AGENDA OF THE TRAFFIC, BICYCLE, & PEDESTRIAN COMMISSION

MONDAY, FEBRUARY 11, 2019, 5:30 PM
CITY HALL, ROOM 203 (COUNCIL CHAMBERS)

A. Roll Call.

1. *Members:* Chairperson Matt Kuepers, Vice Chairperson Daniel Theno, Ald. Craig Stevens, Lieutenant Brad Strouf, Charles Karow, Brighid Riordan, and Ray Smith

B. Approval of the Agenda.

1. Approval of the Monday, February 11, 2019 Traffic, Bicycle, and Pedestrian Commission meeting agenda.

C. Approval of Minutes.

1. Approval of the Monday, January 21, 2019 Traffic, Bicycle, and Pedestrian Commission meeting minutes.

D. Regular Business.

1. *Referred Back from Study:* Consideration with possible action on the request by Ald. De Wane to install a left-turn signal on Alpine Drive to East Mason Street. (Ald. Corpus-Dax - District 2)

2. *Termination of 90-Day Trial Period:* Remove the NO PARKING zone on the south side of Mather Street from a point 50 feet west of Gray Street to a point 100 feet east of Gray Street.

3. *Termination of 90-Day Trial Period*: Remove the NO PARKING zone on the north side of Mather Street from Gray Street to Roy Avenue.

4. *Termination of 90-Day Trial Period:* Establish and adopt by ordinance a NO PARKING BIKE LANE zone on both sides of Mather Street from Gray Street to Vroman Street.

5. *Termination of 90-Day Trial Period:* Establish and adopt by ordinance a NO PARKING zone on the south side of Mather Street from a point 50 feet west of Gray St to Gray St.

F. Informational.

1. Next meeting: Monday, March 18, 2019 at 5:30 p.m. in Room 207.

E. Public Hearings.

G. Adjournment.

1. Adjournment of the current Traffic, Bicycle, and Pedestrian Commission meeting.

1) THIS MEETING IS RECORDED: THE VIDEO OF THIS MEETING AND MINUTES ARE AVAILABLE ONLINE AT www.greenbaywi.gov
2) ACCESSIBILITY: Any person wishing to attend who requires special accommodation because of a disability, should contact the City Safety Manager at 920-448-3125 at least 48 hours before the scheduled meeting time so that arrangements can be made.
3) QUORUM: Please take notice that a majority or quorum of the Common Council will attend this Traffic, Bicycle, & Pedestrian Commission meeting and will constitute a meeting of the Common Council for purposes of discussion and information gathering relative to this agenda.
4) REPRESENTATION: The party requesting the communication, or their representative, should be present at this meeting.

Report to the
Traffic, Bicycle and Pedestrian Commission of the City of Green Bay

MEETING DATE	PREPARED BY
February 11, 2019	

AGENDA ITEM # B.1.

Approval of the Monday, February 11, 2019 Traffic, Bicycle, and Pedestrian Commission meeting agenda.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

None

Report to the
Traffic, Bicycle and Pedestrian Commission of the City of Green Bay

MEETING DATE	PREPARED BY
February 11, 2019	

AGENDA ITEM # C.1.

Approval of the Monday, January 21, 2019 Traffic, Bicycle, and Pedestrian Commission meeting minutes.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

None

Report to the
Traffic, Bicycle and Pedestrian Commission of the City of Green Bay

MEETING DATE	PREPARED BY
February 11, 2019	Dave Hansen, Traffic Engineer

AGENDA ITEM # D.1.

Referred Back from Study: Consideration with possible action on the request by Ald. De Wane to install a left-turn signal on Alpine Drive to East Mason Street. (Ald. Corpus-Dax - District 2)

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

1. 01 M Mason-Alpine SBL Arrow

MEMORANDUM

Department of Public Works | Traffic Division

To: Traffic, Bicycle, & Pedestrian Commissioners
Director Steven Grenier, P.E.

From: Traffic Engineer David J.A. Hansen, P.E., PTOE

Re: **Southbound Left-Turn: Determine Need for Protected Left Phase**
East Mason Street at Alpine Drive

Date: Friday, February 8, 2019

This memorandum serves as a response to the request by Ald. De Wane to install a southbound left-turn signal on Alpine Drive to East Mason Street. The request was referred to staff for study by the Traffic, Bicycle, & Pedestrian Commission (TBPC) on January 15, 2018 and by Common Council on February 6, 2018.

This memo will be presented at the Monday, February 11, 2019 meeting of the TBPC.

EXISTING SITE CONDITIONS

The signalized intersection of East Mason Street and Alpine Drive is located on the east side of the City of Green Bay, in Aldermanic District 2 (Ald. Corpus-Dax). See Figures 1 through 3 for maps and images of the intersection and vicinity.

Figure 1 – General Location

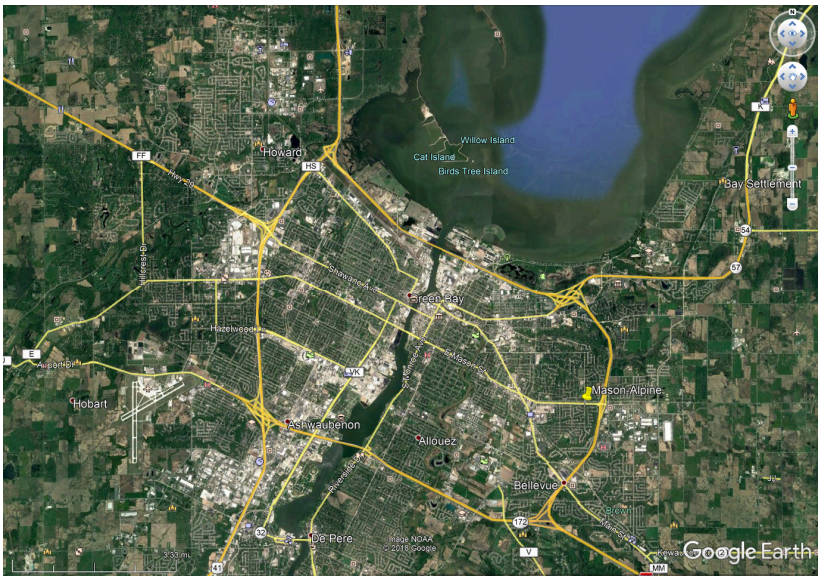


Figure 2 – Neighborhood View

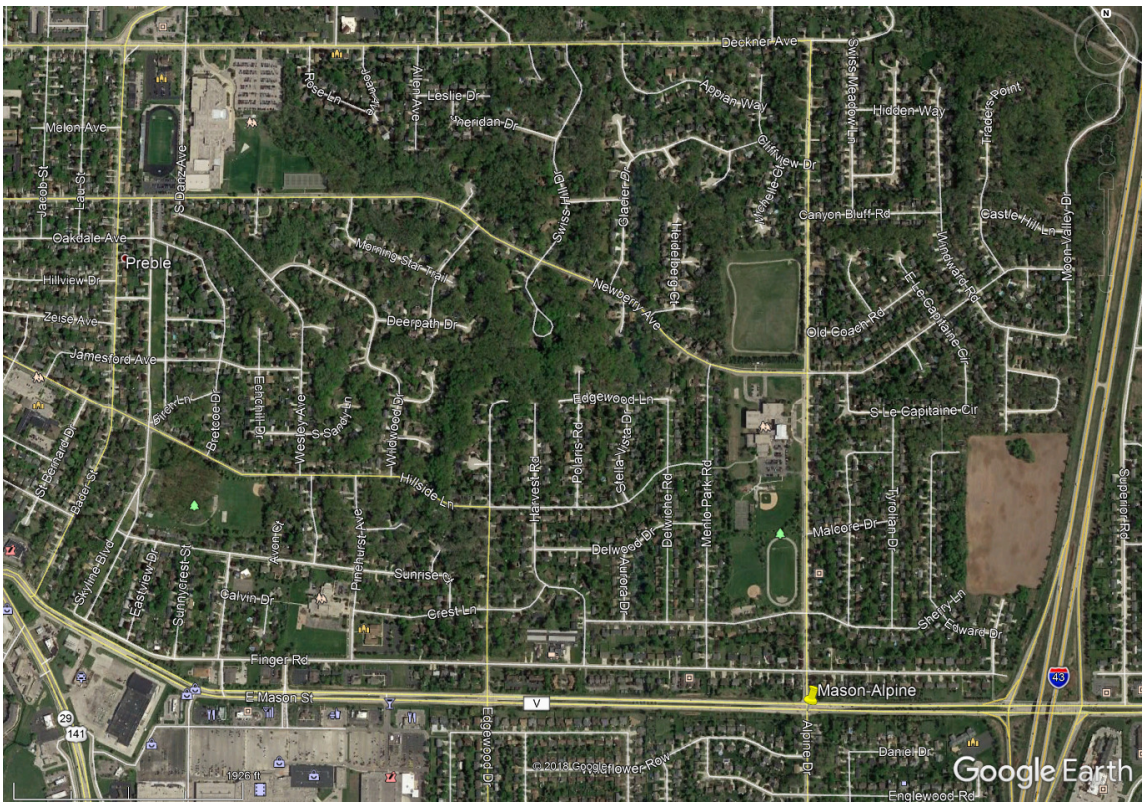
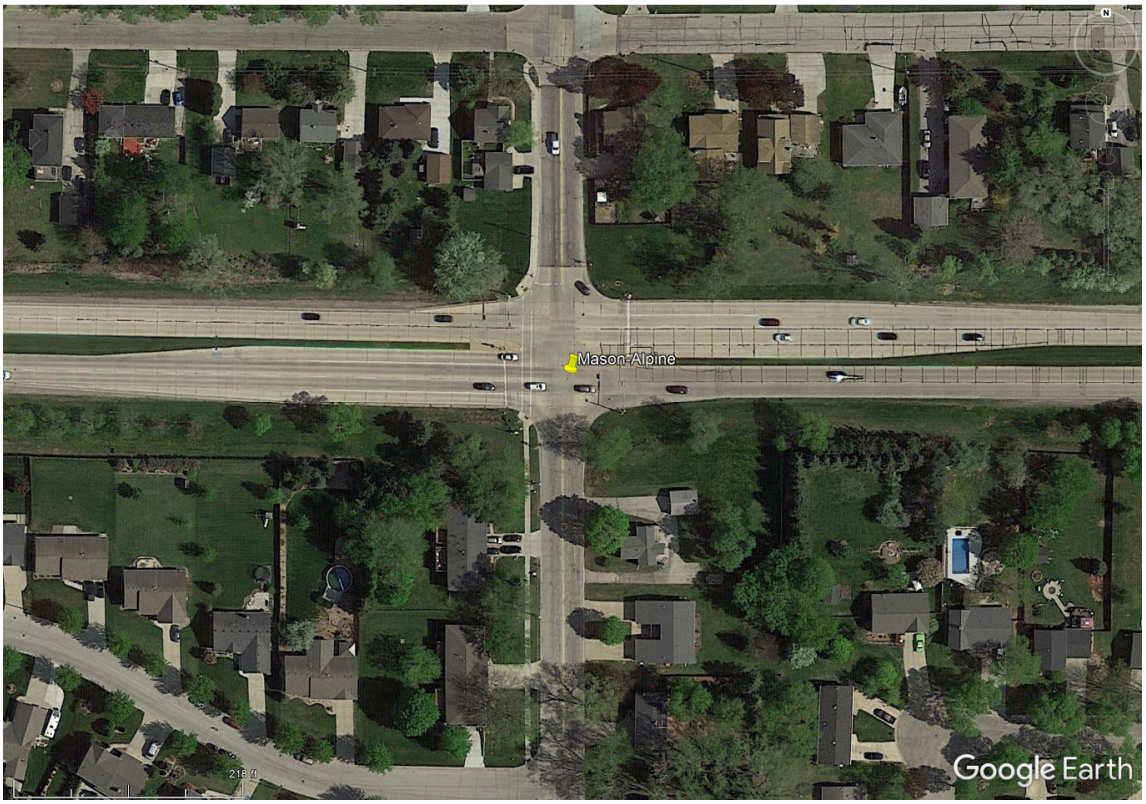


Figure 3 – Intersection View



East Mason St (County Highway V) is a divided urban principal arterial street. It extends east-west through the city, crossing both east and west corporate limits. Total length within the city is 13.4 miles. Alpine Dr is an undivided urban collector street. Its south terminus is Greenbrier Rd. Its north terminus is Deckner Ave. Total length is 2 miles.

Both east and west of the intersection, E Mason St consists of 2 through lanes, 1 left-turn lane, and 1 right turn lane in each direction. North and south of the intersection, Alpine Dr consists of 1 through-left and 1 through-right lane in each direction. Sidewalk exists on the west side of Alpine Dr from Wildflower Row to Newberry Ave. A crosswalk exists crossing the west approach of the intersection.

Complaints and reports from motorists have been received that the southbound movement wait time and queue lengths are lengthy, especially during school release times. The intersection has an increase in traffic during the release times of both Edison Middle and East High schools. Currently, the signal phasing includes eastbound and westbound E Mason St leading protected-permitted left-turns followed by eastbound and westbound E Mason St circular green for left-thru-right movements followed by northbound and southbound Alpine Dr circular green for left-thru-right movements. The signal operates within the E Mason St 2 progression corridor system (Abrams St – Alpine Dr). During the peak periods with the exception of school peaks, the signal operates in coordination mode with the other signals in the E Mason St 2 system. During school peaks, the signal changes to fully-actuated mode, meaning each movement and approach are timed to dynamically respond to real-time traffic conditions using programmed minimum, maximum, and extension times for each signal phase.

EVALUATING CONTROL DELAY AND LEVEL OF SERVICE

Intersection, approach, and movement delays and Levels of Service were evaluated. Intersection turning movement counts used for the analysis were collected in May 2016 by City of Green Bay staff on a school day for nearby schools Edison Middle and Preble High. Since the afternoon release school peak (2:45 p.m. – 3:45 p.m.) has higher traffic volumes than the morning arrival school peak (7 a.m. to 8 a.m.), only the afternoon school peak hour was evaluated.

The study intersection was analyzed using the Synchro 10 traffic analysis model (outputs based on the Highway Capacity Manual, Sixth Edition). Intersection operation is defined by “level of service”. Level of Service (LOS) is a quantitative measure that refers to the overall quality of flow at an intersection ranging from very good, represented by LOS ‘A’, to very poor, represented by LOS ‘F’. For the purpose of this study, LOS D was used to define acceptable peak hour operating conditions. Descriptions of the various levels of service are as follows:

LOS A is the highest level of service that can be achieved. Under this condition, intersection approaches appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation. At signalized and unsignalized intersections, average delays are less than 10 seconds.

LOS B represents stable operation. At signalized intersections, average vehicle delays are 10 to 20 seconds. At unsignalized intersections, average delays are 10 to 15 seconds.

LOS C still represents stable operation, but periodic backups of a few vehicles may develop behind turning vehicles. Most drivers begin to feel restricted, but not objectionably so. At signalized intersections, average vehicle delays are 20 to 35 seconds. At unsignalized intersections, average delays are 15 to 25 seconds.

LOS D represents increasing traffic restrictions as the intersection approaches instability. Delays to approaching vehicles may be substantial during short peaks within the peak period, but periodic clearance of long lines occurs, thus preventing excessive backups. At signalized intersections, average vehicle delays are 35 to 55 seconds. At unsignalized intersections, average delays are 25 to 35 seconds.

LOS E represents the capacity of the intersection. At signalized intersections, average vehicle delays are 55 to 80 seconds. At unsignalized intersections, average delays are 35 to 50 seconds.

LOS F represents jammed conditions where the intersection is over capacity and acceptable gaps for unsignalized intersections in the mainline traffic flow are minimal. At signalized intersections, average vehicle delays exceed 80 seconds. At unsignalized intersections, average delays exceed 50 seconds.

Five scenarios were evaluated. They are described as follows:

The **Existing** option includes existing geometric and operational conditions as programmed in the existing signal controller.

The **Optimized Existing Timings** option is the same as the Existing option but where the signal timings were optimized given the existing basic timing parameters programmed into the controller. Minimum and maximum times are preserved but will return results showing the best signal timings between the programmed min and max timers.

The **Optimized Low Cycle** option is the same as the Optimized Existing Timings option but eliminates the max timers, reduces the minimum timers to their lowest reasonable times, then optimizes the signal splits based on balancing control delays around the intersection. No changes to signal phases are included in this option, meaning the signal displays are not modified in any way.

The **SB Lead Remark SB** option includes converting the inside southbound lane from thru-left to left-turn only, and adding a southbound left-turn phase to the signal operations. The signal timings were optimized given the existing basic timing parameters programmed into the controller. Basically minimum and maximum times are preserved but will return results showing the best signal timings between the programmed min and max timers.

The **SB Lead Low Cycle Remark SB** option is similar to the Optimized Low Cycle option but with the changes to the signal included in the SB Lead Remark SB option. This option includes adding a southbound left turn movement and phase while optimizing to the lowest cycle length feasible.

Figure 4 shows the results of the signal analysis. Delays and LOS values noted in bold text indicate the best results.

Figure 4 – Control Delay and Level of Service (LOS)

Control Delay (sec/veh) and Level Of Service
East Mason Street at Alpine Drive
School Afternoon Release Peak Hour

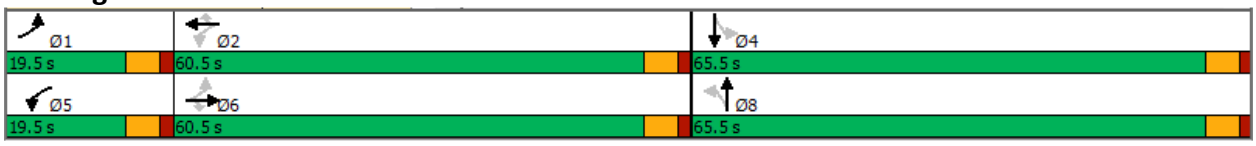
Signal	Northbound				Southbound				Eastbound				Westbound				Intersection
Plan	L	T	R	App	L	T	R	App	L	T	R	App	L	T	R	App	
Existing	18.0	*	19.2	18.7	31.5	*	20.0	27.5	15.3	21.0	17.3	20.2	15.3	20.6	18.9	19.6	21.4
	B		B	B	C		C	C	B	C	B	C	B	C	B	B	C
Optimized	18.0	*	19.2	18.7	31.5	*	20.0	27.5	15.3	21.0	17.3	20.2	15.3	20.6	18.9	19.7	21.4
Existing Timings	B		B	B	C		C	C	B	C	B	C	B	C	B	B	C
Optimized	**14.4**	*	**15.8**	**15.2**	31.9	*	16.6	26.6	**10.3**	**15.2**	**12.4**	**14.6**	**10.2**	**14.9**	**13.6**	**14.1**	**16.9**
Low Cycle	**B**		**B**	**B**	C		B	C	**B**	**B**	**B**	**B**	**B**	**B**	**B**	**B**	**B**
SB Lead	40.3	*	50.5	46.4	25.4	*	20.3	23.6	15.9	21.7	17.9	20.9	15.9	21.2	19.5	20.3	23.2
Remark SB	D		D	D	C		C	C	B	C	B	C	B	C	B	C	C
SB Lead Low Cycle	23.5	*	27.3	25.7	**23.8**	*	**14.7**	**20.6**	12.8	18.6	14.9	17.8	12.8	18.3	16.6	17.3	18.8
Remark SB	C		C	C	**C**		**B**	**C**	B	B	B	B	B	B	B	B	B

Note that NBT and SBT delay and LOS values are included in the NBL/R and SBL/R values since thru movements are made from the left and right turn lanes.

Figure 5 shows the traffic signal timings for each scenario.

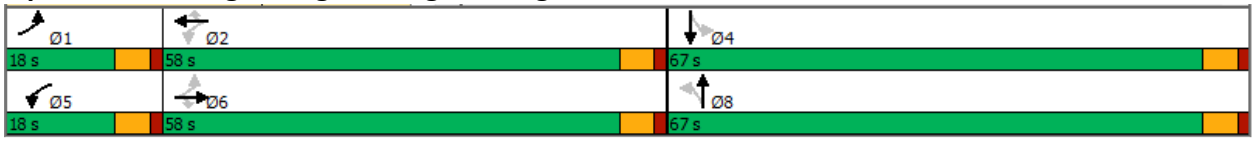
Figure 5 – Signal Timings

Existing



Cycle = 145.5 sec

Optimized Timings using Existing Phasing

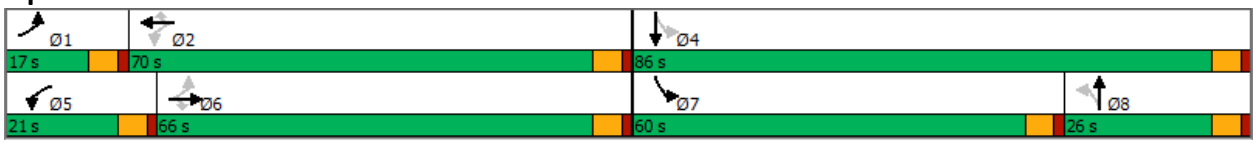


Cycle = 143 sec

Optimized Timings using Existing Phasing and Lower Cycle Length

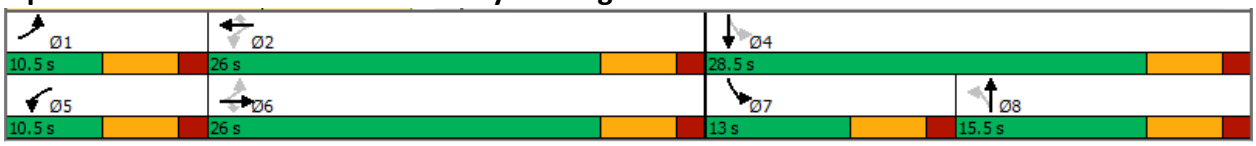
Cycle = 60 sec

Optimized with SB Lead



Cycle = 173 sec

Optimized with SB Lead and Lower Cycle Length



Cycle = 65 sec

Improving the traffic signals and lane markings to include a southbound left signal phase and lane is not a low cost improvement project. If that option were selected, then the City would be required to make other improvements to the signal in order to bring it up to current standards and regulations. Reconstructing the entire signal system would cost anywhere from $150,000 to $300,000 (estimated) depending on the time of year, time constraints, and availability of certain signal parts such as the large overhead monotube signal structures. Without remarking and adding a southbound left-turn arrow, the other improvement options include only staff time to make the timing changes.

CRASH HISTORY

A review of the past 5 years resulted in no crashes that could have been prevented if a southbound left-turn arrow were active and present.

CONCLUSIONS

1. The Existing option does not result in the least amount of signal delay and best LOS.

2. Optimizing signal timings using the basic timing parameters within the signal controller does not result in the least amount of signal delay and best LOS.

3. Optimizing signal timings while using the lowest cycle length possible produces the least amount of signal delay and best Levels of Service (LOS) for all movements and approaches with the exception of the southbound movements and approach.

4. Adding a southbound arrow to the intersection while remarking the southbound approach and lowering the cycle length does not result in the least amount of signal delay and best Levels of Service (LOS) with the exception of southbound movements and approach.

5. The Optimized Low Cycle option has the lowest overall intersection control delay, best LOS, and lowest cost.

6. Overall, both SB Lead options result in worse operating conditions and higher costs compared to the Optimized Low Cycle option.

7. All options result in LOS C or better except the SB Lead Remark SB option where all northbound movements operate at LOS D.

8. Although the SB Lead Low Cycle Remark SB option results in lowest delays for the southbound movement, the difference in delay values compared to the Optimized Low Cycle option for the southbound movement are small and result in the same LOS. In other words, most southbound motorists would not notice the differences in delay between the two options.

9. Adding a southbound left-turn arrow would not have been prevented any Alpine Dr crashes that took place in the past 5 years based on a review of intersection crash history.

RECOMMENDATION

1. Optimize traffic signal timings using the lowest possible cycle length and existing signal phasing at the intersection of East Mason Street and Alpine Drive during both morning arrival and afternoon release school release periods.

Intersection Movement Traffic Volumes

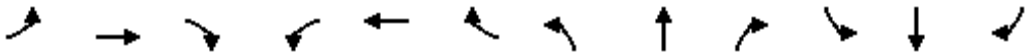
East Mason Street at Alpine Drive

Morning Arrival and Afternoon Release Timeframe

Time	SBR	SBT	SBL	P	App Tot		WBR	WBT	WBL	P	App Tot		NBR	NBT	NBL	P	App Tot		EBR	EBT	EBL	P	App Tot	
7:00	46	12	82	0	140		133	110	6	0	249		41	31	6	0	78		2	102	26	0	130	
7:15	50	11	99	0	160		69	103	23	0	195		40	15	8	0	63		0	107	26	0	133	
7:30	18	6	85	0	109		24	116	27	0	167		42	5	14	0	61		0	126	9	0	135	
7:45	18	17	35	0	70	479	23	127	18	0	168	779	33	6	6	0	45	247	4	104	8	0	116	514
8:00	9	11	38	0	58	397	16	66	4	0	86	616	28	12	10	0	50	219	7	82	7	0	96	480
2:30	10	3	37	0	50		40	158	26	0	224		17	4	2	0	23		5	152	43	0	200	
	1	0	2																					
2:45	38	24	64	1	127		41	151	18	0	210		28	24	13	0	65		12	156	29	0	197	
	3	2	4																					
3:00	40	20	111	0	171		41	179	40	0	260		38	9	5	1	53		7	165	16	0	188	
	3	1	7																					
3:15	24	10	105	0	139	487	50	182	30	0	262	956	24	7	4	0	35	176	5	165	19	0	189	774
	2	1	7																					
3:30	17	6	56	0	79	516	51	192	27	0	270	1002	26	10	8	0	44	197	19	190	14	0	223	797
	1	0	4																					
AM Hour	132	46	301	0	479		249	456	74	0	779		156	57	34	0	247		6	439	69	0	514	
AM Rnd	*135*	*50*	*305*	*0*	*490*		*250*	*460*	*75*	*0*	*785*		*160*	*60*	*35*	*0*	*255*		*10*	*440*	*70*	*0*	*520*	
PM Hour	119	60	336	1	516		183	704	115	0	1002		116	50	30	1	197		43	676	78	0	797	
PM Rnd	***120***	***60***	***340***	***5***	***525***		***185***	***705***	***115***	***0***	***1005***		***120***	***50***	***30***	***5***	***205***		***45***	***680***	***80***	***0***	***805***	

HCM 6th Signalized Intersection Summary
63: Alpine Dr & Mason St

02/06/2019



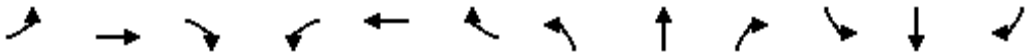
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	680	45	115	705	185	30	50	120	340	60	120
Future Volume (veh/h)	80	680	45	115	705	185	30	50	120	340	60	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1945	1900	1900	1945	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	80	680	45	115	705	185	30	50	120	340	60	120
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0	0	2	0	0	0	0	0	0	0
Cap, veh/h	352	1458	635	392	1490	649	237	373	572	492	201	402
Arrive On Green	0.06	0.39	0.39	0.07	0.40	0.40	0.39	0.39	0.38	0.39	0.39	0.38
Sat Flow, veh/h	1810	3696	1610	1810	3696	1610	467	957	1465	1060	515	1029
Grp Volume(v), veh/h	80	680	45	115	705	185	80	0	120	340	0	180
Grp Sat Flow(s),veh/h/ln	1810	1848	1610	1810	1848	1610	1424	0	1465	1060	0	1544
Q Serve(g_s), s	2.3	12.5	1.6	3.3	12.8	7.1	0.2	0.0	5.0	23.1	0.0	7.4
Cycle Q Clear(g_c), s	2.3	12.5	1.6	3.3	12.8	7.1	7.6	0.0	5.0	28.1	0.0	7.4
Prop In Lane	1.00		1.00	1.00		1.00	0.38		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	352	1458	635	392	1490	649	610	0	572	492	0	602
V/C Ratio(X)	0.23	0.47	0.07	0.29	0.47	0.28	0.13	0.00	0.21	0.69	0.00	0.30
Avail Cap(c_a), veh/h	543	2269	988	568	2269	988	1048	0	980	836	0	1032
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.2	20.5	17.2	15.1	20.1	18.4	17.8	0.0	18.8	27.8	0.0	19.5
Incr Delay (d2), s/veh	0.1	0.5	0.1	0.2	0.5	0.5	0.2	0.0	0.4	3.7	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.1	0.6	1.3	5.2	2.6	1.1	0.0	1.8	7.2	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.3	21.0	17.3	15.3	20.6	18.9	18.0	0.0	19.2	31.5	0.0	20.0
LnGrp LOS	B	C	B	B	C	B	B	A	B	C	A	C
Approach Vol, veh/h		805			1005			200			520	
Approach Delay, s/veh		20.2			19.6			18.7			27.5	
Approach LOS		C			B			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.8	41.3		40.1	10.6	40.5		40.1				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	14.0	55.0		60.0	14.0	55.0		60.0				
Max Q Clear Time (g_c+I1), s	4.3	14.8		30.1	5.3	14.5		9.6				
Green Ext Time (p_c), s	0.1	20.4		4.5	0.1	16.8		1.6				

Intersection Summary		
HCM 6th Ctrl Delay		21.4
HCM 6th LOS		C

HCM 6th Signalized Intersection Summary
63: Alpine Dr & Mason St

02/06/2019



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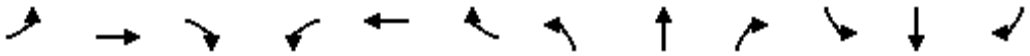
Future Volume (veh/h)	80	680	45	115	705	185	30	50	120	340	60	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1945	1900	1900	1945	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	80	680	45	115	705	185	30	50	120	340	60	120
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0	0	2	0	0	0	0	0	0	0
Cap, veh/h	351	1458	635	391	1490	649	237	374	572	493	201	402
Arrive On Green	0.06	0.39	0.39	0.07	0.40	0.40	0.39	0.39	0.38	0.39	0.39	0.38
Sat Flow, veh/h	1810	3696	1610	1810	3696	1610	467	957	1465	1060	515	1029
Grp Volume(v), veh/h	80	680	45	115	705	185	80	0	120	340	0	180
Grp Sat Flow(s),veh/h/ln	1810	1848	1610	1810	1848	1610	1424	0	1465	1060	0	1544
Q Serve(g_s), s	2.3	12.5	1.6	3.3	12.8	7.1	0.2	0.0	5.0	23.1	0.0	7.4
Cycle Q Clear(g_c), s	2.3	12.5	1.6	3.3	12.8	7.1	7.6	0.0	5.0	28.1	0.0	7.4
Prop In Lane	1.00		1.00	1.00		1.00	0.38		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	351	1458	635	391	1490	649	610	0	572	493	0	603
V/C Ratio(X)	0.23	0.47	0.07	0.29	0.47	0.29	0.13	0.00	0.21	0.69	0.00	0.30
Avail Cap(c_a), veh/h	513	2166	944	538	2166	944	1073	0	1003	856	0	1057
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.2	20.5	17.2	15.1	20.1	18.4	17.8	0.0	18.8	27.8	0.0	19.4
Incr Delay (d2), s/veh	0.1	0.5	0.1	0.2	0.5	0.5	0.2	0.0	0.4	3.7	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.1	0.6	1.3	5.2	2.6	1.1	0.0	1.8	7.2	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.3	21.0	17.3	15.3	20.6	18.9	18.0	0.0	19.2	31.5	0.0	20.0
LnGrp LOS	B	C	B	B	C	B	B	A	B	C	A	C
Approach Vol, veh/h		805			1005			200			520	
Approach Delay, s/veh		20.2			19.7			18.7			27.5	
Approach LOS		C			B			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.8	41.3		40.1	10.6	40.5		40.1				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	12.5	52.5		61.5	12.5	52.5		61.5				
Max Q Clear Time (g_c+I1), s	4.3	14.8		30.1	5.3	14.5		9.6				
Green Ext Time (p_c), s	0.1	19.7		4.5	0.1	16.3		1.6				

Intersection Summary		
HCM 6th Ctrl Delay		21.4
HCM 6th LOS		C

HCM 6th Signalized Intersection Summary
63: Alpine Dr & Mason St

02/07/2019



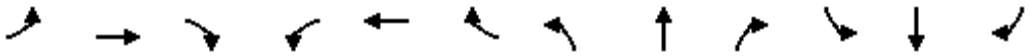
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	680	45	115	705	185	30	50	120	340	60	120
Future Volume (veh/h)	80	680	45	115	705	185	30	50	120	340	60	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1945	1900	1900	1945	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	80	680	45	115	705	185	30	50	120	340	60	120
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0	0	2	0	0	0	0	0	0	0
Cap, veh/h	409	1333	581	446	1371	597	219	330	466	439	164	327
Arrive On Green	0.08	0.36	0.36	0.09	0.37	0.37	0.32	0.32	0.30	0.32	0.32	0.30
Sat Flow, veh/h	1810	3696	1610	1810	3696	1610	421	1039	1465	993	515	1029
Grp Volume(v), veh/h	80	680	45	115	705	185	80	0	120	340	0	180
Grp Sat Flow(s),veh/h/ln	1810	1848	1610	1810	1848	1610	1460	0	1465	993	0	1544
Q Serve(g_s), s	1.5	8.4	1.1	2.2	8.6	4.8	0.1	0.0	3.6	14.9	0.0	5.3
Cycle Q Clear(g_c), s	1.5	8.4	1.1	2.2	8.6	4.8	5.4	0.0	3.6	18.5	0.0	5.3
Prop In Lane	1.00		1.00	1.00		1.00	0.38		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	409	1333	581	446	1371	597	549	0	466	439	0	491
V/C Ratio(X)	0.20	0.51	0.08	0.26	0.51	0.31	0.15	0.00	0.26	0.77	0.00	0.37
Avail Cap(c_a), veh/h	455	1390	606	474	1390	606	549	0	466	439	0	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.2	14.6	12.2	10.1	14.2	13.0	14.2	0.0	15.2	22.2	0.0	15.6
Incr Delay (d2), s/veh	0.1	0.6	0.1	0.1	0.7	0.6	0.3	0.0	0.6	9.7	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.0	0.3	0.7	3.1	1.5	0.7	0.0	1.2	5.6	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.3	15.2	12.4	10.2	14.9	13.6	14.4	0.0	15.8	31.9	0.0	16.6
LnGrp LOS	B	B	B	B	B	B	B	A	B	C	A	B
Approach Vol, veh/h		805			1005			200			520	
Approach Delay, s/veh		14.6			14.1			15.2			26.6	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	26.1		23.0	9.7	25.5		23.0				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	5.1	20.9		17.5	5.1	20.9		17.5				
Max Q Clear Time (g_c+I1), s	3.5	10.6		20.5	4.2	10.4		7.4				
Green Ext Time (p_c), s	0.0	7.5		0.0	0.0	6.8		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		16.9	
HCM 6th LOS		B	

HCM 6th Signalized Intersection Summary
63: Alpine Dr & Mason St

02/07/2019



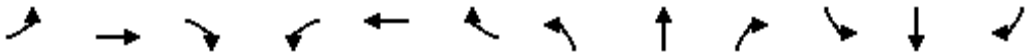
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	680	45	115	705	185	30	50	120	340	60	120
Future Volume (veh/h)	80	680	45	115	705	185	30	50	120	340	60	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1945	1900	1900	1945	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	80	680	45	115	705	185	30	50	120	340	60	120
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0	0	2	0	0	0	0	0	0	0
Cap, veh/h	348	1471	641	389	1506	656	104	146	175	538	223	447
Arrive On Green	0.06	0.40	0.40	0.07	0.41	0.41	0.12	0.12	0.11	0.23	0.39	0.38
Sat Flow, veh/h	1810	3696	1610	1810	3696	1610	439	1219	1465	1810	565	1131
Grp Volume(v), veh/h	80	680	45	115	705	185	80	0	120	340	0	180
Grp Sat Flow(s),veh/h/ln	1810	1848	1610	1810	1848	1610	1657	0	1465	1810	0	1696
Q Serve(g_s), s	2.4	13.0	1.7	3.5	13.4	7.4	0.9	0.0	7.5	14.0	0.0	6.9
Cycle Q Clear(g_c), s	2.4	13.0	1.7	3.5	13.4	7.4	3.9	0.0	7.5	14.0	0.0	6.9
Prop In Lane	1.00		1.00	1.00		1.00	0.38		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	348	1471	641	389	1506	656	250	0	175	538	0	670
V/C Ratio(X)	0.23	0.46	0.07	0.30	0.47	0.28	0.32	0.00	0.68	0.63	0.00	0.27
Avail Cap(c_a), veh/h	482	2376	1035	582	2530	1102	415	0	329	1176	0	1445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.8	21.2	17.8	15.7	20.7	19.0	38.7	0.0	40.9	24.1	0.0	19.8
Incr Delay (d2), s/veh	0.1	0.5	0.1	0.2	0.5	0.5	1.6	0.0	9.6	1.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.4	0.6	1.4	5.5	2.7	1.8	0.0	3.2	6.1	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.9	21.7	17.9	15.9	21.2	19.5	40.3	0.0	50.5	25.4	0.0	20.3
LnGrp LOS	B	C	B	B	C	B	D	A	D	C	A	C
Approach Vol, veh/h		805			1005			200			520	
Approach Delay, s/veh		20.9			20.3			46.4			23.6	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	43.5		42.3	10.8	42.6	26.3	16.0				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	11.5	64.5		80.5	15.5	60.5	54.5	20.5				
Max Q Clear Time (g_c+I1), s	4.4	15.4		8.9	5.5	15.0	16.0	9.5				
Green Ext Time (p_c), s	0.0	22.6		1.5	0.1	17.6	4.8	0.9				

Intersection Summary			
HCM 6th Ctrl Delay		23.2	
HCM 6th LOS		C	

HCM 6th Signalized Intersection Summary
63: Alpine Dr & Mason St

02/07/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	680	45	115	705	185	30	50	120	340	60	120
Future Volume (veh/h)	80	680	45	115	705	185	30	50	120	340	60	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1945	1900	1900	1945	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	80	680	45	115	705	185	30	50	120	340	60	120
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0	0	2	0	0	0	0	0	0	0
Cap, veh/h	364	1216	530	396	1248	544	151	214	252	474	212	425
Arrive On Green	0.08	0.33	0.33	0.08	0.34	0.34	0.17	0.17	0.16	0.13	0.38	0.36
Sat Flow, veh/h	1810	3696	1610	1810	3696	1610	425	1240	1465	1810	565	1131
Grp Volume(v), veh/h	80	680	45	115	705	185	80	0	120	340	0	180
Grp Sat Flow(s),veh/h/ln	1810	1848	1610	1810	1848	1610	1665	0	1465	1810	0	1696
Q Serve(g_s), s	1.8	9.7	1.2	2.5	10.0	5.5	0.0	0.0	4.8	8.5	0.0	4.8
Cycle Q Clear(g_c), s	1.8	9.7	1.2	2.5	10.0	5.5	2.3	0.0	4.8	8.5	0.0	4.8
Prop In Lane	1.00		1.00	1.00		1.00	0.38		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	364	1216	530	396	1248	544	364	0	252	474	0	637
V/C Ratio(X)	0.22	0.56	0.08	0.29	0.56	0.34	0.22	0.00	0.48	0.72	0.00	0.28
Avail Cap(c_a), veh/h	398	1245	542	414	1248	544	364	0	252	474	0	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	17.6	14.8	12.6	17.3	15.8	22.8	0.0	24.3	18.6	0.0	14.2
Incr Delay (d2), s/veh	0.1	1.0	0.1	0.1	1.0	0.8	0.6	0.0	3.0	5.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.7	0.4	0.9	3.8	1.9	1.1	0.0	1.8	4.5	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.8	18.6	14.9	12.8	18.3	16.6	23.5	0.0	27.3	23.8	0.0	14.7
LnGrp LOS	B	B	B	B	B	B	C	A	C	C	A	B
Approach Vol, veh/h		805			1005			200			520	
Approach Delay, s/veh		17.8			17.3			25.7			20.6	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	26.1		28.5	9.8	25.5	13.0	15.5
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	5.0	20.5		23.0	5.0	20.5	7.5	10.0
Max Q Clear Time (g_c+I1), s	3.8	12.0		6.8	4.5	11.7	10.5	6.8
Green Ext Time (p_c), s	0.0	6.4		1.0	0.0	5.9	0.0	0.4

Intersection Summary		
HCM 6th Ctrl Delay		18.8
HCM 6th LOS		B

Report to the
Traffic, Bicycle and Pedestrian Commission of the City of Green Bay

MEETING DATE	PREPARED BY
February 11, 2019	

AGENDA ITEM # D.2.

Termination of 90-Day Trial Period: Remove the NO PARKING zone on the south side of Mather Street from a point 50 feet west of Gray Street to a point 100 feet east of Gray Street.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

None

Report to the
Traffic, Bicycle and Pedestrian Commission of the City of Green Bay

MEETING DATE	PREPARED BY
February 11, 2019	

AGENDA ITEM # D.3.

Termination of 90-Day Trial Period: Remove the NO PARKING zone on the north side of Mather Street from Gray Street to Roy Avenue.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

None

Report to the
Traffic, Bicycle and Pedestrian Commission
of the City of Green Bay

MEETING DATE	PREPARED BY
February 11, 2019	

AGENDA ITEM # D.4.

Termination of 90-Day Trial Period: Establish and adopt by ordinance a NO PARKING BIKE LANE zone on both sides of Mather Street from Gray Street to Vroman Street.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

None

Report to the
Traffic, Bicycle and Pedestrian Commission of the City of Green Bay

MEETING DATE	PREPARED BY
February 11, 2019	

AGENDA ITEM # D.5.

Termination of 90-Day Trial Period: Establish and adopt by ordinance a NO PARKING zone on the south side of Mather Street from a point 50 feet west of Gray St to Gray St.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

None

Report to the
Traffic, Bicycle and Pedestrian Commission of the City of Green Bay

MEETING DATE	PREPARED BY
February 11, 2019	

AGENDA ITEM # F.1.

Next meeting: Monday, March 18, 2019 at 5:30 p.m. in Room 207.

BACKGROUND

RECOMMENDATION

FISCAL IMPACT

ATTACHMENTS

None