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Department of Civil Engineering
Talamban, Cebu City,
Philippines 6000

CE 521G FORM-1:
Undergraduate Research Paper Template
Endorsement Sheet

Term/Academic Year:
Second Semester AY 2017-2018

Research Paper Endorsement and Approval

I/we have read and agreed to the findings contained in the research manuscript entitled

AN INTERSECTION STUDY AT THE JUNCTION OF N. BACALSO AVE. – DECA ACCESS ROAD, LOWER CALAJOAN, MINGLANILLA

Prepared and submitted by

CUBILLO, KEVIN LORENZO L.

DE CLARO, TRISHIA MAE Y.

DEDICATORIA, CHARIBON S.

I/we affirm that the same complies with the standards prescribed for the research paper requirement.

In view thereof, I/we hereby endorses the said research paper for review and oral defense.

Endorsed By:

Engr. Lynn Gloria A. Madrona, MEng	July 5, 2018
Name and Signature of Adviser	Date Endorsed
Name and Signature of Co-Adviser	Date Endorsed

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REVIEW

Name and Signature of Reviewer	Name and Signature of Reviewer
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Date of Review

APPROVAL

Name and Signature of Primary Reviewer	Date Approved
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Name and Signature of Primary Reviewer	Date Approved

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Research Group

An intersection study at the junction of N. Bacalso Ave. – Deca Access Road, Lower Calajoan, Minglanilla

Trishia Mae Y. De Claro[a], Charibon S. Dedicatoria[a], Kevin Lorenzo L. Cubillo[a], Lynn Gloria A. Madrona[a,*]

[a]*Department of Civil Engineering, University of San Carlos, Talamban, Cebu City 6000, Philippines*
**Corresponding author: Email: lynn.madrona@gmail.com*

Abstract

The need for improvement of road system on a region is highly essential to aid the economic growth, the satisfactory of the motorists and the safety of the pedestrians. Heavy traffic is commonly experienced especially during peak hours especially of the intersection concerned and the aim of this study is to resolve it. In making this possible, traffic volume study must be conducted. Recording the traffic flow of the intersection and manual counting of categorized vehicles was part of the process. Vehicles were classified into: Motorcycles; small vehicles such as Sedan and Jeepneys; big vehicles such as SUVs and pickup trucks; buses and; six wheelers and up such as prime mover trucks and trailer trucks. This data was utilized and enabled to identify the total average volume per hour, average control delay and the level of service of the intersection. The result indicated that the intersection has a level of service belonging to the criteria F, which represents the worst quality of traffic. The geometrics of the intersection was redesigned to accommodate the traffic volume. Based on numbers, road widening, adding lanes and constructing flared road design on northbound and southbound only for left turns increased the traffic volume capacity of the intersection resulting to smoother traffic flow. For the safety of the pedestrians, construction of sidewalks and a pedestrian lane was included. The proposed road improvement raised the level of service from F to D.

Keywords: average control delay, flared road design, geometric design, level of service, total average volume per hour

1. Introduction

The significance of transportation in our daily activities is evident. It allows us to mobilize goods, people, promote tourism and provide for the people in a faster way. It essentially makes our lives easier that also aids the economic growth. As the economy of a region or nation grows, so as its number of vehicles on the road given that citizens are now more capable of acquiring one, or more. Some parts of the province of Cebu have shown a rapid increase in number of vehicles that has led to traffic congestion particularly in the cities.

The currently unresolved traffic congestion in the cities has extended its domino effect to the nearby municipalities such as the area of study, which will continue to extend until transportation system improves. The effect of traffic congestion has gravely affected the people's lives in different ways which sum up to delay. Time, money, resources and development is sacrificed because of this. Good transportation alone will not assure success in the marketplace. However, the absence of excellent transportation services will contribute to failure, according to Hoel et al. (2012).

As the improvement of a transportation system is observed, this must sync with the urban transportation system plan upon realization. In this manner, continuous flow of planning and traffic will be achieved. There are various possible causes and possible remedies for traffic congestion, different methods must be analyzed for comparison to come up with the best solution.

This study is limited only to the analysis of the current traffic condition and geometric enhancement of the N. Bacalso Ave. – Deca Access Road, Lower Calajoan, Minglanilla. This intersection is one of the busiest road networks due to the existing establishments such as FoodaSaversmart, Minglanilla District Hospital and Belmort Village Subdivision and the access roads along N. Bacalso Avenue. The researchers have applied various methods in analyzing to reduce traffic congestion in the intersection. Collection and analysis of data, altering the geometric design of the intersection, and adding traffic control devices were applied by the researchers.

2. Main Discussion

The study is limited only to the analysis of the traffic condition at the junction of N. Bacalso Ave. Deca Access Road, Lower Calajoan, Minglanilla. The data were obtained with the use of the Close-Circuit Television (CCTV) from the establishment around the studied area. The three recorded videos were recorded in November 2017 on a Monday, Wednesday and a Friday with a 15-minute interval from 6 am to 8 pm. The month of November was preferred than December to avoid Christmas rush which would sabotage the analysis of traffic data.

2.1. Collection of traffic count and existing road geometric dimensions

Traffic counting was made possible with the use of the functional Close-Circuit Television (CCTV) recordings from an establishment around the studied area. The measurements of the intersection were manually measured by the researchers using a measuring tape.

2.1.1. Traffic count

The availability of functional and good quality video recordings of the studied area allowed the researchers to successfully record the traffic flow of the intersection for three regular weekdays. Traffic counting was manually performed by the researchers for data analysis. Vehicles were categorized in five classifications, namely; motorcycles; small vehicles such as Sedan and Jeepneys; big vehicles such as SUVs and pickup trucks; buses; and six wheelers and up such as prime mover trucks and trailer trucks in all directions.

2.1.2.Dimensions of existing geometric design

The measuring tape was used in measuring the lane widths dimensions of the intersection. The data collected was then used in the study for redesigning the geometrics of the intersection to improve the traffic flow.

2.2. Data Treatment

The data gathered was enhanced using the application Microsoft Excel. Formulas used were acquired from the standard manual, Highway Capacity Manual 2000 (HCM 2000). The data was then used to obtain the necessary parameters in identifying the level of service and the delay at the intersection. Upon identifying the level of service of the intersection, redesigning of the intersection was made with the main objective, increasing the level of service at the intersection. The obtained geometric dimensions were used for the proposed improvement of the intersection which was presented in AutoCADfor visual purposes. Level of Service (LOS) Criteria was also obtained from the manual and is presented in Appendix C.

2.2.1. Peak Hour Factor

The demand of volume for each lane group was evaluated using the peak hour factor. With 15 minute interval, the researchers used Equation 1 to obtain the peak hour factor for each lane group.

$$PHF = \frac{V}{4\ x\ V_{15}} \qquad \textbf{Equation 1}$$

Where: V = hourly volume (veh/hr)
V_{15} = volume during peak 15 min of the peak hour (veh/15min)

2.2.2.Saturation flow rate

For each lane group, a saturation flow rate was computed with the use of Equation 2. According to the Highway Capacity Manual, saturation flow rate is the flow of vehicles per hour that can be accommodated by the lane group assuming that the green phase was displayed 100 percent of the time.

$$s = (s_o)(N)(f_w)(f_{HV})(f_g)(f_p)(f_{bb})(f_a)(f_{LU})(f_{LT})(f_{RT})(f_{Lpb})(f_{Rpb}) \qquad \textbf{Equation 2}$$

Where: s = saturation flow rate for subject lane group, expressed as a total for all lane in lane group (veh/hr)
s_o= base saturation flow rate per lane
N = number of lanes in lane group
f_w= adjustment factor for heavy vehicles in traffic stream
f_{HV}= adjustment factor for approach grade
f_g= adjustment factor for approach grade
f_p= adjustment factor for existence of a parking lane and parking activity adjacent to lane group
f_{bb}= adjustment factor for blocking effect of local buses that stop within intersection area
f_a= adjustment factor for area type
f_{LU}= adjustment factor for lane utilization
f_{LT} = adjustment factor for left turns in lane group
f_{RT} = adjustment factor for right turns in lane group
f_{Lpb}= pedestrian-bicycle adjustment factor for left-turn movements
f_{Rpb}= pedestrian-bicycle adjustment factor for right-turn movements

2.2.3.Capacity analysis

The capacity of a lane is the maximum number of vehicles which can be accommodated under given conditions. Capacity analysis is computed using Equation 3.

$$c_i = s_i(\frac{g_i}{C}) \quad \textbf{Equation 3}$$

Where:c_i = capacity of lane group I (veh/hr)

s_i = saturation flow rate of lane group,i

$\frac{g_i}{C}$ = ratio for lane group, i

g_i= effective green time for lane group, i

C = cycle length

2.2.4.Obtaining level of service

The intention of the level of service (LOS) is to relate the traffic service quality to a given flow rate of traffic. Highway Capacity Manual (HCM) provides procedures to obtain the level of service of signalized and unsignalized intersection. The obtained video recordings were used for manual counting of vehicles with fifteen minute interval. The traffic count was used in calculating the required parameters in solving the level of service of the intersection.

2.2.5. Control delay

The level of service of an intersection was determined on the basis of computing the average control delay per vehicle in sec/vehicle for each lane group. The results were aggregated to arrive at the overall intersection delay. Highway Capacity Manual provided the formula for average control delay.

$$d = d_1(PF) + d_2 + d_3 \quad \textbf{Equation 4}$$

Where:d = control delay per vehicle (sec/veh)

d_1 = uniform control delay assuming uniform arrivals (sec/veh)

PF = uniform delay progression adjustment factor, which accounts for effects of signal progression

d_2 = increment delay to account for effect of random arrivals and oversaturation queues, adjusted

for duration of analysis period and type of signal control; this delay component assumes that there is no initial queue for lane group start of analysis period (sec/veh)

d_3 = initial queue delay, which accounts for delay to all vehicles in analysis period due to initial queue at start of analysis period (sec/veh)

$$d_1 = \frac{0.5C(1-\frac{g}{C})^2}{1-\left[min(1,X)\frac{g}{C}\right]} \qquad \textbf{Equation 5}$$

Where: d_1 = uniform control delay assuming uniform arrivals (sec/veh)

C = cycle length (s), cycle length used in pretimed signal control, or average cycle length for actuated control

g = effective green time for lane group (s); green time used in pretimed signal control, or average lane group effective green time estimation of actuated control

X = v/c ration or degree of saturation for lane group

$$d_2 = 900T\left[(X-1)+\sqrt{(X-1)^2+\frac{8kIX}{cT}}\right] \qquad \textbf{Equation 6}$$

Where: d_2 = incremental delay to account for effect of random and oversaturation queues, adjusted for duration of analysis period and type of signal control (sec/veh); this delay component assumes that there is no initial queue for lane group at start of analysis period

T = duration of analysis period (hr)

k= incremental delay factor that is dependent on controller settings

I = upstream filtering/metering adjustment factor

c = lane group capacity (veh/hr)

X = lane group v/c ration or degree of saturation

After the control delay was computed, the level of service can now be identified using AppendixB.

2.3. Redesigning the geometrics of the intersection

In order to improve the level of service of the intersection, the researchers referred to the HCM 2000 for road widening standards and AutoCAD were used to show the overview of the proposed improvement

of the lane width and necessary adjustments. Researchers decided to widen the road to improve not only the level of service but also the fluidity of traffic flow of the motorists. See Appendix H for the existing geometric design of the intersection and Appendix I for the proposed geometric design of the intersection

3. Results and Discussion

3.1. Total average intersection volume per hour

The traffic count data were collected during three non-consecutive regular weekdays. The researchers made sure to obtain the data during regular weekdays to obtain the regular average peak hour value of the volume of vehicles in the intersection. The vehicles were categorized into five categories. Refer to Appendix D.

Figure 3.1 shows the total average volume per hour of the signalized intersection. It can be noticed that the highest point in the graph is from 10:00 am to 11:00 am. It means that it is considered as the peak hour, the volume of vehicles passing through the intersection gradually increases during that time then decreases again after. In the evening, contrary to what the graph shows, the volume of traffic increases during 6:00pm -7:00pm but it didn't reflect on the graph since during the 15-minute interval the flow of the vehicles decelerate due toshorter greentime and the accumulated traffic ahead .

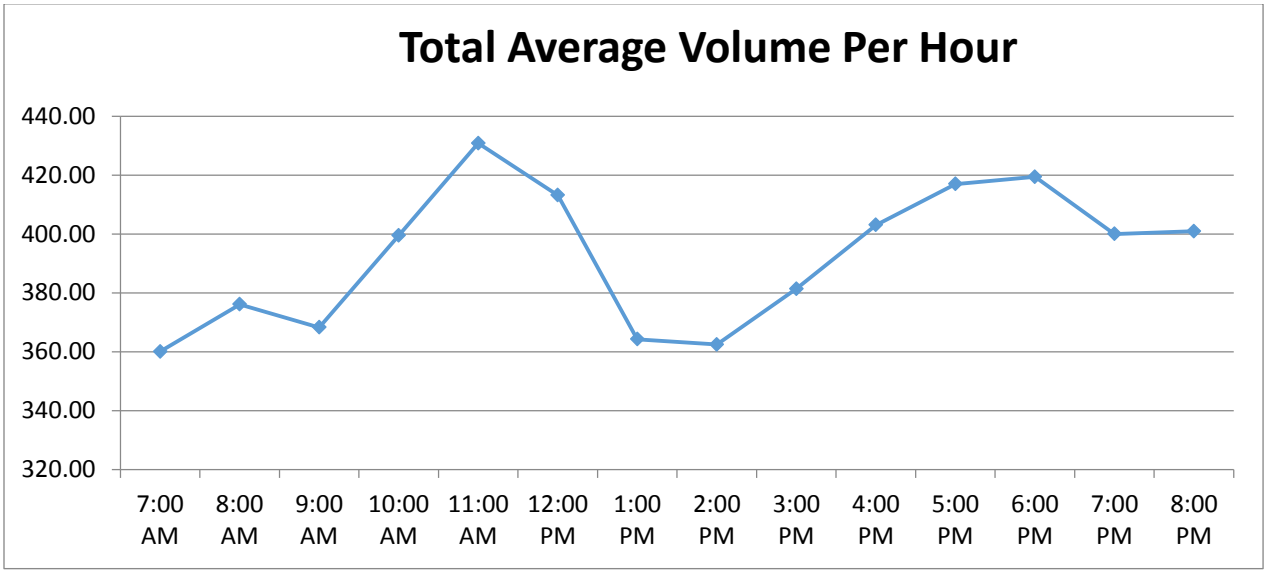


Figure 1. Total average volume per hour (Signalized Intersection)

3.2. Level of service determination for the signalized intersection

The table computations below follow the basic computation order showed in the flow chart in Appendix A. The output of this flow chart is the peak hour control delay of the intersection which will be used in the determining the overall intersection level of service.

3.2.1. Input Module

Table 3.1 shows the tabulated form of all data gathered and will be used for determining the level of service.

Width	6 m	6 m	2.5 m	3 m

VOLUME AND TIMING INPUT												
	NORTH BOUND			SOUTH BOUND			EAST BOUND			WEST BOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume, V (veh/h)	90	2043	6	6	2017	92	98	91	108	71	6	84
% Heavy Vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2
Peak-hour Factor, PHF	0.92			0.92			0.92			0.92		
Pretimed (P) or Actuated (A)	P			P			P			P		
Arrival Type (AT)		3			3			3			3	
Parking (Y or N)	N			N			N			N		
Parking maneuvers, Nm	0			0			0			0		
Bus stopping, Nb	0			0			0			0		
Minimum timing for pedestrians, Gp (s)	10			10			10			10		

Table 3.1 Input module

Table 3.2 shows the signal phasing plan of the intersection.

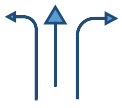
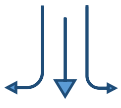
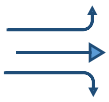
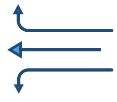
SIGNAL PHASING PLAN				
Phase number	1	2	3	4
Phase type				

Table 3.2 Signal phasing plan

3.2.2. Volume adjustment module

VOLUME ADJUSTMENT												
	NORTH BOUND			SOUTH BOUND			EAST BOUND			WEST BOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume, V (veh/h)	90	2043	6	6	2017	92	98	91	108	71	6	84
Peak-hour Factor, PHF	0.92			0.92			0.92			0.92		
Adjusted flow rate, V/ PHF	97.47	2220.80	6.34	6.37	2191.8	100.4	106.2	99.04	116.9	76.97	6.34	91.62
Lane group												
Adjusted flow rate in lane group		2318.27			2198.2			205.2			83.30	
Proportion of LT or RT	0.042		0.003	0.003		0.046	0.517		0.570	0.924		1.100

Table 3.3 Volume adjustment module

3.2.3. Saturation flow rate module

Table 3.4 shows the tabulated computation for the saturation flow rate for each lane group.

SATURATION FLOW RATE												
Base saturation flow, So (pc/h/ln)		1900			1900			1900			1900	
Number of lanes, N		2			2			1			1	
Lane width adjustment factor, fw		1.9333			1.9333			0.8778			0.9333	
Heavy vehicle adjustment factor, fHV		0.9804			0.9804			0.9804			0.9804	
Grade adjustment factor, fg		1			1			1			1	
Parking adjustment factor, fp		1			1			1			1	
Bus blockage adjustment factor, fbb		1			1			1			1	
Area type adjustment factor, fa		1			1			1			1	
Lane utilization adjustment factor, fLU		0.9080			0.9080			0.9080			0.9080	
Left-turn adjustment factor, fLT		0.9950			0.9950			0.9950			0.9950	
Right-turn adjustment factor, fRT		0.9996			0.9931			0.9145			0.8350	
Left-turn ped/ bike adjustment factor, fLpb		1			1			1			1	
Right-turn ped/ bike adjustment factor, fRpb		1			1			1			1	
Adjusted saturation flow, s (veh/h)		6504.8			6462.8			1351.0			1311.6	

Table 3.4 Saturation flow rate module

3.2.4.Capacity analysis module

Table 3.5 shows the computed capacity of each lane using Equation 3.

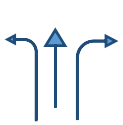
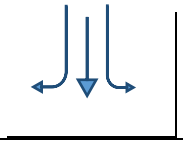
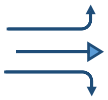
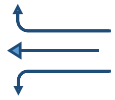
CAPACITY ANALYSIS				
Phase number	1	2	3	4
Phase type				
Adjusted flow rate, v	2318.272	2198.239	205.250	83.304
Saturation flow rate, s	6504.768	6462.849	1350.996	1311.628
Lost time, tL (s)	4	4	4	4
Effective green time, g (s)	60	60	40	25
Cycle Length, C (s)	195			
Green ratio, g/C	0.3077	0.3077	0.2051	0.1282
Lane group capacity, c=s(g/C)	2001	1989	277	168
v/c ratio, X	1.1583	1.1054	0.7406	0.4954
Flow ratio, v/s	0.3564	0.3401	0.1519	0.0635
Critical lane group/ phase				
Sum of flow ratios for critical lane group	0.696530431455463			
Total lost time per cycle, L	16			
Critical flow rate to capacity ratio	0.758790135			

Table 3.5 Capacity analysis module

3.2.5.Level of service module

Table 3.6 shows the tabulated computation of the average control delay of the intersection. It was obtained with the use of Equations 4, 5 and 6.

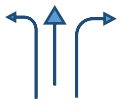
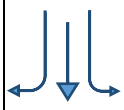
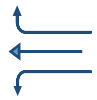
LANE GROUP CAPACITY, CONTROL DELAY, AND LOS DETERMINATION				
	NORTH BOUND	SOUTH BOUND	EAST BOUND	WEST BOUND
Lane group				
Adjusted flow rate, v (veh/h)	2318.27	2198.24	83.30	205.25
Lane group capacity, c=s(g/C) (veh/h)	2001.47	1988.57	168.16	277.13
v/c ratio, X	1.16	1.11	0.50	0.74
Total green ratio, g/C	0.31	0.31	0.13	0.21
Uniform delay, d1 (s/veh)	67.50	67.50	79.13	72.64
Incremental delay calibration, k	0.50	0.50	0.50	0.50
Incremental delay, d2 (s/veh)	77.2935	55.5524	10.0629	16.2774
Initial queue delay, d3 (s/veh)	0	0	0	0
Progression adjustment factor, PF	1	1	1	1
Delay, d (s/veh)	144.793	123.052	89.191	88.915
LOS by lane group	F	F	F	F
Delay by approach, dA (s/veh)	144.79	123.05	89.19	88.92
LOS by approach	F	F	F	F
Approach flow rate, vA (veh/h)	2318.27	2198.24	83.30	205.25
Intersectioin delay, dI (s/veh)	131.496		Intersection LOS	F

Table 3.6 Level of service module

The average control delay for the intersection is approximately 132 seconds. This value of control delay belongs to the criteria F based on Appendix C. Level of service F represents the worst quality of traffic.

3.3. Level of service for the proposed intersection

The same process from 3.2.1 until 3.2.5 was used in obtaining the level of service of the proposed design intersection. The only difference is that the lane widths for the proposed intersection were adjusted to 3.5 m instead of 3m for the main roads and there is an additional lane to be utilized for left turns. For the Deca access road, the researchers adjusted the lane width from 2.5 meters to 3 meters to accommodate larger vehicles that passes through the said road. Pavement markings and sidewalks were provided to ensure the safety of pedestrians in the area. The proposed design of the intersection changed positively the level of service of the intersection from level of service F to D. Below are the tabulated results of the computed level of service for the proposed intersection design.

3.3.1. Level of service determination for the proposed design

Width	10.5	m	10.5	m	3	m	3	m

VOLUME AND TIMING INPUT												
	NORTH BOUND			SOUTH BOUND			EAST BOUND			WEST BOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume, V (veh/h)	90	2043	6	6	2017	92	98	91	108	71	6	84
% Heavy Vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2
Peak-hour Factor, PHF	0.92			0.92			0.92			0.92		
Pretimed (P) or Actuated (A)	P			P			P			P		
Arrival Type (AT)		3			3			3			3	
Parking (Y or N)	N			N			N			N		
Parking maneuvers, Nm	0			0			0			0		
Bus stopping, Nb	0			0			0			0		
Minimum timing for pedestrians, Gp (s)	10			10			10			10		

Table 3.7 Input module

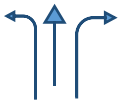
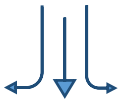
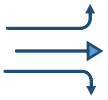
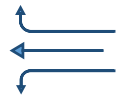
SIGNAL PHASING PLAN				
Phase number	1	2	3	4
Phase type				

Table 3.8 Signal phasing plan

VOLUME ADJUSTMENT												
	NORTH BOUND			SOUTH BOUND			EAST BOUND			WEST BOUND		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume, V (veh/h)	90	2043	6	6	2017	92	98	91	108	71	6	84
Peak-hour Factor, PHF	0.92			0.92			0.92			0.92		
Adjusted flow rate, V/ PHF	97.47	2220.80	6.34	6.37	2191.87	100.41	106.21	99.04	116.96	76.97	6.34	91.62
Lane group												
Adjusted flow rate in lane group		2318.27			2198.24			205.25			83.30	
Proportion of LT or RT	0.042		0.003	0.003		0.046	0.517		0.570	0.924		1.100

Table 3.9 Volume adjustment module

SATURATION FLOW RATE												
Base saturation flow, So (pc/h/ln)		1900			1900			1900			1900	
Number of lanes, N		3			3			1			1	
Lane width adjustment factor, fw		4.1000			4.1000			0.9333			0.9333	
Heavy vehicle adjustment factor, fHV		0.9804			0.9804			0.9804			0.9804	
Grade adjustment factor, fg		1			1			1			1	
Parking adjustment factor, fp		1			1			1			1	
Bus blockage adjustment factor, fbb		1			1			1			1	
Area type adjustment factor, fa		1			1			1			1	
Lane utilization adjustment factor, fLU		0.9080			0.9080			0.9080			0.9080	
Left-turn adjustment factor, fLT		0.9950			0.9950			0.9950			0.9950	
Right-turn adjustment factor, fRT		0.999589978			0.993148172			0.914526293			0.835027401	
Left-turn ped/ bike adjustment factor, fLpb		1			1			1			1	
Right-turn ped/ bike adjustment factor, fRpb		1			1			1			1	
Adjusted saturation flow, s (veh/h)		20691.9			20558.5			1436.5			1311.6	

Table 3.10 Saturation flow rate module

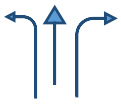
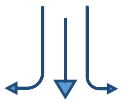
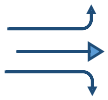
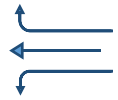
CAPACITY ANALYSIS				
Phase number	1	2	3	
Phase type				
Adjusted flow rate, v	2318.272	2198.239	205.250	83.304
Saturation flow rate, s	20691.893	20558.545	1436.502	1311.628
Lost time, tL (s)	4	4	4	4
Effective green time, g (s)	35	35	28	28
Cycle Length, C (s)	148			
Green ratio, g/C	0.2365	0.2365	0.1892	0.1892
Lane group capacity, c=s(g/C)	4893	4862	272	248
v/c ratio, X	0.4738	0.4521	0.7552	0.3357
Flow ratio, v/s	0.1120	0.1069	0.1429	0.0635
Critical lane group/ phase				
Sum of flow ratios for critical lane group	0.218963496067300			
Total lost time per cycle, L	16			
Critical flow rate to capacity ratio	0.245504526			

Table 3.11 Capacity analysis module

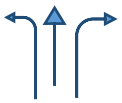
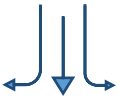
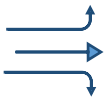
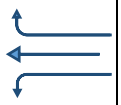
LANE GROUP CAPACITY, CONTROL DELAY, AND LOS DETERMINATION				
	NORTH BOUND	SOUTH BOUND	EAST BOUND	WEST BOUND
Lane group				
Adjusted flow rate, v (veh/h)	2318.27	2198.24	83.30	205.25
Lane group capacity, c=s(g/C) (veh/h)	4893.35	4861.82	248.15	271.77
v/c ratio, X	0.47	0.45	0.34	0.76
Total green ratio, g/C	0.24	0.24	0.19	0.19
Uniform delay, d1 (s/veh)	48.58	48.30	51.95	56.76
Incremental delay calibration, k	0.50	0.50	0.50	0.50
Incremental delay, d2 (s/veh)	0.33	0.31	3.62	17.62
Initial queue delay, d3 (s/veh)	0	0	0	0
Progression adjustment factor, PF	1	1	1	1
Delay, d (s/veh)	48.91	48.61	55.57	74.38
LOS by lane group	D	D	E	E
Delay by approach, dA (s/veh)	48.91	48.61	55.57	74.38
LOS by approach	D	D	E	E
Approach flow rate, vA (veh/h)	2318.27	2198.24	83.30	205.25
Intersectioin delay, dI (s/veh)	49.97641143		Intersection LOS	D

Table 3. 12 Level of service module

The average control delay for the proposed design is 50 seconds and as observed on Appendix C, the level of service falls under the category D. This proves the improvement of the quality of service of the intersection having better traffic flow. Freedom to maneuver within traffic stream has improved with the proposed intersection design. At this level, density deteriorates more quickly with flow.

3.4 Results of the survey from pedestrians

Table 3.13 shows the tabulated summary of the results of the survey done for the safety analysis of pedestrians.

SURVEY SUMMARY		
AGE	<20	4
	20-30	40
	31-40	18
	41-50	12
	51 and above	26
GENDER:	F	56
	M	44
2)	YES	61
	NO	39
3)	YES	44
	NO	56
4)	1	0
	2	35
	3	50
	4	16
	5	0
5)	NO ANSWERS/ EXPLANATIONS PROVIDED	
6)	YES	100
	NO	0
7)	30 sec	8
	1 min	36
	2 min	34
	3min	21
8)	NO ANSWERS/ EXPLANATIONS PROVIDED	

Table 3. 13 Summary of survey results

As can be observed in the results for question 2 in the questionnaire survey (see Appendix F), 61 respondents agreed that the intersection is in need of improvement for pedestrian safety.

Conclusions and Recommendation

The objective of this study is to determine the traffic volume passing through the intersection, level of service and the delay at the intersectionof N. Bacalso Ave. – Deca access road,Lower Calajoan, Minglanilla. Also, to be able to provide an improved geometric design that would cater the growing volume of vehicles that passes through the said intersection that experiences traffic congestion.

The researchers have formulated the following conclusions based on the findings in the results and discussions that would comply with the objectives set for this study.

1. The peak hour starts at 10:00 am to 11:00 am. However, as observed by the researchers that during 6:00 pm -7:00 pm, a traffic congestion occurs at the area but it did not reflect on Figure 1 because of the possible reason that the vehicles are stagnant during the 15-minute interval.
2. Given the results from the computations conducted by the researchers, it showed that the existing geometric design of the intersection fails to accommodate the increasing number of vehicles that passes through resulting to a control delay of approximately 132 seconds which falls to a level of service F.
3. There are 61 respondents that believed that there is a need for improvement for pedestrian safety on the studied intersection. 56 of them agreed that even so, they don't find it difficult and majority of them feels moderately safe to cross the street. In the proposed design of intersection, proper sidewalks are provided and so as with pedestrian lanes. This would raise the level safety of the pedestrians.
4. Using the proposed geometric design, it was proven that the level of service of the intersection was improved from level of service F to level of service D since the control delay improved to 50 seconds. The additional lanes that were allocated for left turns on both main roads resulted to a great difference on the condition of the flow of traffic of the intersection.
5. The new geometric design proposes wider lane widths than the existing one thus becoming more effective and prevents the causes of delays that commonly occurs in the area.

This study was able to assess only the current situation of the traffic congestion in the area. In the future, traffic congestion on the area might get worse. Thus, the researchers advise the following:

1. The proposed geometric design is highly recommended to be implemented.
2. Sidewalks should be free of vendors' obstructions to be able to use it effectively to the extent of its purpose.
3. Upon implementation of the proposed geometric design of the intersection, installation of traffic signals with left turn is highly recommended.
4. Brighter light posts can provide better vision on the road that would also help the motorists notice more the pedestrians.
5. Scheduled assessment on the maintenance of the traffic signals, signs and road markings on the area should be done.
6. For the study to be used as a reference for further studies by researchers having similar thesis.

7. MITCOM should strictly implement traffic laws not only on the area of study but also to other neighboring areas.

Acknowledgements

This study was made possible with the help of many individuals. The researchers would like to extend their heartfelt gratitude to the following:

First of all, to our God Almighty for without Him this study will be impossible. For blessing the researchers, strength and good health to finish this research study.

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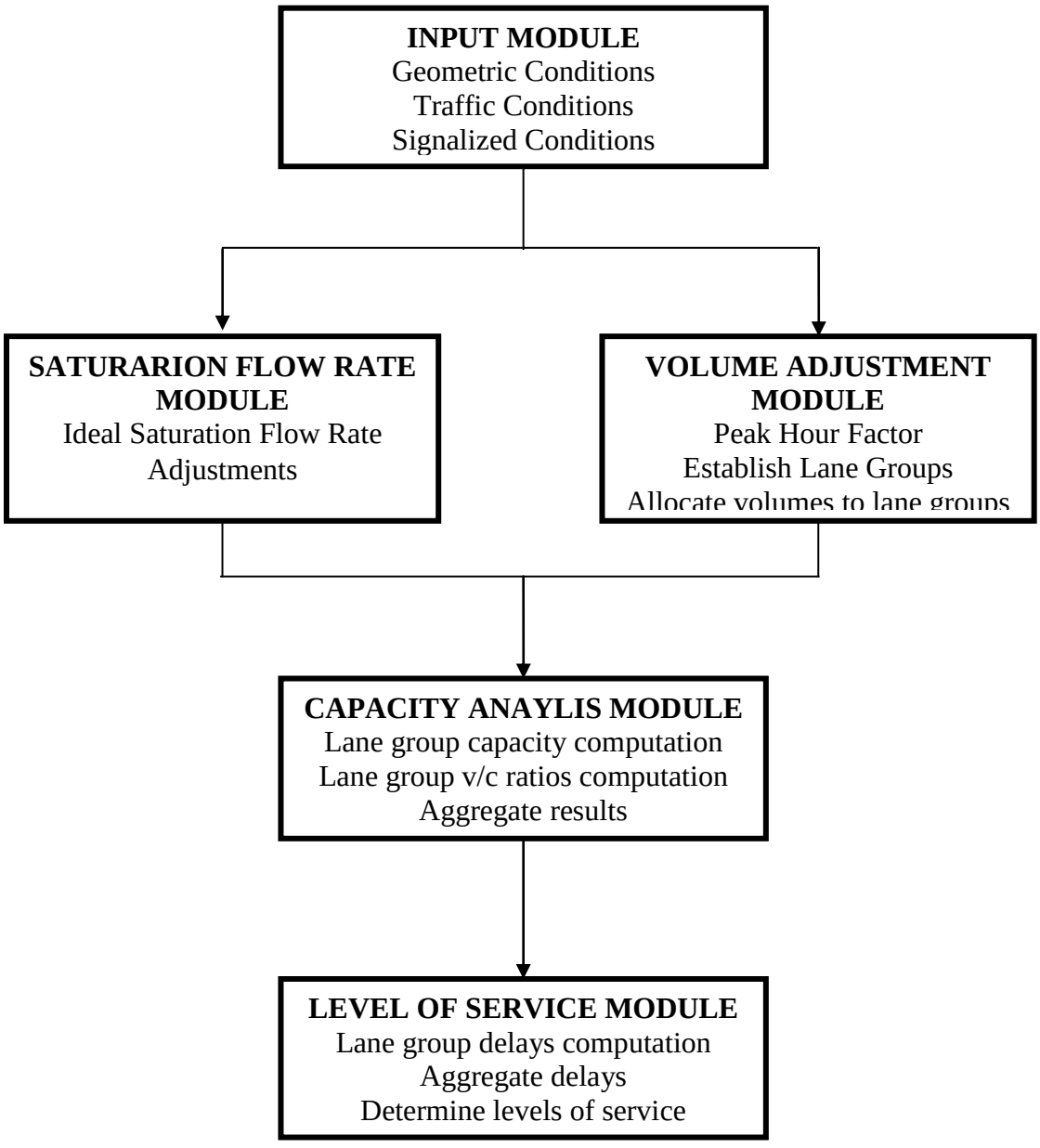
Appendices

A. Flow of Analysis



B. Required data for signalized intersection

EXHIBIT 10-12. REQUIRED DATA FOR SIGNALIZED INTERSECTIONS

Item	Default
Geometric Data	
Exclusive turn lanes	Exhibit 10-13
Demand Data	
Intersection turning movements	-
PHF	0.92
Length of analysis period	0.25 h
Intersection Data	
Control type	-
Cycle	Exhibit 10-16
Lost time	Exhibit 10-17
g/C	-
Arrival type (AT)	3 uncoordinated, 4 coordinated
Unit extension time (UE)	3.0 s
Actuated control adjustment factor (k)	0.40 (planning)
Upstream filtering adjustment factor (I)	1.00
Adjusted saturation flow rate	Exhibit 10-19
Saturation Flow Data	
Base saturation flow rate	1900 pc/h/ln
Lane widths	3.6 m
Heavy vehicles	2 %
Grades	0 %
Parking maneuvers	Exhibit 10-20
Local bus	Exhibit 10-21
Pedestrians	Exhibit 10-22
Area type	-
Lane utilization	Exhibit 10-23

EXHIBIT 16-7. ADJUSTMENT FACTORS FOR SATURATION FLOW RATE[a]

Factor	Formula	Definition of Variables	Notes
Lane width	$f_w = 1 + \frac{(W - 3.6)}{9}$	W = lane width (m)	$W \geq 2.4$ If W > 4.8, a two-lane analysis may be considered
Heavy vehicles	$f_{HV} = \frac{100}{100 + \%\,HV(E_T - 1)}$	% HV = % heavy vehicles for lane group volume	E_T = 2.0 pc/HV
Grade	$f_g = 1 - \frac{\%\,G}{200}$	% G = % grade on a lane group approach	$-6 \leq \%\,G \leq +10$ Negative is downhill
Parking	$f_P = \frac{N - 0.1 - \frac{18N_m}{3600}}{N}$	N = number of lanes in lane group N_m = number of parking maneuvers/h	$0 \leq N_m \leq 180$ $f_p \geq 0.050$ f_p = 1.000 for no parking
Bus blockage	$f_{bb} = \frac{N - \frac{14.4N_B}{3600}}{N}$	N = number of lanes in lane group N_B = number of buses stopping/h	$0 \leq N_B \leq 250$ $f_{bb} \geq 0.050$
Type of area	f_a = 0.900 in CBD f_a = 1.000 in all other areas		
Lane utilization	$f_{LU} = v_g/(v_{g1}N)$	v_g = unadjusted demand flow rate for the lane group, veh/h v_{g1} = unadjusted demand flow rate on the single lane in the lane group with the highest volume N = number of lanes in the lane group	

Left turns	Protected phasing: Exclusive lane: $f_{LT} = 0.95$ Shared lane: $f_{LT} = \frac{1}{1.0 + 0.05P_{LT}}$	P_{LT} = proportion of LTs in lane group	See Exhibit C16-1, Appendix C, for nonprotected phasing alternatives
Right turns	Exclusive lane: $f_{RT} = 0.85$ Shared lane: $f_{RT} = 1.0 - (0.15)P_{RT}$ Single lane: $f_{RT} = 1.0 - (0.135)P_{RT}$	P_{RT} = proportion of RTs in lane group	$f_{RT} \geq 0.050$
Pedestrian-bicycle blockage	LT adjustment: $f_{Lpb} = 1.0 - P_{LT}(1 - A_{pbT})(1 - P_{LTA})$ RT adjustment: $f_{Rpb} = 1.0 - P_{RT}(1 - A_{pbT})(1 - P_{RTA})$	P_{LT} = proportion of LTs in lane group A_{pbT} = permitted phase adjustment P_{LTA} = proportion of LT protected green over total LT green P_{RT} = proportion of RTs in lane group P_{RTA} = proportion of RT protected green over total RT green	Refer to Appendix D for step-by-step procedure

C. Level of service criteria

EXHIBIT 16-2. LOS CRITERIA FOR SIGNALIZED INTERSECTIONS

LOS	Control Delay per Vehicle (s/veh)
A	≤ 10
B	> 10–20
C	> 20–35
D	> 35–55
E	> 55–80
F	> 80

EXHIBIT 17-2. LEVEL-OF-SERVICE CRITERIA FOR TWSC INTERSECTIONS

Level of Service	Average Control Delay (s/veh)
A	0–10
B	> 10–15
C	> 15–25
D	> 25–35
E	> 35–50
F	> 50

D. Legend for traffic count data

	TYPES OF VEHICLES
1	MOTORCYCLE
2	TRICYCLE / SEDAN
3	PICK UP TRUCKS - SUV
4	BUSES
5	TRAILERS

E. Traffic count data

DATE:	NORTH BOUND														
08-Nov-17 Wednesday	LEFT TURN					THROUGH					RIGHT TURN				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
6:00-6:15 AM	7	5	8	0	0	159	171	69	8	16	4	4	0	0	0
6:15-6:30 AM	19	12	2	0	0	172	188	62	11	14	3	3	0	0	0
6:30-6:45 AM	16	8	8	0	1	168	96	96	14	25	10	5	2	0	0
6:45-7:00 AM	10	6	4	0	0	172	153	102	13	16	7	2	0	0	0
SUBTOTAL	52	31	22	0	1	671	608	329	46	71	24	14	2	0	0
7:00-7:15 AM	9	5	7	0	0	169	189	121	7	18	9	4	1	0	0
7:15-7:30 AM	11	12	2	0	0	185	199	61	9	27	3	5	0	0	0
7:30-7:45 AM	15	8	3	0	0	178	162	63	11	15	22	12	5	0	0
7:45-8:00 AM	21	6	8	0	0	151	150	67	10	17	12	9	0	0	0
SUBTOTAL	56	31	20	0	0	683	700	312	37	77	46	30	6	0	0
8:00-8:15 AM	26	11	5	0	0	155	168	59	12	9	10	8	2	0	0
8:15-8:30 AM	9	8	11	0	0	159	171	69	8	16	8	2	1	0	0
8:30-8:45 AM	17	4	3	0	0	172	188	62	11	14	5	5	0	0	0
8:45-9:00 AM	15	9	7	0	0	142	140	78	7	15	4	4	0	0	0
SUBTOTAL	67	32	26	0	0	628	667	268	38	54	27	19	3	0	0
9:00-9:15 AM	9	8	4	0	0	139	146	81	5	16	3	3	0	0	0
9:15-9:30 AM	12	11	6	0	0	155	150	82	9	20	10	5	2	0	0
9:30-9:45 AM	16	6	9	0	0	200	172	98	12	19	7	2	0	0	0
9:45-10:00 AM	8	6	0	0	0	212	186	101	9	18	9	4	1	0	0
SUBTOTAL	45	31	19	0	0	706	654	362	35	73	29	14	3	0	0
10:00-10:15 AM	11	12	2	0	0	255	169	108	9	22	22	11	2	0	0
10:15-10:30 AM	15	8	3	0	0	237	164	105	14	21	26	13	5	0	0
10:30-10:45 AM	21	6	8	0	0	232	152	120	11	15	35	9	0	0	1
10:45-11:00 AM	26	11	5	0	0	246	148	116	10	17	41	12	2	0	0
SUBTOTAL	73	37	18	0	0	970	633	449	44	75	124	45	9	0	1
11:00-11:15 AM	9	8	11	0	0	238	137	112	9	16	27	8	1	0	0

11:15-11:30 AM	7	6	1	0	3	233	119	112	7	15	39	8	3	0	0
11:30-11:45 AM	3	3	1	0	3	231	126	110	10	15	29	5	2	0	0
11:45-12:00 PM	7	2	1	0	1	229	130	99	12	22	30	6	2	0	0
SUBTOTAL	26	19	14	0	7	931	512	433	38	68	125	27	8	0	0
12:00-12:15 PM	2	0	0	0	1	198	227	83	14	39	24	5	6	0	1
12:15-12:30 PM	0	2	0	0	0	172	212	89	11	24	25	3	5	0	0
12:30-12:45 PM	9	3	0	0	0	160	180	101	12	14	20	5	6	0	1
12:45-01:00 PM	4	0	0	0	0	155	182	93	10	11	16	4	3	0	1
SUBTOTAL	15	5	0	0	1	685	801	366	47	88	85	17	20	0	3
01:00-01:15 PM	4	1	0	0	0	149	177	87	6	25	11	9	11	0	1
01:15-01:30 PM	5	5	0	0	0	162	168	68	10	15	12	3	5	0	0
01:30-01:45 PM	3	3	0	0	0	176	137	150	20	51	19	6	8	0	1
01:45-02:00 PM	2	0	0	0	0	192	201	183	9	31	21	5	9	0	0
SUBTOTAL	14	9	0	0	0	679	683	488	45	122	63	23	33	0	2
02:00-02:15 PM	2	0	0	0	0	200	217	185	12	22	22	12	5	0	0
02:15-02:30 PM	3	2	0	0	0	177	201	152	15	15	12	9	0	0	0
02:30-02:45 PM	0	0	0	0	0	185	175	102	8	12	10	8	2	0	0
02:45-03:00 PM	0	0	1	0	0	166	188	99	9	8	9	12	0	0	0
SUBTOTAL	5	2	1	0	0	728	781	538	44	57	53	41	7	0	0
03:00-03:15 PM	1	1	0	0	0	180	193	115	11	10	12	15	7	0	1
03:15-03:30 PM	0	1	0	0	0	199	179	121	12	12	22	11	2	0	0
03:30-03:45 PM	5	1	0	0	0	229	196	127	10	29	26	13	5	0	0
03:45-04:00 PM	7	2	2	0	1	212	190	88	8	9	35	9	0	0	1
SUBTOTAL	13	5	2	0	1	820	758	451	41	60	95	48	14	0	2
04:00-04:15 PM	3	0	0	0	0	219	190	98	10	15	41	12	2	0	0
04:15-04:30 PM	3	2	0	0	0	223	191	110	7	32	27	8	1	0	0
04:30-04:45 PM	10	2	1	1	1	194	141	188	18	41	39	8	3	0	0
04:45-05:00 PM	0	2	1	0	0	178	155	166	9	29	30	6	2	0	0
SUBTOTAL	16	6	2	1	1	814	677	562	44	117	137	34	8	0	0
05:00-05:15 PM	5	1	1	0	0	196	130	179	10	37	24	5	6	0	1
05:15-05:30 PM	1	4	0	0	0	188	118	156	12	29	25	3	5	0	0
05:30-05:45 PM	6	4	3	0	0	203	135	171	8	37	20	5	6	0	1
05:45-06:00 PM	8	0	0	0	0	209	122	162	13	30	16	4	3	0	1
SUBTOTAL	20	9	4	0	0	796	505	668	43	133	85	17	20	0	3
06:00-06:15 PM	7	0	2	0	1	200	127	160	11	36	11	9	11	0	1
06:15-06:30 PM	4	0	3	0	0	188	132	145	7	45	12	3	5	0	0
06:30-06:45 PM	6	0	3	0	1	196	124	159	15	38	22	12	5	0	0
06:45-07:00 PM	5	1	2	0	0	183	119	162	12	32	12	9	0	0	0
SUBTOTAL	22	1	10	0	2	767	502	626	45	151	57	33	21	0	1

07:00-07:15 PM	8	2	1	0	0	170	133	179	9	37	10	8	2	0	0
07:15-07:30 PM	7	2	1	1	0	162	129	182	11	29	9	12	0	0	0
07:30-07:45 PM	3	0	0	0	2	156	135	165	13	32	12	15	7	0	1
07:45-08:00 PM	4	0	0	1	0	168	145	172	9	43	22	11	2	0	0
SUBTOTAL	22	4	2	2	2	656	542	698	42	141	53	46	11	0	1

468

SOUTH BOUND

LEFT TURN					THROUGH					RIGHT TURN				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
15	9	7	0	0	198	227	83	14	39	3	5	0	0	0
9	8	4	0	0	172	212	89	11	24	6	8	0	1	0
12	11	6	0	0	160	180	101	12	14	5	9	0	0	0
16	6	9	0	0	155	182	93	10	11	12	5	0	0	1
52	34	26	0	0	685	801	366	47	88	26	27	0	1	1
8	6	0	0	0	149	177	87	6	25	9	0	0	0	0
11	12	2	0	0	162	168	68	10	15	8	2	0	0	0
15	8	3	0	0	176	137	150	20	51	12	0	0	0	1
21	6	8	0	0	192	201	183	9	31	15	7	0	1	0
55	32	13	0	0	679	683	488	45	122	44	9	0	1	1
26	11	5	0	0	180	193	115	11	10	12	9	0	0	0
9	8	11	0	0	199	179	121	12	12	10	8	2	0	0
7	6	1	0	3	229	196	127	10	29	8	2	1	0	0
3	3	1	0	3	212	190	88	8	9	5	5	0	0	0
45	28	18	0	6	820	758	451	41	60	35	24	3	0	0
7	2	1	0	1	219	190	98	10	15	4	4	0	0	1
2	0	0	0	1	223	191	110	7	32	3	3	0	0	0
0	2	0	0	0	194	141	188	18	41	10	5	2	0	0
9	3	0	0	0	178	155	166	9	29	7	2	0	0	0
18	7	1	0	2	814	677	562	44	117	24	14	2	0	1
4	0	0	0	0	196	130	179	10	37	9	4	1	0	0
4	1	0	0	0	176	137	150	20	51	22	11	2	0	0
5	5	0	0	0	192	201	183	9	31	20	5	6	0	1
9	5	7	0	0	200	217	185	12	22	16	4	3	0	1
22	11	7	0	0	764	685	697	51	141	67	24	12	0	2
11	12	2	0	0	177	201	152	15	15	11	9	11	0	1
15	8	3	0	0	185	175	102	8	12	12	3	5	0	0
21	6	8	0	0	166	188	99	9	8	19	6	8	0	1
26	11	5	0	0	180	193	115	11	10	12	15	7	0	1

73	37	18	0	0	708	757	468	43	45	54	33	31	0	3
7	6	1	0	3	199	179	121	12	12	8	2	1	0	0
3	3	1	0	3	178	162	63	11	15	5	5	0	0	0
7	2	1	0	1	151	150	67	10	17	4	4	0	0	0
2	2	0	0	2	155	168	59	12	9	3	3	0	0	0
19	13	3	0	9	683	659	310	45	53	20	14	1	0	0
1	4	6	0	6	159	171	69	8	16	10	5	2	0	0
3	2	1	0	5	172	188	62	11	14	7	2	0	0	0
13	1	9	0	6	168	96	96	14	25	9	4	1	0	0
8	8	4	0	3	172	153	102	13	16	3	5	0	0	0
25	15	20	0	20	671	608	329	46	71	29	16	3	0	0
7	10	5	0	1	169	189	121	7	18	22	12	5	0	0
5	3	3	0	2	155	162	102	8	19	12	9	0	0	0
7	5	5	0	5	142	140	78	7	15	10	8	2	0	0
10	4	3	0	3	139	146	81	5	16	9	12	0	0	0
29	22	16	0	11	605	637	382	27	68	53	41	7	0	0
13	8	3	0	6	155	150	82	9	20	8	2	1	0	0
9	5	2	0	3	200	172	98	12	19	5	5	0	0	0
8	6	8	0	4	212	186	101	9	18	4	4	0	0	0
9	5	7	0	2	255	169	108	9	22	3	3	0	0	0
39	24	20	0	15	822	677	389	39	79	20	14	1	0	0
11	8	6	0	3	237	164	105	14	21	41	12	2	0	0
8	9	5	0	4	232	152	120	11	15	27	8	1	0	0
9	6	8	0	3	246	148	116	10	17	39	8	3	0	0
11	3	4	0	4	250	139	122	8	13	29	5	2	0	0
39	26	23	0	14	965	603	463	43	66	136	33	8	0	0
13	4	7	0	2	247	140	117	9	16	30	6	2	0	0
15	2	6	0	4	240	139	120	8	13	24	5	6	0	1
18	4	6	0	3	238	137	112	9	16	25	3	5	0	0
17	6	6	0	2	233	119	112	7	15	20	5	6	0	1
63	16	25	0	11	958	535	461	33	60	99	19	19	0	2
19	5	6	0	1	231	126	110	10	15	16	4	3	0	1
22	7	5	0	2	229	130	99	12	22	11	9	11	0	1
23	5	7	0	1	225	111	105	11	18	12	3	5	0	0
25	5	3	0	2	232	121	113	9	21	19	6	8	0	1
89	22	21	0	6	917	488	427	42	76	58	22	27	0	3
29	6	5	0	1	235	119	121	6	19	21	5	9	0	0
22	8	9	0	2	242	132	115	8	16	18	2	6	0	0
19	4	4	0	3	239	129	109	12	20	20	4	7	0	1

12	8	3	0	0	255	118	113	9	17	23	2	8	0	0
82	26	21	0	6	971	498	458	35	72	82	13	30	0	1

469

EAST BOUND

LEFT TURN					THROUGH					RIGHT TURN				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
9	0	0	0	0	10	5	2	0	0	11	9	11	0	1
8	2	0	0	0	7	2	0	0	0	12	3	5	0	0
12	0	0	0	1	9	4	1	0	0	19	6	8	0	1
15	7	0	1	0	3	5	0	0	0	12	15	7	0	1
44	9	0	1	1	29	16	3	0	0	54	33	31	0	3
11	9	11	0	1	8	2	1	0	0	9	0	0	0	0
12	3	5	0	0	5	5	0	0	0	8	2	0	0	0
19	6	8	0	1	4	4	0	0	0	12	0	0	0	1
12	15	7	0	1	3	3	0	0	0	15	7	0	1	0
54	33	31	0	3	20	14	1	0	0	44	9	0	1	1
10	5	2	0	0	21	5	9	0	0	8	2	1	0	0
7	2	0	0	0	18	2	6	0	0	5	5	0	0	0
9	4	1	0	0	20	4	7	0	1	4	4	0	0	0
3	5	0	0	0	23	2	8	0	0	3	3	0	0	0
29	16	3	0	0	82	13	30	0	1	20	14	1	0	0
8	2	1	0	0	11	9	11	0	1	12	9	0	0	0
5	5	0	0	0	12	3	5	0	0	10	8	2	0	0
4	4	0	0	0	19	6	8	0	1	8	2	1	0	0
3	3	0	0	0	12	15	7	0	1	5	5	0	0	0
20	14	1	0	0	54	33	31	0	3	35	24	3	0	0
8	2	1	0	0	8	6	0	0	0	8	2	1	0	0
5	5	0	0	0	11	12	2	0	0	5	5	0	0	0
4	4	0	0	0	15	8	3	0	0	4	4	0	0	0
3	3	0	0	0	21	6	8	0	0	3	3	0	0	0
20	14	1	0	0	55	32	13	0	0	20	14	1	0	0
16	4	3	0	1	8	2	1	0	0	11	9	11	0	1
11	9	11	0	1	5	5	0	0	0	12	3	5	0	0
12	3	5	0	0	4	4	0	0	0	19	6	8	0	1
19	6	8	0	1	3	3	0	0	0	12	15	7	0	1
58	22	27	0	3	20	14	1	0	0	54	33	31	0	3
7	2	1	0	1	11	9	11	0	1	8	2	1	0	0
2	0	0	0	1	12	3	5	0	0	5	5	0	0	0

0	2	0	0	0	19	6	8	0	1	4	4	0	0	0
9	3	0	0	0	12	15	7	0	1	3	3	0	0	0
18	7	1	0	2	54	33	31	0	3	20	14	1	0	0
11	9	11	0	1	10	5	2	0	0	11	12	2	0	0
12	3	5	0	0	7	2	0	0	0	15	8	3	0	0
19	6	8	0	1	9	4	1	0	0	21	6	8	0	0
12	15	7	0	1	3	5	0	0	0	26	11	5	0	0
54	33	31	0	3	29	16	3	0	0	73	37	18	0	0
29	6	5	0	1	8	2	1	0	0	8	6	0	0	0
22	8	9	0	2	5	5	0	0	0	11	12	2	0	0
19	4	4	0	3	4	4	0	0	0	15	8	3	0	0
12	8	3	0	0	3	3	0	0	0	21	6	8	0	0
82	26	21	0	6	20	14	1	0	0	55	32	13	0	0
8	2	1	0	0	11	12	2	0	0	11	8	6	0	3
5	5	0	0	0	15	8	3	0	0	8	9	5	0	4
4	4	0	0	0	21	6	8	0	0	9	6	8	0	3
3	3	0	0	0	26	11	5	0	0	11	3	4	0	4
20	14	1	0	0	73	37	18	0	0	39	26	23	0	14
21	5	9	0	0	7	2	1	0	1	16	4	3	0	1
18	2	6	0	0	2	0	0	0	1	11	9	11	0	1
20	4	7	0	1	0	2	0	0	0	12	3	5	0	0
23	2	8	0	0	9	3	0	0	0	19	6	8	0	1
82	13	30	0	1	18	7	1	0	2	58	22	27	0	3
13	4	7	0	2	29	6	5	0	1	19	5	6	0	1
15	2	6	0	4	22	8	9	0	2	22	7	5	0	2
18	4	6	0	3	19	4	4	0	3	23	5	7	0	1
17	6	6	0	2	12	8	3	0	0	25	5	3	0	2
63	16	25	0	11	82	26	21	0	6	89	22	21	0	6
19	5	6	0	1	11	12	2	0	0	13	4	7	0	2
22	7	5	0	2	15	8	3	0	0	15	2	6	0	4
23	5	7	0	1	21	6	8	0	0	18	4	6	0	3
25	5	3	0	2	26	11	5	0	0	17	6	6	0	2
89	22	21	0	6	73	37	18	0	0	63	16	25	0	11
11	8	6	0	3	8	6	0	0	0	16	4	3	0	1
8	9	5	0	4	11	12	2	0	0	11	9	11	0	1
9	6	8	0	3	15	8	3	0	0	12	3	5	0	0
11	3	4	0	4	21	6	8	0	0	19	6	8	0	1
39	26	23	0	14	55	32	13	0	0	58	22	27	0	3

470

WEST BOUND

LEFT TURN					THROUGH					RIGHT TURN				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
0	1	0	0	0	1	0	0	0	0	0	2	0	0	0
0	1	1	0	0	0	1	0	0	0	1	3	0	0	0
0	0	1	0	0	0	0	0	0	0	1	2	0	0	0
1	0	0	0	0	2	1	0	0	0	1	0	0	0	0
1	2	2	0	0	3	2	0	0	0	3	7	0	0	0
1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	1	0	0	0
0	0	0	0	0	2	1	0	0	0	1	1	0	0	0
2	1	0	0	0	0	0	0	0	0	0	2	0	0	0
3	2	0	0	0	4	1	0	0	0	1	4	0	0	0
1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2	1	0	0	0	0	0	0	0	0	0	1	0	0	0
0	0	0	0	0	3	0	0	0	0	1	1	0	0	0
4	1	0	0	0	3	0	0	0	0	1	4	0	0	0
0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
3	0	0	0	0	1	0	0	0	0	2	0	0	0	0
3	0	0	0	0	3	2	0	0	0	3	2	0	0	0
3	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1	0	0	0	0	0	0	0	0	0	1	1	0	0	0
0	2	0	0	0	1	0	0	0	0	2	0	0	0	0
0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
4	2	0	0	0	1	1	0	0	0	4	2	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	2	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	0	0	3	0	0	0	0
1	0	0	0	0	1	2	0	0	0	3	1	0	0	0
0	1	0	0	0	0	1	0	0	0	2	0	0	0	0
0	1	0	0	0	0	2	0	0	0	3	0	0	0	0
2	0	0	0	0	2	1	0	0	0	2	0	0	0	0
0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2	2	0	0	0	2	5	0	0	0	7	0	0	0	0

1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
2	2	0	0	0	2	1	0	0	0	1	0	0	0	0
1	0	0	0	0	1	1	0	0	0	1	2	0	0	0
1	0	0	0	0	1	2	0	0	0	2	0	0	0	0
5	3	0	0	0	5	4	0	0	0	4	2	0	0	0
0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
0	1	0	0	0	0	1	0	0	0	1	0	0	0	0
1	1	0	0	0	1	1	0	0	0	1	0	0	0	0
1	1	0	0	0	1	1	0	0	0	1	0	0	0	0
2	3	0	0	0	2	4	0	0	0	4	0	0	0	0
0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
1	0	0	0	0	1	1	0	0	0	1	0	0	0	0
1	1	0	0	0	1	0	0	0	0	0	2	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	0	0	0	2	2	0	0	0	2	2	0	0	0
2	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1	0	0	0	0	0	0	0	0	0	1	2	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
0	1	0	0	0	3	0	0	0	0	1	1	0	0	0
3	1	0	0	0	3	0	0	0	0	2	5	0	0	0
2	0	0	0	0	2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	3	1	0	0	0	0	0	0	0	0
2	0	2	0	0	2	1	0	0	0	1	1	0	0	0
0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
7	0	2	0	0	7	3	0	0	0	1	2	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	1	0	0	0	0	0	1	0	0	0
1	1	0	0	0	1	1	0	0	0	0	1	0	0	0
2	0	0	0	0	2	0	0	0	0	0	0	0	0	0
4	2	0	0	0	4	1	0	0	0	0	2	0	0	0
1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
1	1	0	0	0	1	0	0	0	0	2	0	0	0	0
1	0	0	0	0	1	1	0	0	0	0	3	0	0	0
4	2	0	0	0	4	1	0	0	0	2	3	0	0	0

DATE: 10-Nov-17 Friday	NORTH BOUND														
	LEFT TURN					THROUGH					RIGHT TURN				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
6:00-6:15 AM	9	12	1	0	0	183	223	80	13	26	3	3	4	0	3
6:15-6:30 AM	13	9	2	0	2	188	211	99	16	25	4	10	6	0	4
6:30-6:45 AM	8	8	0	0	0	208	230	117	15	37	8	2	12	0	0
6:45-7:00 AM	10	6	1	0	0	243	178	54	12	7	12	0	6	0	1
SUBTOTAL	40	35	4	0	2	822	842	350	56	95	27	15	28	0	8
7:00-7:15 AM	10	9	0	0	0	216	235	79	20	21	4	7	0	0	0
7:15-7:30 AM	11	15	5	0	1	223	201	97	22	25	7	0	0	0	0
7:30-7:45 AM	12	7	7	0	0	200	216	118	27	31	8	8	19	0	0
7:45-8:00 AM	11	2	7	0	0	193	213	103	21	20	8	2	17	0	0
SUBTOTAL	44	33	19	0	1	832	865	397	90	97	27	17	36	0	0
8:00-8:15 AM	19	8	0	0	0	243	178	54	12	7	11	3	2	0	0
8:15-8:30 AM	14	0	4	0	0	262	158	70	7	12	9	12	1	0	0
8:30-8:45 AM	19	5	9	0	0	297	190	82	3	16	13	9	2	0	2
8:45-9:00 AM	10	3	12	0	2	368	186	65	8	8	8	8	0	0	0
SUBTOTAL	62	16	25	0	2	1170	712	271	30	43	41	32	5	0	2
9:00-9:15 AM	11	15	5	0	1	294	207	73	12	11	7	12	4	0	7
9:15-9:30 AM	12	7	7	0	0	240	199	80	3	9	9	2	7	0	4
9:30-9:45 AM	11	2	7	0	0	237	186	66	6	19	12	8	4	0	0
9:45-10:00 AM	9	4	12	0	0	196	220	80	11	9	14	5	9	0	5
SUBTOTAL	43	28	31	0	1	967	812	299	32	48	42	27	24	0	16
10:00-10:15 AM	13	9	2	0	2	200	216	118	27	31	11	0	5	0	0
10:15-10:30 AM	12	7	1	0	1	193	213	103	21	20	9	0	0	0	1
10:30-10:45 AM	15	0	3	0	0	183	223	80	13	26	9	2	1	0	8
10:45-11:00 AM	13	5	4	0	0	188	211	99	16	25	14	4	2	0	4
SUBTOTAL	53	21	10	0	3	764	863	400	77	102	43	6	8	0	13
11:00-11:15 AM	11	12	2	0	0	213	246	128	9	26	12	1	4	0	3
11:15-11:30 AM	15	8	3	0	0	220	297	96	14	22	16	3	3	0	4
11:30-11:45 AM	21	6	8	0	0	257	294	120	11	25	21	7	2	0	7
11:45-12:00 PM	26	11	5	0	0	229	304	103	6	21	13	9	0	0	2
SUBTOTAL	73	37	18	0	0	919	1141	447	40	94	62	20	9	0	16
12:00-12:15 PM	8	5	2	0	0	243	178	54	12	7	12	4	9	0	0
12:15-12:30 PM	17	4	1	0	0	190	142	18	10	13	11	5	3	0	2
12:30-12:45 PM	10	3	5	0	1	188	156	22	5	11	4	6	1	0	2
12:45-01:00 PM	9	1	2	0	0	171	138	24	8	15	2	1	1	0	1
SUBTOTAL	44	13	10	0	1	792	614	118	35	46	29	16	14	0	5

01:00-01:15 PM	11	2	2	0	0	186	118	162	10	30	10	6	4	0	2
01:15-01:30 PM	9	2	3	0	0	156	107	140	12	25	5	4	2	0	2
01:30-01:45 PM	9	3	4	0	0	125	95	114	14	27	7	2	2	0	1
01:45-02:00 PM	10	1	2	0	1	123	96	128	10	32	9	1	1	0	2
SUBTOTAL	39	8	11	0	1	590	416	544	46	114	31	13	9	0	7
02:00-02:15 PM	8	2	1	0	0	120	88	117	11	18	8	3	2	0	1
02:15-02:30 PM	11	3	1	0	0	161	113	157	10	20	7	4	4	0	1
02:30-02:45 PM	13	5	0	0	1	202	138	148	9	29	15	2	3	0	0
02:45-03:00 PM	11	4	1	0	2	258	145	138	10	35	16	7	5	0	2
SUBTOTAL	43	14	3	0	3	741	484	560	40	102	46	16	14	0	4
03:00-03:15 PM	19	12	2	0	0	223	191	110	7	32	22	12	5	0	0
03:15-03:30 PM	16	8	8	0	1	194	141	188	18	41	12	9	0	0	0
03:30-03:45 PM	10	6	4	0	0	178	155	166	9	29	9	12	0	0	0
03:45-04:00 PM	9	8	11	0	0	196	130	179	10	37	10	8	2	0	0
SUBTOTAL	54	34	25	0	1	791	617	643	44	139	53	41	7	0	0
04:00-04:15 PM	12	6	3	0	0	172	212	89	11	24	3	3	0	0	0
04:15-04:30 PM	8	12	4	0	0	160	180	101	12	14	10	5	2	0	0
04:30-04:45 PM	6	2	2	0	0	155	182	93	10	11	7	2	0	0	0
04:45-05:00 PM	11	8	4	0	0	149	177	87	6	25	9	4	1	0	0
SUBTOTAL	37	28	13	0	0	636	751	370	39	74	29	14	3	0	0
05:00-05:15 PM	19	8	0	0	0	192	201	183	9	31	22	11	2	0	0
05:15-05:30 PM	14	0	4	0	0	200	217	185	12	22	26	13	5	0	0
05:30-05:45 PM	19	5	9	0	0	203	135	171	8	37	35	9	0	0	1
05:45-06:00 PM	10	3	12	0	2	209	122	162	13	30	27	8	1	0	0
SUBTOTAL	62	16	25	0	2	804	675	701	42	120	110	41	8	0	1
06:00-06:15 PM	13	9	2	0	2	200	217	185	12	22	30	6	2	0	0
06:15-06:30 PM	8	8	0	0	0	177	201	152	15	15	16	4	3	0	1
06:30-06:45 PM	10	6	1	0	0	185	175	102	8	12	12	3	5	0	0
06:45-07:00 PM	6	4	0	0	0	166	188	99	9	8	11	9	11	0	1
SUBTOTAL	37	27	3	0	2	728	781	538	44	57	69	22	21	0	2
07:00-07:15 PM	4	1	4	0	1	155	182	93	10	11	19	6	8	0	1
07:15-07:30 PM	15	3	5	0	0	149	177	87	6	25	21	5	9	0	0
07:30-07:45 PM	10	8	1	0	0	162	168	68	10	15	12	9	0	0	0
07:45-08:00 PM	7	2	1	0	0	176	137	150	20	51	10	8	2	0	0
SUBTOTAL	36	14	11	0	1	642	664	398	46	102	62	28	19	0	1

SOUTH BOUND														
LEFT TURN					THROUGH					RIGHT TURN				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
3	3	1	0	3	178	162	63	11	15	3	2	0	0	0
7	2	1	0	1	151	150	67	10	17	4	2	0	0	0
2	2	0	0	2	155	168	59	12	9	1	2	2	0	0
1	4	6	0	6	155	76	84	11	15	8	0	1	0	0
13	11	8	0	12	639	556	273	44	56	16	6	3	0	0
3	2	1	0	5	172	188	62	11	14	7	5	3	0	0
13	1	9	0	6	168	96	96	14	25	8	6	0	0	0
8	8	4	0	3	172	153	102	13	16	3	3	2	0	0
7	10	5	0	1	177	187	51	16	24	1	4	3	0	0
31	21	19	0	15	689	624	311	54	79	19	18	8	0	0
5	3	3	0	2	155	162	102	8	19	4	9	1	0	1
7	5	5	0	5	142	140	78	7	15	6	0	4	0	0
10	4	3	0	3	139	146	81	5	16	5	2	2	0	0
9	5	7	0	2	196	180	70	12	20	8	1	3	0	0
31	17	18	0	12	632	628	331	32	70	23	12	10	0	1
8	9	5	0	4	267	282	76	10	17	3	4	4	0	0
9	6	8	0	3	281	284	93	11	20	7	9	2	0	0
11	3	4	0	4	221	254	114	8	24	9	7	5	0	0
13	4	7	0	2	177	187	51	16	24	17	3	2	0	0
41	22	24	0	13	946	1007	334	45	85	36	23	13	0	0
18	4	6	0	3	232	169	72	12	24	3	2	5	0	0
17	6	6	0	2	274	264	100	8	23	2	2	3	0	0
19	5	6	0	1	248	274	97	14	19	7	4	4	0	0
22	7	5	0	2	267	183	42	4	8	9	6	0	0	0
76	22	23	0	8	1021	890	311	38	74	21	14	12	0	0
25	5	3	0	2	233	172	32	7	8	12	8	2	0	0
29	6	5	0	1	283	167	28	5	10	10	4	1	0	0
22	8	9	0	2	266	172	41	8	9	13	12	1	0	0
19	4	4	0	3	254	158	45	11	15	22	8	9	0	2
95	23	21	0	8	1036	669	146	31	42	57	32	13	0	2
8	2	1	0	0	249	177	57	9	12	12	9	8	0	3
18	7	0	0	0	220	297	96	14	22	8	2	1	0	0
15	2	3	0	0	257	294	120	11	25	18	7	0	0	0
9	4	5	0	3	229	304	103	6	21	15	2	3	0	0
50	15	9	0	3	955	1072	376	40	80	53	20	12	0	3

7	5	11	0	3	245	153	153	17	30	5	4	2	0	1
5	3	13	0	2	232	142	139	20	25	7	5	11	0	3
9	4	10	0	1	199	117	110	12	19	5	4	2	0	2
6	3	9	0	1	184	89	95	15	20	7	2	2	0	1
27	15	43	0	7	860	501	497	64	94	24	15	17	0	7
12	1	5	0	4	155	76	84	11	15	9	4	5	0	3
11	7	16	0	1	246	111	99	9	16	8	3	2	0	1
16	6	9	0	1	274	166	147	15	17	7	4	4	0	1
12	9	8	0	3	325	158	189	19	28	18	7	0	0	0
51	23	38	0	9	1000	511	519	54	76	42	18	11	0	5
6	8	10	0	3	255	169	108	9	22	9	4	5	0	3
14	8	0	0	0	237	164	105	14	21	5	4	2	0	1
21	4	1	0	3	232	152	120	11	15	9	9	0	0	0
16	7	1	0	0	246	148	116	10	17	7	13	7	0	1
57	27	12	0	6	970	633	449	44	75	30	30	14	0	5
13	9	2	0	2	247	140	117	9	16	10	7	5	0	3
12	7	1	0	1	240	139	120	8	13	23	8	9	0	1
15	0	3	0	0	238	137	112	9	16	8	5	3	0	2
13	5	4	0	0	233	119	112	7	15	15	7	0	0	4
53	21	10	0	3	958	535	461	33	60	56	27	17	0	10
11	12	2	0	0	229	130	99	12	22	12	9	4	0	4
7	4	4	0	0	225	111	105	11	18	9	10	8	0	2
9	6	0	0	0	172	153	102	13	16	11	8	5	0	6
8	1	3	0	0	169	189	121	7	18	22	12	5	0	0
35	23	9	0	0	795	583	427	43	74	54	39	22	0	12
41	12	2	0	0	142	140	78	7	15	10	8	2	0	0
27	8	1	0	0	139	146	81	5	16	9	12	0	0	0
39	8	3	0	0	155	150	82	9	20	12	15	7	0	1
29	5	2	0	0	200	172	98	12	19	12	2	0	0	0
136	33	8	0	0	636	608	339	33	70	43	37	9	0	1
24	5	6	0	1	258	145	138	10	35	6	8	10	0	3
13	9	0	0	2	223	201	97	22	25	14	8	0	0	0
22	30	6	2	0	0	191	110	7	32	21	4	1	0	3
12	4	9	0	0	194	141	188	18	41	16	7	1	0	0
71	48	21	2	3	675	678	533	57	133	57	27	12	0	6

EAST BOUND

LEFT TURN					THROUGH					RIGHT TURN				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
10	6	2	0	0	21	5	9	0	0	9	2	1	0	0
7	3	0	0	0	18	2	6	0	0	7	5	0	0	0
9	5	1	0	0	20	4	7	0	1	4	4	0	0	0
3	6	0	0	0	23	2	8	0	0	5	3	0	0	0
29	20	3	0	0	82	13	30	0	1	25	14	1	0	0
9	3	1	0	0	9	6	0	0	0	10	2	1	0	0
6	6	0	0	0	11	12	2	0	0	7	5	0	0	0
5	5	0	0	0	15	8	3	0	0	4	4	0	0	0
4	4	0	0	0	21	6	8	0	0	9	3	0	0	0
24	18	1	0	0	56	32	13	0	0	30	14	1	0	0
8	3	1	0	1	17	9	11	0	1	11	2	1	0	0
4	0	0	0	1	12	3	5	0	0	5	5	0	0	0
5	3	0	0	0	19	6	8	0	1	17	4	0	0	0
9	3	0	0	0	12	15	7	0	1	13	3	0	0	0
26	9	1	0	2	60	33	31	0	3	46	14	1	0	0
13	9	11	0	1	10	5	2	0	0	11	12	2	0	0
10	5	5	0	0	9	2	0	0	0	15	8	3	0	0
19	7	8	0	1	9	4	1	0	0	21	6	8	0	0
17	15	7	0	1	7	5	0	0	0	26	11	5	0	0
59	36	31	0	3	35	16	3	0	0	73	37	18	0	0
12	4	1	0	0	8	6	0	0	0	8	2	1	0	0
9	6	0	0	0	11	12	2	0	0	7	5	0	0	0
6	4	0	0	0	15	8	3	0	0	9	4	0	0	0
7	7	0	0	0	21	6	8	0	0	3	3	0	0	0
34	21	1	0	0	55	32	13	0	0	27	14	1	0	0
9	0	0	0	0	10	5	2	0	0	11	9	11	0	1
8	4	0	0	0	4	2	0	0	0	12	3	5	0	0
13	0	0	0	1	9	4	1	0	0	22	6	8	0	1
17	7	0	1	0	3	5	0	0	0	12	15	7	0	1
47	11	0	1	1	26	16	3	0	0	57	33	31	0	3
19	12	11	0	1	8	2	1	0	0	9	0	0	0	0
24	7	5	0	0	5	5	0	0	0	8	2	0	0	0
19	6	8	0	1	12	4	0	0	0	18	0	0	0	1
16	15	7	0	1	3	3	0	0	0	15	7	0	1	0
78	40	31	0	3	28	14	1	0	0	50	9	0	1	1

16	6	3	0	1	8	2	1	0	0	11	9	11	0	1
12	9	11	0	1	5	5	0	0	0	12	3	5	0	0
10	3	5	0	0	4	4	0	0	0	19	6	8	0	1
15	6	8	0	1	3	3	0	0	0	12	15	7	0	1
53	24	27	0	3	20	14	1	0	0	54	33	31	0	3
22	5	9	0	0	7	2	1	0	1	16	4	3	0	1
19	2	6	0	0	2	0	0	0	1	14	9	11	0	1
21	4	7	0	1	0	2	0	0	0	15	3	5	0	0
24	4	8	0	0	9	3	0	0	0	19	6	8	0	1
86	15	30	0	1	18	7	1	0	2	64	22	27	0	3
13	8	6	0	3	8	6	0	0	0	16	4	3	0	1
9	9	5	0	4	11	12	2	0	0	11	9	11	0	1
10	6	8	0	3	15	8	3	0	0	12	3	5	0	0
12	6	4	0	4	21	6	8	0	0	19	6	8	0	1
44	29	23	0	14	55	32	13	0	0	58	22	27	0	3
14	4	7	0	2	29	6	5	0	1	19	5	6	0	1
16	3	6	0	4	22	8	9	0	2	22	7	5	0	2
19	4	6	0	3	19	4	4	0	3	23	5	7	0	1
15	6	6	0	2	12	8	3	0	0	25	5	3	0	2
64	17	25	0	11	82	26	21	0	6	89	22	21	0	6
9	5	2	0	0	21	5	9	0	0	20	2	1	0	0
9	3	0	0	0	18	2	6	0	0	18	5	0	0	0
12	4	1	0	0	20	4	7	0	1	16	4	0	0	4
15	5	0	0	0	23	2	8	0	0	17	3	0	0	0
45	17	3	0	0	82	13	30	0	1	71	14	1	0	4
19	5	6	0	1	17	12	2	0	0	13	4	7	0	2
22	7	5	0	2	15	8	3	0	0	15	2	6	0	4
23	5	7	0	1	21	6	8	0	0	18	4	6	0	3
25	5	3	0	2	26	11	5	0	0	15	6	6	0	2
89	22	21	0	6	79	37	18	0	0	61	16	25	0	11
16	2	1	0	1	11	9	11	0	1	12	2	1	0	0
14	2	0	0	1	12	3	5	0	0	9	5	0	0	2
15	2	0	0	0	19	6	8	0	1	11	4	0	0	0
8	3	0	0	0	12	15	7	0	1	14	3	0	0	0
53	9	1	0	2	54	33	31	0	3	46	14	1	0	2

WEST BOUND

LEFT TURN					THROUGH					RIGHT TURN				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	1	0	0	0	1	0	0	0	0	0	2	0	0	0
0	1	1	0	0	0	1	0	0	0	1	3	0	0	0
0	0	1	0	0	0	0	0	0	0	1	2	0	0	0
1	0	0	0	0	2	1	0	0	0	1	0	0	0	0
2	2	2	0	0	3	2	0	0	0	3	7	0	0	0
1	0	0	0	0	1	0	0	0	0	1	0	0	0	0
0	1	0	0	0	1	0	0	0	0	2	1	0	0	0
0	0	0	0	0	2	1	0	0	0	1	1	0	0	0
2	1	0	0	0	0	0	0	0	0	0	2	0	0	0
3	2	0	0	0	4	1	0	0	0	4	4	0	0	0
1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2	0	0	0	0	2	0	0	0	0	2	1	0	0	0
1	1	0	0	0	0	0	0	0	0	0	1	0	0	0
0	0	0	0	0	3	0	0	0	0	1	1	0	0	0
4	1	0	0	0	5	0	0	0	0	3	4	0	0	0
0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
0	0	0	0	0	1	0	0	0	0	1	1	0	0	0
1	0	0	0	0	3	2	0	0	0	0	0	0	0	0
3	0	0	0	0	1	0	0	0	0	2	0	0	0	0
4	0	0	0	0	5	2	0	0	0	4	2	0	0	0
3	0	0	0	0	2	0	0	0	0	1	0	0	0	0
1	0	0	0	0	0	0	0	0	0	1	1	0	0	0
0	2	0	0	0	1	0	0	0	0	2	0	0	0	0
1	0	0	0	0	2	1	0	0	0	0	1	0	0	0
5	2	0	0	0	5	1	0	0	0	4	2	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
1	0	0	0	0	1	2	0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0	0	0	3	0	0	0	0
2	0	0	0	0	4	2	0	0	0	3	1	0	0	0
0	1	0	0	0	0	1	0	0	0	2	0	0	0	0
0	1	0	0	0	0	2	0	0	0	3	0	0	0	0
2	0	0	0	0	2	1	0	0	0	2	0	0	0	0
0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2	2	0	0	0	2	5	0	0	0	7	0	0	0	0

1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
2	2	0	0	0	2	1	0	0	0	1	0	0	0	0
1	0	0	0	0	1	1	0	0	0	1	2	0	0	0
1	0	0	0	0	1	2	0	0	0	2	0	0	0	0
5	3	0	0	0	5	4	0	0	0	4	2	0	0	0
2	0	0	0	0	0	1	0	0	0	1	0	0	0	0
0	1	0	0	0	0	1	0	0	0	1	0	0	0	0
1	1	0	0	0	1	1	0	0	0	1	0	0	0	0
2	1	0	0	0	1	1	0	0	0	1	0	0	0	0
5	3	0	0	0	2	4	0	0	0	4	0	0	0	0
2	0	0	0	0	0	1	0	0	0	1	0	0	0	0
1	0	0	0	0	1	1	0	0	0	1	0	0	0	0
1	1	0	0	0	3	0	0	0	0	0	2	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	0	0	0	4	2	0	0	0	2	2	0	0	0
2	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1	0	0	0	0	1	0	0	0	0	1	2	0	0	0
2	0	0	0	0	0	0	0	0	0	0	1	0	0	0
0	1	0	0	0	3	0	0	0	0	1	1	0	0	0
5	1	0	0	0	4	0	0	0	0	2	5	0	0	0
2	0	0	0	0	2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	3	1	0	0	0	0	0	0	0	0
2	0	2	0	0	2	1	0	0	0	1	1	0	0	0
0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
7	0	2	0	0	7	3	0	0	0	1	2	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	2	0	0	0	0	2	1	0	0	0
1	1	0	0	0	1	1	0	0	0	0	1	0	0	0
2	0	0	0	0	2	0	0	0	0	0	0	0	0	0
4	2	0	0	0	5	1	0	0	0	2	2	0	0	0
1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1	1	2	0	0	3	0	0	0	0	1	0	0	0	0
3	1	0	0	0	1	0	0	0	0	2	0	0	0	0
1	0	0	0	0	1	1	0	0	0	0	3	0	0	0
6	2	2	0	0	6	1	0	0	0	3	3	0	0	0

November 12, 2017 (Friday)

DATE:	NORTH BOUND														
13-Nov-17															
Monday	LEFT TURN					THROUGH					RIGHT TURN				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
6:00-6:15 AM	10	8	8	0	0	167	180	74	8	15	5	4	0	0	0
6:15-6:30 AM	19	17	7	0	1	180	188	69	14	14	3	5	1	0	0
6:30-6:45 AM	17	10	11	0	1	174	131	101	15	25	11	7	1	0	0
6:45-7:00 AM	13	9	6	0	0	168	153	105	20	23	8	3	0	0	0
SUBTOTAL	59	44	32	0	2	689	652	349	57	77	27	19	2	0	0
7:00-7:15 AM	10	6	7	0	0	173	189	129	7	20	9	4	1	0	0
7:15-7:30 AM	11	10	3	0	0	188	200	63	11	27	7	7	0	0	0
7:30-7:45 AM	17	9	5	0	0	178	167	70	14	16	20	13	5	0	0
7:45-8:00 AM	24	7	9	0	0	163	149	67	11	14	14	10	0	0	0
SUBTOTAL	62	32	24	0	0	702	705	329	43	77	50	34	6	0	0
8:00-8:15 AM	26	11	7	0	0	166	168	62	12	10	10	8	2	0	0
8:15-8:30 AM	14	10	12	0	0	159	171	70	8	16	8	3	1	0	0
8:30-8:45 AM	17	6	5	0	0	180	188	62	16	15	5	5	0	0	0
8:45-9:00 AM	16	9	7	0	0	151	142	79	9	15	4	5	0	0	0
SUBTOTAL	73	36	31	0	0	656	669	273	45	56	27	21	3	0	0
9:00-9:15 AM	9	8	4	0	0	141	140	80	5	15	3	3	0	0	0
9:15-9:30 AM	12	11	6	0	0	155	150	90	10	20	10	5	2	0	0
9:30-9:45 AM	16	6	9	0	0	215	180	99	12	19	8	3	0	0	0
9:45-10:00 AM	8	6	0	0	0	220	200	104	11	22	9	5	1	0	0
SUBTOTAL	45	31	19	0	0	731	670	373	38	76	30	16	3	0	0
10:00-10:15 AM	11	12	2	0	0	255	169	108	11	22	22	11	2	0	0
10:15-10:30 AM	15	8	3	0	0	237	164	106	14	21	26	13	5	0	0
10:30-10:45 AM	21	6	8	0	0	243	158	123	11	18	40	10	1	0	1
10:45-11:00 AM	26	11	5	0	0	250	163	120	10	17	52	12	3	0	0
SUBTOTAL	73	37	18	0	0	985	654	457	46	78	140	46	11	0	1
11:00-11:15 AM	9	8	11	0	0	238	137	112	9	16	27	8	1	0	0
11:15-11:30 AM	7	6	1	0	3	233	119	116	8	15	39	9	3	0	0
11:30-11:45 AM	3	3	1	0	3	231	126	110	10	18	31	5	3	0	0
11:45-12:00 PM	7	2	1	0	1	229	130	117	14	22	30	6	2	0	0
SUBTOTAL	26	19	14	0	7	931	512	455	41	71	127	28	9	0	0
12:00-12:15 PM	2	0	0	0	1	201	217	90	14	39	24	5	6	0	1
12:15-12:30 PM	0	2	0	0	0	183	215	91	11	24	25	3	5	0	0
12:30-12:45 PM	9	3	0	0	0	160	193	103	12	14	20	5	6	0	1

12:45-01:00 PM	4	0	0	0	0	161	182	93	10	11	16	4	3	0	1
SUBTOTAL	15	5	0	0	1	705	807	377	47	88	85	17	20	0	3
01:00-01:15 PM	3	1	0	0	0	156	180	85	7	24	18	7	11	0	1
01:15-01:30 PM	5	4	0	0	0	162	168	78	11	17	12	3	5	0	0
01:30-01:45 PM	4	3	0	0	0	179	146	153	20	48	19	6	8	0	1
01:45-02:00 PM	3	1	0	0	0	192	201	183	10	33	21	7	9	0	0
SUBTOTAL	15	9	0	0	0	689	695	499	48	122	70	23	33	0	2
02:00-02:15 PM	2	1	0	0	0	200	209	188	13	22	23	13	6	0	0
02:15-02:30 PM	2	2	0	0	0	177	201	160	15	15	12	9	0	0	0
02:30-02:45 PM	0	0	0	0	0	172	175	104	8	16	11	9	2	0	0
02:45-03:00 PM	0	0	2	0	0	166	188	99	9	10	10	12	0	0	0
SUBTOTAL	4	3	2	0	0	715	773	551	45	63	56	43	8	0	0
03:00-03:15 PM	2	1	0	0	0	180	193	115	11	10	12	15	7	0	1
03:15-03:30 PM	0	1	0	0	0	199	179	121	12	12	22	11	2	0	0
03:30-03:45 PM	5	2	0	0	0	229	196	127	10	29	26	13	5	0	0
03:45-04:00 PM	7	2	2	0	1	212	190	88	8	9	35	9	0	0	1
SUBTOTAL	14	6	2	0	1	820	758	451	41	60	95	48	14	0	2
04:00-04:15 PM	3	0	0	0	0	219	190	98	10	15	41	12	2	0	0
04:15-04:30 PM	3	2	0	0	0	223	191	110	7	32	27	8	1	0	0
04:30-04:45 PM	10	2	1	1	1	194	141	188	18	41	39	8	3	0	0
04:45-05:00 PM	0	2	1	0	0	178	155	166	9	29	30	6	2	0	0
SUBTOTAL	16	6	2	1	1	814	677	562	44	117	137	34	8	0	0
05:00-05:15 PM	5	1	1	0	0	196	130	182	10	40	28	6	6	0	1
05:15-05:30 PM	1	4	0	0	0	186	123	156	12	29	25	3	5	0	0
05:30-05:45 PM	6	4	3	0	0	200	135	171	19	37	23	5	3	0	1
05:45-06:00 PM	8	0	0	0	0	209	122	162	13	31	18	6	6	0	1
SUBTOTAL	20	9	4	0	0	791	510	671	54	137	94	20	20	0	3
06:00-06:15 PM	7	0	2	0	1	205	130	166	12	37	11	10	11	0	1
06:15-06:30 PM	4	0	3	0	0	188	132	150	7	45	12	3	5	0	0
06:30-06:45 PM	6	0	3	0	1	196	124	159	15	40	22	12	6	0	0
06:45-07:00 PM	5	1	2	0	0	184	120	162	14	33	12	9	1	0	0
SUBTOTAL	22	1	10	0	2	773	506	637	48	155	57	34	23	0	1
07:00-07:15 PM	8	2	1	0	0	180	133	178	10	35	11	9	5	0	0
07:15-07:30 PM	7	2	1	1	0	162	129	190	13	30	9	12	0	0	1
07:30-07:45 PM	3	0	0	0	2	166	135	165	13	36	12	15	7	0	1
07:45-08:00 PM	4	0	0	1	0	168	150	172	10	42	23	13	3	0	0
SUBTOTAL	22	4	2	2	2	676	547	705	46	143	55	49	15	0	2

SOUTH BOUND

LEFT TURN					THROUGH					RIGHT TURN				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
14	11	7	0	0	201	226	84	16	42	4	5	0	0	0
10	9	6	0	0	173	214	90	11	24	7	7	0	1	1
12	11	6	0	0	170	183	101	14	16	6	10	0	0	0
14	5	9	0	0	161	182	99	13	12	15	5	0	1	1
50	36	28	0	0	705	805	374	54	94	32	27	0	2	2
8	6	0	0	0	149	184	88	6	25	9	0	0	0	0
10	12	3	0	0	162	173	73	11	15	8	3	0	0	1
16	9	4	0	0	176	134	150	20	51	15	1	0	1	1
21	6	8	0	0	191	200	184	16	44	15	7	0	1	0
55	33	15	0	0	678	691	495	53	135	47	11	0	2	2
26	11	6	0	0	180	193	115	11	10	12	9	0	0	0
11	9	13	0	0	199	179	121	12	12	10	8	2	0	0
7	5	2	0	4	229	196	127	10	29	8	2	1	0	0
4	3	1	0	3	212	190	88	8	9	5	5	0	0	0
48	28	22	0	7	820	758	451	41	60	35	24	3	0	0
7	3	1	0	1	219	190	98	10	15	4	4	0	0	1
3	0	0	0	2	223	191	117	9	32	6	3	1	0	0
1	2	0	0	0	194	147	188	18	41	10	5	2	0	0
9	3	0	0	0	182	155	164	11	29	7	3	0	0	0
20	8	1	0	3	818	683	567	48	117	27	15	3	0	1
4	0	0	0	0	196	130	179	10	37	10	5	1	0	0
5	1	0	0	0	176	137	163	20	51	23	11	3	0	0
5	6	1	0	0	196	201	183	10	36	21	5	5	0	1
9	6	7	0	0	204	217	186	11	23	19	4	3	0	1
23	13	8	0	0	772	685	711	51	147	73	25	12	0	2
10	12	2	0	0	177	201	152	15	15	11	9	11	0	1
15	8	5	0	0	185	175	102	8	12	12	3	5	0	0
23	7	8	0	0	166	188	99	9	8	19	6	8	0	1
26	11	6	0	0	180	193	115	11	10	12	15	7	0	1
74	38	21	0	0	708	757	468	43	45	54	33	31	0	3
7	6	1	0	3	198	182	121	12	12	8	3	1	0	0
3	4	2	0	3	178	162	67	11	17	5	5	0	0	0
8	2	1	0	1	151	150	67	13	17	4	5	0	0	0
3	3	0	0	2	161	168	59	12	9	6	3	0	0	0
21	15	4	0	9	688	662	314	48	55	23	16	1	0	0

2	4	6	0	6	163	175	69	8	16	10	5	2	0	0
4	2	2	0	5	172	188	66	11	15	8	2	0	0	0
13	2	9	0	6	168	99	96	15	25	9	6	1	0	0
10	9	5	0	4	174	153	103	13	16	3	5	0	0	0
29	17	22	0	21	677	615	334	47	72	30	18	3	0	0
7	10	5	0	2	169	189	121	7	18	22	12	5	0	0
5	3	3	0	2	155	162	94	8	19	12	10	0	0	0
7	5	5	0	5	142	140	86	8	15	10	8	2	0	0
10	4	3	0	4	139	147	81	6	18	9	12	0	0	0
29	22	16	0	13	605	638	382	29	70	53	42	7	0	0
13	8	3	0	6	164	150	82	9	20	8	2	1	0	0
10	5	3	0	3	200	172	98	12	19	5	5	0	0	0
8	6	8	0	4	212	186	101	9	18	4	4	0	0	0
9	5	7	0	2	258	169	108	9	22	3	3	0	0	0
40	24	21	0	15	834	677	389	39	79	20	14	1	0	0
11	8	6	0	3	237	164	105	14	21	39	12	2	0	0
8	9	7	0	4	235	152	126	11	16	27	9	1	0	0
9	8	7	0	5	246	153	116	10	17	37	8	3	0	0
10	4	4	0	4	250	139	122	9	14	29	5	2	0	0
38	29	24	0	16	968	608	469	44	68	132	34	8	0	0
14	4	5	0	2	247	140	118	9	16	30	6	2	0	0
15	2	6	0	4	240	139	120	8	13	24	5	6	0	1
18	4	6	0	6	238	137	115	9	17	25	4	6	0	0
17	6	5	0	1	233	121	112	7	15	23	5	6	0	1
64	16	22	0	13	958	537	465	33	61	102	20	20	0	2
19	5	6	0	1	231	126	110	10	15	16	4	3	0	1
21	7	5	0	2	231	130	98	12	22	10	11	11	0	1
23	6	7	0	2	225	115	105	14	18	17	3	5	0	0
26	5	4	0	2	232	124	113	9	21	19	5	9	0	1
89	23	22	0	7	919	495	426	45	76	62	23	28	0	3
30	7	6	0	1	247	121	121	6	19	21	5	9	0	0
25	8	10	0	2	242	134	118	9	17	18	2	6	0	1
19	5	4	0	3	245	127	109	12	20	21	5	6	0	1
14	7	3	0	1	255	119	114	9	18	23	2	8	0	0
88	27	23	0	7	989	501	462	36	74	83	14	29	0	2

EAST BOUND

LEFT TURN					THROUGH					RIGHT TURN				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
11	1	0	1	1	9	6	2	0	0	15	10	11	0	1
9	1	0	0	0	7	4	0	0	0	12	3	6	0	0
13	1	1	0	1	10	4	1	0	0	20	7	8	0	2
14	7	0	1	0	5	7	0	0	0	13	15	8	0	1
47	10	1	2	2	31	21	3	0	0	60	35	33	0	4
11	9	11	0	2	7	2	1	0	0	9	0	0	0	0
12	5	10	0	0	10	5	0	0	0	8	2	0	0	0
19	9	8	0	2	4	6	0	0	0	15	0	0	0	2
20	15	8	0	1	5	3	0	0	0	18	8	0	2	0
62	38	37	0	5	26	16	1	0	0	50	10	0	2	2
10	8	2	0	0	23	6	9	0	0	9	2	1	0	0
10	2	0	0	0	20	2	6	0	1	9	5	0	0	0
9	5	2	0	0	22	5	9	0	2	4	4	0	0	0
5	6	0	0	0	23	3	8	0	0	5	5	0	0	0
34	21	4	0	0	88	16	32	0	3	27	16	1	0	0
8	3	1	0	0	11	9	11	0	1	12	9	0	0	0
5	5	0	0	0	16	6	10	0	0	10	10	2	0	0
5	4	0	0	0	19	8	8	0	2	10	2	2	0	0
4	6	0	0	0	15	15	5	0	2	6	7	0	0	0
22	18	1	0	0	61	38	34	0	5	38	28	4	0	0
8	2	1	0	0	9	6	0	0	0	8	4	1	0	0
5	5	0	0	0	11	12	2	0	0	5	5	0	0	0
5	5	0	0	0	17	10	7	0	0	6	5	0	0	0
3	4	0	0	0	21	7	8	0	0	3	3	0	0	0
21	16	1	0	0	58	35	17	0	0	22	17	1	0	0
16	5	5	0	1	8	2	1	0	0	15	9	11	0	1
13	9	11	0	1	6	5	0	0	0	17	5	8	0	0
16	5	6	0	0	4	5	0	0	0	19	8	7	0	1
19	7	9	0	1	4	6	0	0	0	12	15	8	0	1
64	26	31	0	3	22	18	1	0	0	63	37	34	0	3
7	2	2	0	1	11	9	11	0	1	8	2	1	0	0
3	0	0	0	1	16	6	6	0	0	5	3	0	0	0
1	5	0	0	0	19	8	8	0	1	5	5	0	0	0
10	3	0	0	0	13	15	7	0	1	6	3	0	0	0
21	10	2	0	2	59	38	32	0	3	24	13	1	0	0

11	9	11	0	1	7	5	2	0	0	17	12	2	0	0
16	5	6	0	0	7	3	0	0	0	20	8	5	0	0
19	6	8	0	2	8	4	2	0	0	21	7	8	0	0
13	15	7	0	1	4	6	0	0	0	26	11	5	0	0
59	35	32	0	4	26	18	4	0	0	84	38	20	0	0
29	6	5	0	1	8	4	1	0	0	8	8	0	0	0
22	8	9	0	2	5	6	0	0	0	14	12	2	0	0
19	4	4	0	5	4	4	0	0	0	17	8	3	0	0
14	8	5	0	0	5	3	0	0	0	21	8	7	0	0
84	26	23	0	8	22	17	1	0	0	60	36	12	0	0
8	2	1	0	0	11	12	2	0	0	11	8	6	0	3
5	5	0	0	0	15	8	3	0	0	8	9	5	0	4
4	4	0	0	0	21	6	8	0	0	9	6	8	0	3
3	3	0	0	0	26	11	5	0	0	11	3	4	0	4
20	14	1	0	0	73	37	18	0	0	39	26	23	0	14
21	5	9	0	0	7	2	1	0	1	14	4	3	0	1
18	2	6	0	0	5	0	0	0	1	10	9	11	0	1
20	6	7	0	1	0	2	0	0	0	12	4	7	0	0
23	2	8	0	0	9	3	0	0	0	19	6	8	0	1
82	15	30	0	1	21	7	1	0	2	55	23	29	0	3
13	4	7	0	2	29	6	5	0	1	19	5	6	0	1
15	2	6	0	4	22	8	9	0	2	22	7	5	0	2
18	4	6	0	3	19	4	4	0	3	23	5	7	0	1
17	6	6	0	2	12	8	3	0	0	25	5	3	0	2
63	16	25	0	11	82	26	21	0	6	89	22	21	0	6
19	5	6	0	1	11	12	2	0	0	13	4	7	0	2
22	7	5	0	2	15	8	3	0	0	15	2	6	0	4
23	5	7	0	1	21	6	8	0	0	18	4	6	0	3
25	5	3	0	2	26	11	5	0	0	17	6	6	0	2
89	22	21	0	6	73	37	18	0	0	63	16	25	0	11
11	8	6	0	3	8	8	0	0	0	15	4	5	0	1
9	9	6	0	4	11	12	2	0	0	13	9	11	0	1
10	6	8	0	3	15	8	6	0	0	16	5	7	0	0
11	5	5	0	6	24	7	8	0	0	19	6	8	0	1
41	28	25	0	16	58	35	16	0	0	63	24	31	0	3

WEST BOUND

LEFT TURN					THROUGH					RIGHT TURN				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
0	1	0	0	0	1	0	0	0	0	0	2	0	0	0
0	2	2	0	0	0	1	0	0	0	1	3	0	0	0
0	0	1	0	0	0	0	0	0	0	2	2	0	0	0
2	0	0	0	0	2	2	0	0	0	1	0	0	0	0
2	3	3	0	0	3	3	0	0	0	4	7	0	0	0
1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	1	0	0	0
0	0	0	0	0	2	1	0	0	0	2	1	0	0	0
2	2	0	0	0	0	0	0	0	0	0	2	0	0	0
3	3	0	0	0	4	1	0	0	0	2	4	0	0	0
1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1	0	0	0	0	0	0	0	0	0	1	1	0	0	0
2	1	0	0	0	0	0	0	0	0	0	2	0	0	0
1	1	0	0	0	2	0	0	0	0	1	1	0	0	0
5	2	0	0	0	2	0	0	0	0	2	5	0	0	0
0	0	0	0	0	0	1	0	0	0	1	1	0	0	0
1	0	0	0	0	1	0	0	0	0	0	2	0	0	0
0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
3	0	0	0	0	2	0	0	0	0	2	1	0	0	0
4	0	0	0	0	4	3	0	0	0	3	4	0	0	0
3	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1	0	0	0	0	0	0	0	0	0	2	1	0	0	0
0	2	0	0	0	1	0	0	0	0	2	0	0	0	0
1	0	0	0	0	1	1	0	0	0	0	1	0	0	0
5	2	0	0	0	2	1	0	0	0	5	2	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
1	0	0	0	0	0	2	0	0	0	0	1	0	0	0
1	0	0	0	0	1	0	0	0	0	3	0	0	0	0
2	0	0	0	0	2	2	0	0	0	3	2	0	0	0
1	1	0	0	0	1	1	0	0	0	2	0	0	0	0
0	2	0	0	0	0	1	0	0	0	3	0	0	0	0
1	0	0	0	0	1	1	0	0	0	1	0	0	0	0
0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
2	3	0	0	0	2	5	0	0	0	6	0	0	0	0

1	1	0	0	0	1	1	0	0	0	0	0	0	0	0
2	1	0	0	0	2	2	0	0	0	1	0	0	0	0
1	0	0	0	0	1	1	0	0	0	1	2	0	0	0
1	2	0	0	0	1	2	0	0	0	2	0	0	0	0
5	4	0	0	0	5	6	0	0	0	4	2	0	0	0
0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
0	1	0	0	0	0	2	0	0	0	1	0	0	0	0
1	2	0	0	0	2	1	0	0	0	2	0	0	0	0
2	1	0	0	0	1	1	0	0	0	1	0	0	0	0
3	4	0	0	0	3	5	0	0	0	5	0	0	0	0
0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
1	0	0	0	0	1	1	0	0	0	1	0	0	0	0
2	1	0	0	0	2	0	0	0	0	0	2	0	0	0
0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
3	1	0	0	0	3	3	0	0	0	3	2	0	0	0
2	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1	1	0	0	0	0	0	0	0	0	1	2	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1	1	0	0	0	3	0	0	0	0	2	2	0	0	0
4	2	0	0	0	3	0	0	0	0	3	6	0	0	0
2	0	0	0	0	2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	3	1	0	0	0	1	0	0	0	0
1	0	2	0	0	2	2	0	0	0	1	1	0	0	0
0	0	0	0	0	0	1	0	0	0	0	2	0	0	0
6	0	2	0	0	7	4	0	0	0	2	3	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	1	0	0	0	0	0	1	0	0	0
1	2	0	0	0	1	1	0	0	0	0	1	0	0	0
2	0	0	0	0	2	0	0	0	0	0	1	0	0	0
5	3	0	0	0	4	1	0	0	0	0	3	0	0	0
1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1	1	0	0	0	1	0	0	0	0	0	1	0	0	0
3	1	0	0	0	2	1	0	0	0	2	0	0	0	0
1	2	0	0	0	1	1	0	0	0	1	2	0	0	0
6	4	0	0	0	5	2	0	0	0	3	3	0	0	0

F. Survey questionnaire

1. Basic information

   Name (optional):

   Age:

   Gender:

2. Do you think that this junction is in need of improvement for pedestrian safety?

   ◯ YES ◯ NO

3. If so, do you find it difficult to cross the street?

   ◯ YES ◯ NO

4. On a scale of 1-5 with 1 being very safe and 5 not safe, how safe did you feel crossing the street?

   ◯ 1 ◯ 2

   ◯ 3 ◯ 4 ◯ 5

5. Is there anything at this crossing that was confusing or that you had a hard time understanding?

   If yes, explain

   _____

6. Are sidewalks a concern in this street?

   ◯ YES ◯ NO

7. What is the maximum amount of time a person should have to wait to cross?

   ◯ 30 sec ◯ 1 min

   ◯ 2 mins ◯ 3 mins

8. Is there anything else that could be added to improve the safety if this street crossing? If yes, explain _____

THANK YOU AND GOD BLESS

518 G. Tally of survey results
519

SURVEY TALLEY OF 100 RESPONDENTS

PERSON	1			2	3	4					5	6	7				8
	NAME (optional)	AGE	GENDER	YES/NO	YES/NO	1	2	3	4	5		YES/NO	30sec	1min	2mins	3mins	
1		26	F	Y	N		1					Y		1			
2		32	F	Y	Y			1				Y			1		
3		19	F	Y	N		1					Y			1		
4		20	M	N	N		1					Y			1		
5		21	F	Y	N		1					Y			1		
6		55	M	Y	N		1					Y		1			
7		22	M	N	N		1					Y		1			
8		45	F	N	Y			1				Y					
9		18	F	N	N		1					Y			1		
10		27	F	Y	N			1				Y				1	
11		28	F	Y	N			1				Y				1	
12		60	M	Y	Y			1				Y		1			
13		20	M	Y	N		1					Y		1			
14		21	F	N	N		1					Y		1			
15		35	M	N	Y			1				Y		1			
16		28	M	N	N		1					Y			1		
17		54	M	Y	Y			1				Y	1				
18		34	F	N	Y			1				Y			1		
19		20	F	Y	Y			1				Y			1		
20		62	F	Y	N			1				Y			1		
21		23	F	N	N			1				Y			1		
22		69	F	N	Y			1				Y				1	
23		32	F	Y	Y			1				Y			1		
24		33	M	Y	N			1				Y			1		
25		75	M	N	N		1					Y			1		
26		52	M	Y	Y			1				Y			1		
27		27	M	Y	Y			1				Y				1	
28		32	F	Y	N		1					Y				1	
29		49	M	Y	Y			1				Y				1	
30		45	F	Y	Y			1				Y		1			
31		25	M	Y	N		1					Y		1			
32		28	F	N	N		1					Y				1	
33		32	F	Y	N		1					Y				1	
34		35	M	Y	Y				1			Y				1	
35		54	M	Y	Y			1				Y			1		

36		49	F	Y	Y			1				Y				1	
37		72	F	N	Y			1				Y		1			
38		22	F	Y	N			1				Y			1		
39		48	F	Y	N		1					Y			1		
40		59	M	Y	Y				1			Y		1			
41		26	M	N	N			1				Y				1	
42		23	F	N	N			1				Y		1			
43		24	M	N	N			1				Y		1			
44		35	M	Y	N		1					Y		1			
45		49	M	Y	Y			1				Y	1				
46		73	M	N	Y			1				Y	1				
47		61	F	Y	Y			1				Y			1		
48		52	F	Y	Y				1			Y			1		
49		50	F	N	Y				1			Y				1	
50		34	M	Y	N		1					Y			1		
51		28	F	Y	N		1					Y		1			
52		39	M	N	N		1					Y		1			
53		20	F	Y	Y			1				Y			1		
54		22	M	N	Y		1					Y				1	
55		21	M	Y	N		1					Y			1		
56		22	M	N	Y				1			Y		1			
57		36	F	N	N			1				Y		1			
58		33	F	N	N			1				Y		1			
59		49	F	Y	Y		1		1			Y		1			
60		56	M	N	Y			1				Y			1		
61		23	M	Y	N			1				Y				1	
62		26	F	N	N			1				Y				1	
63		28	F	Y	N		1					Y	1				
64		29	M	Y	N		1					Y	1				
65		51	F	N	Y			1				Y			1		
66		24	M	Y	N		1					Y			1		
67		55	F	N	Y				1			Y		1			
68		46	F	Y	Y				1			Y		1			
69		33	F	Y	N			1				Y	1				
70		20	F	Y	N		1					Y				1	
71		19	M	N	N		1					Y				1	
72		66	F	N	Y			1				Y		1			
73		26	M	Y	N			1				Y			1		
74		44	F	N	Y				1			Y	1				
75		21	M	Y	Y			1				Y		1			
76		73	F	Y	Y			1				Y			1		
77		20	M	N	N		1					Y			1		
78		18	M	Y	N		1					Y				1	

79		29	M	N	N		1				Y		1			
80		61	F	Y	Y			1			Y		1			
81		44	F	N	N			1			Y		1			
82		65	F	Y	Y				1		Y			1		
83		22	M	N	N		1				Y		1			
84		47	F	N	Y				1		Y			1		
85		23	M	Y	Y				1		Y			1		
86		55	F	N	Y				1		Y		1			
87		67	M	N	Y			1			Y		1			
88		32	M	Y	N			1			Y		1			
89		72	F	N	Y				1		Y			1		
90		32	F	N	N			1			Y		1			
91		20	F	Y	N			1			Y			1		
92		24	F	Y	N		1				Y				1	
93		30	F	Y	N		1				Y				1	
94		56	M	Y	Y				1		Y				1	
95		54	F	Y	Y				1		Y			1		
96		34	M	Y	N			1			Y		1			
97		22	M	Y	N		1				Y		1			
98		20	F	Y	N			1			Y		1			
99		26	F	Y	N			1			Y		1			
100		38	F	Y	N			1			Y	1				

H. Existing geometric design of the intersection

I. Proposed geometric design of the intersection