MILWAUKEE ARENA

Traffic Report

SUPPLEMENTAL UPDATE DRAFT

October 21, 2022

INTRODUCTION

In 2015, HNTB Corporation was contracted by the Milwaukee Bucks to conduct a traffic study in conjunction with the planned construction of a new Arena and the planned development of various residential, office and retail uses. Since that time, the proposed development plans have been updated, including a proposed 4,000 seat and 800 seat music venue (4,800 total) in Block 3. This memo details the updated trip generation and analysis for Phase 2 and Phase 3 of development based on updated development plans, as a supplement to the *Milwaukee Arena Traffic Report*, October 23, 2015. Updated analysis was completed for the PM and Pregame hours.

SUMMARY OF RECOMMENDATIONS

In addition to the previously recommended improvements listed in the 2015 report, the following considerations are recommended:

- Juneau Avenue and Vel R. Phillips Avenue: this intersection has been reconfigured with only one eastbound lane, a shared through/left turn lane, bike lanes, and valet parking lanes. Eastbound through vehicles queue behind left turning vehicles waiting for a gap at Vel R. Phillips Avenue. Pedestrian safety and accommodations should be prioritized over vehicle operations at this location. Additionally, police officer control could be considered during the Pregame peak hour.
- Highland Avenue and 6th Street: Review the westbound approach geometry as the design of the parking structure on Block 2 is determined (Phase 3)

PROJECTED TRAFFIC

The previously developed trip generation and trip distribution for the proposed development traffic volumes has been updated based on the most current development plans. Block 3 has a proposed 4,000 seat and 800 seat music venue (4,800 total). Figure 1 shows the proposed site plan for Block 2 and Block 3. Additionally, changes in development type and/or size were included in Blocks 4, 6, and 7. Block 2 has been moved to Phase 3 of development.

The music venue will not have on-site parking. Trips generated to and from Block 3 were distributed to the existing parking structure in Block 7 (1,216 spaces), the existing parking structure in Block 2 (776 spaces), and the new structure planned in Block 2 (1,488 spaces), which will be built in Phase 3. It is assumed the new parking structure on Block 2 access could be to and from 5th Street and constructed in Phase 3.



Figure 1: Site Plan – Block 2 and Block 3

No changes were made to the background traffic volumes or growth rates applied in 2015. That analysis applied an assumed 0.5% annual growth of background traffic traveling through the study area from Year 2015 to the proposed construction years for Phase 2 (2022) and Phase 3 (2027).

Traffic projections do not take any potential streetcar extension into account. If a streetcar route extension were put into place, it would change the results of this analysis and likely remove some vehicle trips from the study area.

ON SITE AND OFF SITE DEVELOPMENT TRAFFIC FORECASTING

The three development phases are the following:

- Phase 1 Blocks 1, 4, 7, and 8 in Year 2018
- Phase 2 Block 3 in Year 2022 (previously included Block 2)
- Phase 3 Blocks 2, 5, and 6 in Year 2027

The development trip generation is based on trip rates in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition.* Table 1 on the following pages shows the original PM, Pregame and Postgame peak hour trip generation for the proposed development.

Phase 2 and Phase 3 non-arena development traffic volumes were updated and reassigned to the roadway network. No updates were made to the previously developed background trips. Updated trip generations

are shown in Table 2, and Table 3 shows the difference between the original trip generation and the update.

The newly proposed music venue is expected to generate 625 trips in the PM peak hour and 375 trips in the Pregame peak hour. Overall, the changes in the proposed development are expected to generate an additional 445 trips in the PM peak hour and 225 trips in the Pregame peak hour, when compared to the original 2015 trip generation.

Although the proposed music venue trip generation is projected to create a greater amount of trips than the previously planned commercial uses, the additional trips have a limited impact to the traffic operations on the downtown street grid.

<u>Table 1: Originally Proposed Development Trip Generation – October 2015</u>

Block	ITE Code	Development Type	Size	Daily Trips	P	M Peak H	Iour	Pr	egame Hour		Po	stgame Hour	
	Code	Туре		111ps	In	Out	Total	In	Out	Total	In	Out	Total
1		NBA Arena		Not	calcula	ıted. Assı	ımed to r	eplace	trips ge	nerated b	y curre	ent Are	na.
	220	Apartments	102 units	678	40	25	65	25	15	40	5	5	10
2	220	Student Housing	62 units	412	25	15	40	15	10	25	5	5	10
2	820	Retail	34,079 sq. ft.	1,455	60	65	125	45	50	95	10	10	20
	710	Office	102,438 sq. ft.	1,130	25	130	155	15	80	95	5	25	30
3	310	Hotel	300 rooms	2,451	90	90	180	55	55	110	15	15	30
3	820	Retail	89,805 sq. ft.	3,835	160	175	335	120	135	255	30	30	60
4	820	Retail	58,962 sq. ft.	2,518	105	115	220	80	90	170	20	20	40
	220	Apartments	48 units	319	20	10	30	10	5	15	5	0	5
	220	Apartments	215 units	1,430	90	45	135	55	25	80	15	10	25
5	820	Retail	16,519 sq. ft.	705	30	30	60	20	25	45	5	5	10
	710	Office	101,795 sq. ft.	1,123	25	125	150	15	75	90	5	20	25
	220	Apartments	55 units	366	25	10	35	15	5	20	5	0	5
6	710	Office	350,000 sq. ft.	3,861	90	430	520	55	255	310	15	75	90
	820	Retail	12,000 sq. ft.	512	20	25	45	15	20	35	5	5	10
	220	Apartments	70 units	466	30	15	45	20	10	30	5	5	10
7	820	Retail	11,402 sq. ft.	487	20	20	40	15	15	30	5	5	10
	710	Office	36,621 sq. ft.	404	10	45	55	5	25	30	0	10	10
0	710	Office	30,000 sq. ft.	331	10	35	45	5	20	25	0	5	5
8		Practice Facility	Retail 11,402 sq. ft. 487 20 20 40 15 15 30 5 5 10 Office 36,621 sq. ft. 404 10 45 55 5 25 30 0 10 10 Office 30,000 sq. ft. 331 10 35 45 5 20 25 0 5 5 ractice 45,000 Not calculated. Assumed no trip generation during PM, Pregame, & Postgam								stgame		
		TOTAL		22,483	875	1,405	2,280	585	915	1,500	155	250	405

^{*}The Pregame and Postgame peak hour trip generation is calculated as a function of the PM peak hour trip generation

<u>Table 2: Updated Proposed Development Trip Generation – October 2022</u>

Block	ITE	Davidana ant Tima	Size	Daily	PM	1 Peak H	our	Prega	me Peak	Hour			
DIOCK	Code	Development Type	Size	Trips	In	Out	Total	In	Out	Total			
1		NBA Arena		Not calcul	ated. Ass	sumed to	replace ti	rips gene	rated by	current			
		TVD/T THEHa					Arena.						
	220	Apartments	102 units	678	40	25	65	25	15	40			
2	220	Student Housing	62 units	412	25	15	40	15	10	25			
2	820	Retail	34,079 sq. ft.	1,455	60	65	125	45	50	95			
	710	Office	102,438 sq. ft.	1,130	25	130	155	15	80	95			
	310	Hotel	300 rooms	2,451	90	90	180	55	55	110			
3	820	Retail	30,000 sq. ft.	1,281	55	55	110	40	45	85			
	460	Arena (Music Venue)	4,800 seats	*	225	400	625	135	240	375			
4	820	Retail	51,000 sq. ft.	2,178	90	100	190	65	80	145			
	220	Apartments	215 units	1,430	90	45	135	55	25	80			
5	820	Retail	16,519 sq. ft.	705	30	30	60	20	25	45			
	710	Office	101,795 sq. ft.	1,123	25	125	150	15	75	90			
	220	Apartments	55 units	366	25	10	35	15	5	20			
6	710	Office	350,000 sq. ft.	3,861	90	430	520	55	255	310			
	310	Hotel	205 rooms	1,675	65	60	125	40	35	75			
	220	Apartments	112 units	745	45	25	70	25	15	40			
7	820	Retail	22,000 sq. ft.	939	40	40	80	30	30	60			
	710	Office	40,000 sq. ft.	441	10	50	60	5	30	35			
8		Dunation Engilit-	45 000 ag 6	Not calc	ulated. A	ssumed	no trip ge	neration	during P	M &			
		Practice Facility	45,000 sq. ft.		Prega	me peak	hours on	gameda	135 240 65 80 55 25 20 25 15 75 15 5 55 255 40 35 25 15 30 30 5 30 peration during PA gamedays.				
		TOTAL		20,870*	1,030	1,695	2,725	655	1,070	1,725			

^{*}Daily Trips do not include the Arena (Music Venue) in Block 3

<u>Table 3: Updated Proposed Development Trip Generation Changes – October 2022</u>

Block	ITE	Development Type	Size	Daily	PN	1 Peak Ho	our	Prega	ame Peak	Hour
DIOCK	Code	Development Type	Size	Trips	In	Out	Total	In	Out	Total
1		NBA Arena								
	220	Apartments	0	0	0	0	0	0	0	0
2	220	Student Housing	0	0	0	0	0	0	0	0
2	820	Retail	0	0	0	0	0	0	0	0
	710	Office	0	0	0	0	0	0	0	0
	310	Hotel	0	0	0	0	0	0	0	0
3	820	Retail	-59,805 sq. ft.	-2,554	-105	-120	-225	-80	-90	-170
	460	Arena (Music Venue)	+4,800 seats		+ 225	+ 400	+ 625	+ 135	+ 240	+ 375
4	820	Retail	-7,962 sq. ft.	-340	-15	-15	-30	-15	-10	-25
4	220	Apartments	-48 units	-319	-20	-10	-30	-10	-5	-15
	220	Apartments	0	0	0	0	0	0	0	0
5	820	Retail	0	0	0	0	0	0	0	0
	710	Office	0	0	0	0	0	0	0	0
	220	Apartments	0	0	0	0	0	0	0	0
	710	Office	0	0	0	0	0	0	0	0
6	820	Retail	-12,000 sq. ft.	-512	-20	-25	-45	-15	-20	-35
	310	Hotel	+205 rooms	+ 1675	+ 65	+ 60	+ 125	+ 40	+ 35	+ 75
	220	Apartments	+42 units	+ 279	+ 15	+ 10	+ 25	+ 5	+ 5	+ 10
7	820	Retail	+10,598 sq. ft.	+ 452	+ 20	+ 20	+ 40	+ 15	+ 15	+ 30
	710	Office	-36,621 sq. ft.	-404	-10	-45	-55	-5	-25	-30
0	710	Office	+10,000 sq. ft.	+ 110	+ 0	+ 15	+ 15	+ 0	+ 10	+ 10
8		Practice Facility	45,000 sq. ft.							
		TOTAL			+ 155	+ 290	+ 445	+ 70	+ 155	+ 225

The updated trip distribution and trip generation due to changes in Phase 2 and Phase 3 development were compared to the previous forecasts. Intersection turning movements with the largest volume increases from the previous study are shown in Table 4. Volumes are expected to increase on westbound McKinley Avenue, eastbound Juneau Avenue, westbound Highland Avenue, westbound State Street, and northbound and southbound 6th Street.

Table 4: Intersection Turning Movement Volume Increases

Intersection	Marramant	Ph	ase 2	Ph	ase 3
intersection	Movement	PM	Pregame	PM	Pregame
McKinley Avenue & Vel R. Phillips Avenue	WBT	+107	+70	+125	+80
McKinley Avenue & 3 rd Street	WBT	+79	+49	+92	+55
Juneau Avenue & Vel R. Phillips Avenue	EBT	+155	+94	+176	+105
Juneau Avenue & 3 rd Street	EBT	+99	+49	+114	+57
Highland Assense 9- III 42 CD name	WBL	+82	+10	+82	+10
Highland Avenue & IH 43 SB ramp	WBT	+82	+10	+97	+10
Highland Avenue & 6 th Street	WBT	+130	+0	+130	+0
	NBT	+26	+13	+96	+58
State Street & 6 th Street	WBR	+145	+90	+160	+90
	SBT	+42	+28	+142	+93
Kilbourn Avenue & 6 th Street	NBT	+19	+8	+68	+34
Kilbourii Avenue & o Street	SBT	+14	+5	+97	+51
Wells Street & 6 th Street	SBT	+12	+4	+83	+38

TRAFFIC ANALYSIS

This section presents the Future peak hour traffic operations analysis during Phases 2 and 3. All previously identified geometric and signal phasing/timing improvements recommended in the 2015 analysis and report remain beneficial for future traffic operations. Synchro software was used with 2010 HCM (Highway Capacity Manual) methods to assess the future peak hour intersections traffic operations.

GEOMETRIC IMPROVEMENTS IN PLACE

The following are previously recommended improvements that have been incorporated and exist in the field today.

McKinley Avenue & 6th Street

• The City of Milwaukee installed monotubes at McKinley Avenue and 6th Street

McKinley Avenue & 5th Street

• Stop sign at northbound approach

Juneau Avenue

- Juneau Avenue is reduced to a three-lane cross section between 6th Street and west of Old World 3rd Street
- Juneau Avenue is restriped to one lane in each direction east of Old World 3rd Street

Juneau Avenue & 6th Street

• Eastbound approach modified

Westbound approach modified

Juneau Avenue & 5th Street

• Stop sign at southbound approach

Juneau Avenue & Vel R. Phillips Avenue

- Southbound approach intersection lane geometry reduced to include a left turn bay with a right turn lane
- Northbound leg is closed

Juneau Avenue & Old World 3rd Street

• All four approaches include one left turn bay, one through lane, and one right turn only lane

Highland Avenue & Vel R. Phillips Avenue

- The northern leg is removed
- The western leg will not allow traffic
- Only two traffic movements are allowed at this intersection: westbound left and northbound right

Old World 3rd Street

• Restriped and reduced to one lane in each direction south of Juneau Avenue

RECOMMENDED IMPROVEMENTS

The following are the recommended intersection geometry and signal phasing improvements for the study area intersections. In addition to the improvements recommended in the 2015 traffic study, considerations are recommended at Juneau Avenue & Vel R. Phillips Avenue and Highland Avenue & 6th Street. These new considerations are highlighted in **bold text** on the following page.

McKinley Avenue & Vel R. Phillips Avenue – Phases 2 & 3

- Remove northbound left protected phasing due to reduced traffic demands resulting from closure of Vel R. Phillips Avenue south of Juneau Avenue
- Install eastbound left protected phasing
- Northbound approach intersection lane geometry reduced to include a left turn bay with a shared through/right turn lane
- Adjust traffic signal timings

McKinley Avenue & Old World 3rd Street - Phases 2 & 3

- Install westbound protected left turn phasing
- Adjust traffic signal timings

Juneau Avenue & 6th Street-Phases 2 & 3

• Install protected left turn signal phasing for eastbound and westbound left turn movements

• Adjust traffic signal timings

<u>Juneau Avenue & Vel R. Phillips Avenue – Phases 2 & 3</u>

• This intersection has been reconfigured with only one eastbound lane, a shared through/left turn lane, bike lanes, and valet parking lanes. Eastbound through vehicles queue behind left turning vehicles waiting for a gap at Vel R. Phillips Avenue. Pedestrian accommodations and safety should remain prioritized over vehicle operations at this location. Additionally, police officer control could be considered during the Pregame peak hour.

Highland Avenue & 6th Street-Phase 3

- Review the westbound approach geometry as the design of the parking structure on Block 2 is determined
- Depending on the design of the parking structure on Block 2, investigate the Northbound approach geometry of one left turn bay, one through lane, one shared through/right turn lane and one right turn bay. The second right turn lane is needed to facilitate Pregame operations.

 Additionally, investigate the feasibility of a mid-block entrance to parking facility along 6th Street. Alternatively, maintain one left turn bay, two through lanes and one right-turn bay with police officer traffic control to facilitate ability for one through lane to include right-turning vehicles along with the dedicated right turn lane.
- Adjust traffic signal timings

State Street & 6th Street - Phase 3

- Depending on the parking structure design on Block 2, remove northbound left turn protected phasing to facilitate Postgame operations, which require more green time for outgoing traffic.
- State Street is currently one-way westbound in the project study area. Two-way State Street operations would be expected to provide improved traffic access to better develop Block 2 and Block 3 for mixed-use development. Converting State Street to two-way should be examined further when the final design of the Block 2 parking structure is completed.
- Adjust signal timings

FUTURE OPERATIONAL ANALYSIS

The twenty study area intersections, plus three additional intersections along the 5th Street corridor at McKinley Avenue, Juneau Avenue and State Street, were analyzed under future Phase 2 and Phase 3 conditions with improved intersection geometry, signal phasing and timings. Improvements were recommended to improve LOS. Tables 5 to 12 present the future traffic operations analysis at the study area intersections, along with the 2015 existing traffic operations, and the previous analysis for Phases 1-3 for comparative reference.

Four intersection approaches (Northbound 6th Street at McKinley Avenue, Northbound Old World 3rd Street at McKinley Avenue, Eastbound McKinley Avenue at Old World 3rd Street and Westbound Juneau Avenue at 6th Street) are denoted by a thick black border to identify the approaches that are of particular interest to the City of Milwaukee. These four approaches are discussed more in detail on the following pages.

<u>Table 5: Future Intersection Peak Hour Traffic Operations – McKinley Avenue intersections</u>

T. (1)	m .cc		D 1				Level o	of Serv	ice per	Mover	nent b	y Appr	oach			
Intersection & Improvements	Traffic Control	Scenario	Peak Hour	Int.	Е	astbour	ıd	W	estbou	nd	No	orthbou	ınd	So	uthbou	nd
C improvements	Control		Hour	LOS	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
			PM	D	D	С	D	E	A	A	F	E	E	F	С	С
		2015 Existing	Pregame	D	D	С	F	F	С	С	Е	D	D	D	С	С
No are 1 and 2 of the		Laisting	Postgame	F	С	В	В	С	С	С	F	С	С	D	С	С
McKinley Ave & 6 th Street			PM	D	F	С	E	F	С	D	F	D	D	E	С	С
• City of		Phase 1	Pregame	D	D	D	F	F	В	В	Е	D	D	D	С	С
Milwaukee:			Postgame	F	D	В	В	С	С	С	F	С	D	С	С	С
monotubes installed	Traffic	Phase 2	PM	D	F	С	F	F	С	С	Е	Е	Е	D	D	D
Adjust timings	Signal	Filase 2	Pregame	D	С	С	F	F	A	A	E	D	D	D	С	С
• LOS issues		Phase 3	PM	E	F	D	F	F	С	С	E	E	E	E	D	D
identified without		T Hase 3	Pregame	D	С	С	F	F	A	A	F	D	D	D	С	С
Arena development		Phase 2	PM	D	F	D	F	F	С	D	D	D	D	D	D	D
development		update	Pregame	D	С	D	F	F	A	A	D	С	С	D	С	С
		Phase 3	PM	D	F	D	F	F	С	С	E	E	Е	E	D	D
		update	Pregame	D	С	С	F	F	A	A	F	D	D	D	С	С
			PM	С	F	В	С	E	D	D	В	A	A	С	С	С
		2015 Existing	Pregame	В	С	В	С	E	A	A	В	A	A	С	С	С
		Laisting	Postgame	В	В	В	В	A	A	A	С	A	A	С	С	С
McKinley Ave & Vel R. Phillips Avenue			PM	С	D	A	A	С	D	D	В	В	В	С	С	С
Remove NBLT		Phase 1	Pregame	В	С	A	A	С	D	D	В	В	В	С	С	С
protected phasing			Postgame	С	С	С	С	В	С	С	С	В	В	В	В	В
Add EBLT	Traffic	ni a	PM	В	С	A	A	A	В	В	В	В	В	С	С	С
protected phasing • Reduce NB	Signal	Phase 2	Pregame	A	В	A	A	A	A	A	D	С	С	С	С	С
approach to LT		nl a	PM	С	D	A	A	С	D	D	D	С	С	С	С	D
bay and shared		Phase 3	Pregame	С	D	A	A	С	D	D	D	D	С	С	С	С
TH/RT lane • Adjust timings		Phase 2	PM	С	D	A	A	С	D	D	D	С	С	С	С	С
- Trajust tillings		update	Pregame	С	D	A	A	С	D	D	D	С	С	С	С	С
		Phase 3	PM	С	Е	A	A	С	E	E	E	D	D	С	С	D
		update	Pregame	С	С	A	A	С	E	E	D	С	С	С	С	С

Northbound 6th Street approach at McKinley Avenue

City of Milwaukee approach of interest

As shown in Table 5, the northbound 6th Street approach was previously projected to operate at LOS E/F in Phase 2 and 3. The updated forecasts project LOS D in Phase 2, likely because of the delay in Block 2 development. Phase 3 shows LOS E/F for the northbound left turn movement.

Table 6: Future Intersection Peak Hour Traffic Operations - McKinley Avenue intersections

Level of Service per Movement by Approach Traffic Intersection Peak Eastbound Westbound Northbound Southbound Scenario Int. & Improvements Control Hour LOS LT TH RT LT TH LT TH RT LT TH RT RT C C C С C D Ε Α Α В Α Α D PM 2015 В В A A C В В В A Α C D D Pregame Existing В Α Α A В В В В Α Α C C C Postgame D C D C C D C C Α C D D PM Α C C C D В C C Phase 1 Pregame D C Α A D D C C C С C C В В В В В A A Postgame McKinley Ave & Old World 3rd Street С С D D C C D C D C C D E PM Traffic Add WBLT Phase 2 D C D C D C В C C С C D D Signal Pregame protected phasing D D D В C C В D В В C PM F F • Adjust timings Phase 3 D C D C D C C C A A C D D Pregame D D D C C D C C Α C D D PM Phase 2 update D C D C C В C A C D D Pregame D Α PM Ε D D В C D В D В В D F F Phase 3 update D C D C D C В D Α A C D D Pregame

McKinley Avenue & Old World 3rd Street: Eastbound & Northbound approaches

City of Milwaukee approaches of interest

Additional WBT volumes expected

The eastbound McKinley Avenue movements were previously projected to operate at LOS D or better in Phase 2 and 3. The updated projections also show LOS D or better.

The northbound turning movements continues to operate at LOS D or better, similar to the previous forecasts.

In order to meet the future traffic needs of the westbound left-turn movement at this intersection, it is recommended that protected left-turn phasing be installed for the eastbound approach.

<u>Table 7: Future Intersection Peak Hour Traffic Operations – IH 43 intersections</u>

	·		- 1				Level o	of Serv	ice per	Mover	nent b	y Appr	oach			
Intersection	Traffic Control	Scenario	Peak Hour	Int.	Е	astbour	ıd	W	estbou	nd	No	rthbou	nd	So	uthbou	nd
	Control		11001	LOS	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
		201-	PM	В	-	В	В	В	В	-	-	-	-	В	С	С
		2015 Existing	Pregame	В	-	В	В	В	В	-	-	-	-	В	С	С
		Laisting	Postgame	В	-	В	В	В	В	-	1	1	-	В	В	С
			PM	В	-	В	В	В	В	-	-	-	-	С	С	С
		Phase 1	Pregame	С	-	В	В	С	В	-	-	-	-	В	D	D
Highland Ave &			Postgame	С	-	В	В	В	В	-	-	-	-	В	С	С
IH 43 SB ramp/	Traffic	Phase 2	PM	В	-	В	В	В	В	-	-	-	-	С	С	С
SB frontage road • Adjust	Signal	Phase 2	Pregame	D	-	В	В	С	В	-	1	1	-	В	D	D
timings		Dl 2	PM	С	-	В	В	В	В	-	-	-	-	С	С	С
		Phase 3	Pregame	D	-	В	В	С	В	-	-	-	-	В	D	D
		Phase 2	PM	С	-	В	В	С	В	-	-	-	-	С	С	С
		update	Pregame	С	-	В	В	С	В	-	-	1	-	В	С	С
		Phase 3	PM	С	-	В	В	С	В	-	-	-	-	С	С	С
		update	Pregame	С	-	В	В	С	В	-	-	-	-	В	D	D

<u>Table 8: Future Intersection Peak Hour Traffic Operations – Juneau Avenue intersections</u>

	- ·						Level o	of Serv	ice per l	Mover	nent b	y Appr	oach			
Intersection & Improvements	Traffic Control	Scenario	Peak Hour	Int.	E	astbour	ıd	W	estbou	nd	No	rthbou	nd	So	uthbou	nd
& improvements	Control		11001	LOS	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
			PM	С	D	С	A	С	С	С	D	С	С	F	В	В
		2015 Existing	Pregame	В	С	С	Α	С	С	С	С	В	В	С	В	В
Y		Laisting	Postgame	С	E	С	A	С	С	D	В	В	В	С	В	A
Juneau Ave & 6 th Street			PM	D	D	С	A	D	С	С	D	С	С	F	В	В
• EB and WB		Phase 1	Pregame	С	С	С	A	D	С	С	С	В	С	D	В	В
approaches			Postgame	F	С	В	A	D	С	F	С	С	С	С	В	В
include 1 LT bay, 1 TH lane, 1 RT	Traffic	Phase 2	PM	D	D	С	A	D	D	С	D	D	С	F	В	В
lane	Signal	1 Hase 2	Pregame	С	С	D	A	D	D	D	С	С	С	E	В	В
• Add EBLT &		Phase 3	PM	D	D	С	A	D	D	С	D	В	В	F	В	В
WBLT protected		T Hase 3	Pregame	С	С	D	A	D	D	D	С	С	С	D	В	В
phasing Adjust timings		Phase 2	PM	D	D	С	С	С	D	D	D	D	С	F	В	В
- riajust tillings		update	Pregame	С	D	С	С	D	С	С	С	В	С	E	В	В
		Phase 3	PM	D	D	С	С	С	С	В	D	С	В	F	С	В
		update	Pregame	С	С	С	С	D	D	D	D	С	С	E	В	В
			PM	В	С	В	В	С	В	В	A	A	A	В	В	В
		2015 Existing	Pregame	В	В	С	С	В	A	A	A	A	A	В	В	В
		Laisting	Postgame	В	С	В	В	A	A	A	A	A	A	В	В	В
Juneau Ave & Vel R. Phillips Avenue*			PM	С	D	D	-	-	С	В	-	-	-	С	-	С
• SB approach		Phase 1	Pregame	С	D	D	-	-	С	В	-	-	-	С	-	D
reduced to LT bay			Postgame	С	D	D	-	-	В	В	-	1	-	В	-	В
and RT lane	Traffic	Phase 2	PM	С	D	D	-	-	С	В	-	-	-	С	-	С
EB approach reduced to 1	Signal	Pilase 2	Pregame	С	С	С	-	-	В	В	-	-	-	С	-	С
shared lane		Phase 3	PM	С	D	D	-	-	В	A	-	-	-	E	-	E
Adjust timings to		F 11a8C 3	Pregame	D	F	D	-	-	В	В	-	-	-	С	-	D
maximize EB/WB green time		Phase 2	PM	С	С	С	-	-	С	В	-	-	-	D	-	D
g. vo		update	Pregame	F	F	F	-	-	A	A	-	-	-	С	-	С
		Phase 3	PM	F	F	F	-	-	С	В	-	-	-	D	-	D
		update	Pregame	Е	F	F	-	-	В	В	-	-	-	С	-	С

Westbound Juneau Avenue approach at 6th Street

City of Milwaukee approach of interest

Juneau Avenue has been reconfigured, and the approaches at 6th Street include one left turn bay, one through lane, and one right turn lane. Westbound operations are expected to operate at LOS D or better during the Phase 2 and Phase 3 PM and Pregame hours.

Eastbound Juneau Avenue approach at Vel R. Phillips Avenue

Additional EBT volumes expected

This intersection has been reconfigured with only one eastbound lane, a shared through/left turn lane, bike lanes, and valet parking lanes. Eastbound through vehicles queue behind left turning vehicles waiting for a gap at Vel R. Phillips Avenue. The eastbound left and eastbound through movements operate at LOS F during the Phase 2 and Phase 3 Pregame hours, and the Phase 3 PM peak hour. Split phasing eastbound/westbound was explored, and this reduces both the eastbound and westbound approaches to LOS F in the Phase 2 and Phase 3 Pregame hours. Pedestrian accommodations and safety should remain prioritized over vehicle operations at this location. Additionally, police officer control could be considered during the Pregame peak hour.

<u>Table 9: Future Intersection Peak Hour Traffic Operations – Juneau Avenue intersections</u>

			n 1				Level o	of Serv	ice per	Mover	nent b	y Appro	oach			
Intersection & Improvements	Traffic Control	Scenario	Peak Hour	Int.	E	astbour	ıd	W	estbou	nd	No	orthbou	nd	So	uthbou	nd
& improvements	Control		11001	LOS	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
			PM	С	D	С	С	D	С	С	A	A	A	В	В	В
		2015 Existing	Pregame	С	D	С	D	D	С	С	С	С	С	С	В	В
Juneau Ave & Old		Laisting	Postgame	С	D	С	С	D	С	С	D	D	С	С	В	В
World 3 rd Street			PM	С	Е	С	С	D	С	С	D	С	В	С	С	С
• Change WB approach to 1 LT,		Phase 1	Pregame	С	D	С	С	D	С	С	D	D	D	D	С	С
* *			Postgame	С	D	С	С	С	С	С	D	С	С	С	В	В
1 TH, 1 RT lane	Traffic	Phase 2	PM	С	E	С	С	D	D	С	D	D	С	С	С	С
reduced to 1 lane	Signal	Phase 2	Pregame	С	D	С	С	D	С	С	D	D	С	D	С	С
east of		DI 2	PM	D	D	С	С	D	D	С	F	A	С	D	D	D
intersection • Add EBLT		Phase 3	Pregame	С	D	С	С	D	С	С	E	A	D	D	С	С
• Add EBLT protected phasing		Phase 2	PM	С	E	D	С	E	D	С	E	В	A	С	D	С
Adjust timings		update	Pregame	С	D	С	С	D	С	С	D	С	С	С	D	С
		Phase 3	PM	E	D	D	С	E	Е	С	F	С	В	D	F	С
		update	Pregame	С	D	С	С	D	С	С	E	С	С	С	D	С

Table 10: Future Intersection Peak Hour Traffic Operations - Highland Avenue intersections

	·		- 1				Level o	of Serv	ice per	Mover	nent b	y Appro	oach			
Intersection	Traffic Control	Scenario	Peak Hour	Int.	E	astbour	nd	W	estbou	nd	No	rthbou	nd	So	uthbou	nd
& Improvements	Control		Houi	LOS	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
			PM	D	F	F	С	Е	Е	A	С	В	В	Е	D	С
TT: 11 1 A O oth		2015 Existing	Pregame	D	F	F	С	F	F	A	В	A	A	D	С	С
Highland Ave & 6 th Street*		Existing	Postgame	С	С	С	В	Е	Е	A	В	A	A	С	С	С
NB approach			PM	С	С	С	С	С	С	В	D	С	С	A	D	D
includes LT bay,		Phase 1	Pregame	С	D	С	С	D	С	В	С	A	С	С	D	D
TH lane, TH/RT lane & RT bay			Postgame	В	С	С	С	A	С	С	В	A	A	С	С	D
WB approach	Traffic	DI 2	PM	С	С	С	С	D	С	В	D	В	В	D	D	D
includes LT bay,	Signal	Phase 2	Pregame	С	D	С	С	F	В	В	С	A	D	D	D	D
& TH/RT lane		DI 2	PM	С	D	С	С	D	С	В	D	В	С	D	D	С
(Phase 3) • Adjust timings		Phase 3	Pregame	С	С	С	С	F	В	В	С	A	В	D	D	D
• LOS issues		Phase 2	PM	D	D	D	С	Е	С	В	E	В	С	A	D	D
identified without Arena		update	Pregame	D	С	С	С	F	В	В	С	A	С	С	С	С
Arena development		Phase 3	PM	D	E	D	С	F	D	С	E	В	В	A	D	С
r		update	Pregame	С	С	С	С	F	Е	В	D	A	В	D	D	D

^{*}The Block 2 parking structure still needs to be designed. This Highland Avenue & 6th Street analysis assumes one-way westbound State Street and access off Highland Avenue and 5th Street.

Northbound Highland Avenue approach at 6th Street

Additional WBT volumes expected

Table 10 shows results with a second northbound right turn lane. Without the second northbound right turn lane at the Highland Avenue intersection with 6th Street, a single northbound right is expected to operate at LOS F during the Phase 2 and Phase 3 Pregame hours.

<u>Table 11: Future Intersection Peak Hour Traffic Operations – State Street intersections</u>

			- 1				Level o	of Serv	ice per	Mover	nent b	y Appro	oach			
Intersection & Improvements	Traffic Control	Scenario	Peak Hour	Int.	Е	astbour	ıd	W	estbou:	nd	No	rthbou	nd	So	uthbou	nd
& improvements	Control		11001	LOS	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
			PM	С	D	-	С	В	В	В	С	В	-	-	С	С
		2015 Existing	Pregame	С	D	-	С	С	В	С	В	В	-	-	С	С
		Laisting	Postgame	В	С	-	С	С	В	В	В	В	-	-	С	С
			PM	С	D	-	С	В	В	В	С	С	-	-	D	С
State Street & 6 th		Phase 1	Pregame	С	D	-	С	В	A	В	С	В	-	-	С	С
Street*			Postgame	С	A	-	A	С	A	A	D	С	-	-	С	С
Remove NBLT	Traffic	DI 2	PM	С	E	-	С	В	A	A	D	С	-	-	D	С
protected phasing during	Signal	Phase 2	Pregame	С	D	-	С	В	A	В	С	В	-	-	С	D
Postgame		DI 2	PM	С	E	-	С	С	В	В	D	С	-	-	D	С
Adjust timings		Phase 3	Pregame	С	D	-	С	В	A	В	С	В	-	1	С	D
		Phase 2	PM	С	D	-	С	В	A	В	E	С	-	-	D	С
		update	Pregame	С	D	-	С	В	A	В	С	В	-	-	С	С
		Phase 3	PM	D	Е	-	С	В	В	С	D	С	-	-	F	С
		update	Pregame	С	D	-	С	В	A	В	С	С	-	-	D	С

^{*}The Block 2 parking structure still needs to be designed. This State Street & 6th Street analysis assumes one-way westbound State Street and access off Highland Avenue and 5th Street.

<u>Table 12: Future Intersection Peak Hour Traffic Operations – Kilbourn Ave & Wells Street intersections</u>

							Level o	of Serv	ice per	Mover	nent b	y App	roach			
Intersection	Traffic	Scenario	Peak	Int.	E	astbour	ıd	W	estbou	nd	No	orthbo	und	So	uthbou	nd
microcodon	Control	300114110	Hour	LOS	LT	TH	RT	LT	TH	RT	LT	T H	RT	LT	TH	RT
			PM	D	С	С	A	D	С	D	D	D	С	D	D	A
		Existing	Pregame	С	D	С	A	С	С	D	В	С	С	С	С	A
			Postgame	С	С	С	A	С	D	D	С	С	С	В	D	A
			PM	D	С	С	A	D	С	D	D	D	С	D	D	A
		Phase 1	Pregame	D	D	С	A	D	D	D	С	С	С	D	С	A
Kilbourn Ave			Postgame	С	С	С	A	С	С	D	С	С	С	С	В	A
& 6 th Street	Traffic	Phase 2	PM	D	D	D	A	D	D	E	D	D	С	D	D	A
• Adjust	Signal	1 11430 2	Pregame	D	E	С	A	D	D	D	С	D	С	D	С	A
timings		Phase 3	PM	D	D	D	A	E	D	F	D	D	С	D	D	A
		T Hase 3	Pregame	D	D	С	A	С	D	D	С	D	С	D	С	A
		Phase 2	PM	D	D	D	A	D	D	Е	D	D	С	D	D	A
		update	Pregame	D	Е	С	A	D	D	Е	С	D	С	D	С	A
		Phase 3	PM	E	D	D	A	E	D	F	E	D	С	Е	F*	A
		update	Pregame	D	D	С	A	С	С	D	С	D	С	D	С	A
			PM	С	Е	В	В	С	С	D	С	С	В	Е	С	С
		Existing	Pregame	С	С	В	В	С	С	С	С	С	С	D	В	В
			Postgame	С	С	В	В	С	С	С	В	В	В	В	В	В
			PM	С	E	В	В	С	С	D	С	С	В	Е	С	С
		Phase 1	Pregame	С	С	В	В	С	С	С	С	D	С	D	В	В
Wells Street &			Postgame	С	С	В	В	С	С	D	В	В	В	В	В	С
6 th Street	Traffic	nl a	PM	С	E	В	В	С	D	D	С	С	В	F	С	С
• Adjust	Signal	Phase 2	Pregame	С	С	В	В	С	С	С	В	С	В	D	В	В
timings		DI a	PM	С	E	В	В	D	D	E	С	С	В	F	С	С
		Phase 3	Pregame	С	С	В	В	С	С	С	С	D	С	D	В	В
		Phase 2	PM	С	Е	В	В	D	D	Е	С	С	В	F	С	С
		update	Pregame	С	С	В	В	С	С	С	В	С	В	D	В	В
		Phase 3	PM	D	E	В	В	С	D	D	С	С	В	F	С	С
		update	Pregame	С	С	В	В	С	С	С	С	D	С	D	В	В

V/C > 1.0

Table 13 provides the LOS changes predicted due to the updated trip distribution and trip generation for Phase 2 and Phase 3, for the movements with the highest volume increases.

Table 13: Intersection Turning Movement LOS Changes due to Development Updates

T.,4	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Ph	ase 2	Ph	ase 3
Intersection	Movement	PM	Pregame	PM	Pregame
M-W:1 A 9- W-1 D DI:11: A	JAZD'T	+107	+70	+125	+80
McKinley Avenue & Vel R. Phillips Avenue	WBT	B→D	A→D	D→E	D → E
MaVinlay Avanua 9, 2rd Ctmat	MDT	+79	+49	+92	+55
McKinley Avenue & 3 rd Street	WBT	D → D	C→C	C→D	C→C
Juneau Avenue & Vel R. Phillips Avenue	EBT	+155	+94	+176	+105
Juneau Avenue & ver R. Pinnips Avenue	EDI	D → C	C→F	D→F	D→F
Juneau Avenue & 3 rd Street	EBT	+99	+49	+114	+57
Julieau Avenue & 3 ⁻⁴ Street	EDI	C → D	C→C	C → D	C→C
	WBL	+82	+10	+82	+10
 Highland Avenue & IH 43 SB ramp	WBL	B→C	C→C	B→C	C→C
Inginana Avenue & 111 43 3B famp	WBT	+82	+10	+97	+10
	WDI	В→В	В→В	В→В	В→В
Highland Avenue & 6 th Street	WBT	+130	+0	+130	+0
Highland Avenue & 6 Street	WDI	C→C	В→В	C→C	В→В
	NBT	+26	+13	+96	+58
	NDI	C→C	В→В	C→C	B→C
State Street & 6th Street	WBR	+145	+90	+160	+90
State Street & 6° Street	WDK	A→B	В→В	B→C	В→В
	SBT	+42	+28	+142	+93
	351	D → D	C→C	D→F	C → D
	NBT	+19	+8	+68	+34
Kilbourn Avenue & 6 th Street	NDI	D → D	D → D	D → D	D → D
Killourii Avenue & 0 Street	SBT	+14	+5	+97	+51
	SDI	D → D	C→C	D→F*	C→C
Wells Street & 6 th Street	SBT	+12	+4	+83	+38
TYCHO SHEET & U. SHEET	301	C→C	В→В	C→C	В→В

V/C > 1.0

Typically, movements are reduced by one letter grade due to the increased traffic volumes. The Juneau Avenue eastbound through movement at Vel R. Phillips Avenue is reduced to LOS F in Phase 2 and Phase 3. The increase in volume, limited geometry, and competing turning movements at this location cause the movement to fail.

The 6th Street southbound through movement at State Street is reduced to LOS F in the Phase 3 PM peak hour. The competing eastbound and westbound volumes require long green times, specifically for the eastbound left turning movement.

The 6^{th} Street southbound through movement at Kilbourn Avenue is reduced to LOS F (67.0 seconds of delay and volume/capacity ratio >1.0) in the Phase 3 PM peak hour. The competing westbound approach is at LOS E, with the westbound left operating at LOS E and the westbound right operating at LOS F.

PEDESTRIAN ACCOMODATIONS

The proposed music venue in Block 3 is expected to generate 625 vehicle trips in the PM peak hour and 375 vehicle trips in the Pregame peak hour. The music venue will not have on-site parking and trips are distributed to the parking structures in Block 7 and Block 2.

Increased pedestrian trips are expected from these locations to Block 3. From the new structure in Block 7, pedestrians can utilize 6th Street, 5th Street, and 3rd Street to reach the music venue. Additionally, the skywalk between the parking structure and the Fiserv Forum Arena could be used. From the Block 2 parking structure, pedestrians will utilize Highland Avenue or State Street to reach the music venue. All identified crossings currently have ADA compliant pedestrian cross walks.

CONCLUSIONS AND RECOMMENDATIONS

Increased traffic demands due to changes in the proposed development have minor impacts on the study area intersections. Westbound McKinley at Vel R. Phillips Avenue is expected to be reduced to LOS E due to increased traffic volumes. Eastbound Juneau is expected to be reduced to LOS F, and southbound 6th Street at State Street and Kilbourn Avenue is expected to be reduced to LOS F.

No changes were made to the background traffic volumes or growth rates applied in 2015. That analysis applied an assumed 0.5% annual growth of background traffic traveling through the study area from Year 2015 to the proposed construction years for Phase 2 (2022) and Phase 3 (2027).

RECOMMENDATIONS

The previously recommended intersection geometry improvements, signal phasing improvements, signal timings improvements, and additional services (police officer traffic control) remain beneficial with the new trip generation volumes. In addition to the improvements recommended in the 2015 traffic study, new considerations are recommended at Juneau Avenue & Vel R. Phillips Avenue and Highland Avenue & 6th Street. These intersections have both heavier traffic volumes and nearby parking structures, which contribute to projected level of service issues.

• The Juneau Avenue and Vel R. Phillips Avenue intersection has been reconstructed with a shared eastbound through/left turn lane. With this geometry the eastbound approach will operate at LOS F during the Phase 2 and Phase 3 Pregame hours, and the Phase 3 PM peak hour. Split phasing

eastbound/westbound was explored, and this reduces both the eastbound and westbound approaches to LOS F in the Phase 2 and Phase 3 Pregame hours. Pedestrian accommodations and safety should remain prioritized over vehicle operations at this location. Additionally, police officer control could be considered during the Pregame peak hour.

• The Highland Avenue and 6th Street intersection is projected to be directly affected by the operation of the proposed parking structure in its southeast quadrant. The design of the Block 2 parking structure has not been finalized yet. Currently, the main entrance is assumed to be along 5th Street. In addition to investigating a second northbound right turn lane, the westbound approach should be considered. This analysis assumes the westbound approach is reconfigured with a left turn lane and a shared through/right turn lane.

Appendix

LEVEL OF SERVICE RESULTS
2010 HIGHWAY CAPACITY MANUAL METHOD
FUTURE PHASE 2 & PHASE 3

		Traffic	Peak					Level	of Servi	ce per M	lovemer	nt by Ap	proach						Traffic	Peak					L	evel of S	ervice p	er Mov	ement by	Approach			
Intersection	Scenario	Control	Hour		I	Castbou	nd	V	Vestbour	nd	N	orthbou	ınd	S	outhbou	ınd	Intersectio	Scenario	Control	Hour			Eastbou	nd	W	estbound			Northbo	und		Southbound	
		Control	Hour		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			Control	Hour		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
				Lanes	-	2	1	2	2	-	-	-	-	2	<1	1					Lanes	1	3	-	-	4	1	1	<1	-	-	-	-
43		р		Volume	-	519	494	713	965	-	-	-	-	313	83	39	3		p		Volume	46	787	-	-	1246	569	432	66		-	-	
4	Π	9	PM	PHF	0.81	0.95	0.89	0.88	0.9	0.81	-	-	-	0.64	0.78	0.73	4		ize	PM	PHF	0.75	0.84	0.81	0.81	0.9	0.85	0.96	0.88	0.89	-	-	-
i i	o	.[2]	r ivi	Delay	-	40.2	0	18.3	0.9	-	-	-	-	31.4	30.6	0	_	O	1:2	rivi	Delay	6.8	0.2	-	-	11.9	0	46.2	46.2		-	-	-
$\mathbf{\alpha}$	13	al		LOS	-	D	A	В	A	-	-	-	-	С	C	A	\mathbf{a}	as	ਂ ਲ		LOS	A	A	-	-	В	A	D	D		-	-	-
S	h	gus		Volume	-	457	387	609	405	-	-	-	-	678	12	67	Z	Phi Phi	gus		Volume	43	1091	-	-	798	336	216	10	-	-	-	-
જ જ	Ь	Sig	Pre	PHF	0.81	0.72	0.92	0.89	0.84	0.81	-	-	-	0.84	0.55	0.88	00	Ь	Sig	Pre	PHF	0.94	0.83	0.81	0.81	0.91	0.76	0.87	0.56	0.92	-	-	-
		<i>O</i> 1	Game	Delay	-	30.3	0	36.4	0.4	-	-	-	-	32.6	16.3	0	3 Sa		<i>O</i> 2	Game	Delay	5.7	0.3	-	-	10.4	0	35	35	-	-	-	-
ac				LOS	-	С	A	D	A	-	-	-	-	C	В	A	2 E				LOS	A	Α	-	-	В	A	C	С	-	-	-	-
				Lanes	-	2	11	2	2	-	-	-	-	2	<1	1	್ಷಿಡ				Lanes	1	3	-	-	4	1	1	<1	-	-	-	-
	I	ed		Volume	-	564	506	795	1078	-	-	-	-	340	85	40			ized		Volume	47	858	-	-	1430	654	443	68		-	-	-
		Ze	PM	PHF	0.81	0.95	0.89	0.88	0.9	0.81	-	-	-	0.64	0.78	0.73	= 1		26	PM	PHF	0.75		0.81	0.81	0.9	0.85	0.96	0.88	0.89	-	-	-
	(1)	:=		Delay	-	45.4	0	20.2	1.1	-	-	-	-	32.1	31.1	0		o			Delay	7.5	0.2	-	-	12.2	0	47.5	47.5		-	-	-
p	S	13		LOS	-	D	A	C	A	-	-	-	-	C	С	A	7	as	12		LOS	A	A	-	-	В	A	D	D	-	-	-	-
Ē	ps	gna]		Volume	-	455	397	682	453	-	-	-	-	675	13	69	<u> </u>	ha	Signa		Volume	45		-	-	913	385	222	11		-	-	-
F0.	P	Sig	Pre	PHF	0.81	0.72	0.92	0.89	0.84	0.81	-	-	-	0.84	0.55	0.88	و,		:53	Pre	PHF	0.94	0.83	0.81	0.81	0.91	0.76	0.87	0.56	0.92	-	-	-
_		01	Game	Delay	-	30.2	0	47.6	0.4	-	-	-	-	32.6	16.3	0	=		01	Game	Delay	5.9	0.3	-	-	10.7	0	35.2	35.2	-	-	-	-
				LOS	-	С	A	D	A	-	-	-	-	C	В	A					LOS	A	A	-	-	В	A	D	D	-	-	-	-

		70 ee	n .					Level	of Servi	ce per M	ovemer	t by Ap	proach			
Intersection	Scenario	Traffic	Peak Hour		E	astboun	d	W	Vestbour	ıd	N	orthbou	nd	Se	uthbou	nd
		Control	nour		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
				Lanes	-	2>	0	1	2	-	-	-	-	1	2>	0
ده				Volume	-	549	52	126	478	-	-	-	-	119	553	180
ρ'n		ĕ	PM	PHF	0.81	0.88	0.77	0.75	0.72	0.81	0.81	0.81	0.81	0.71	0.94	0.82
ta ta		12.	r ivi	Delay	-	14.8	14.8	25.9	14	-	-	-	-	20.6	28.2	28.5
Ē	šč	[a]		LOS		В	В	C	В	-	-	-	-	C	C	C
Frontage	Phase	Signalized		Volume	-	462	43	60	157	-	-	-	-	133	553	180
<u> </u>	Д	.515	Pre	PHF	0.81	0.79	0.71	0.7	0.8	0.81	0.81	0.81	0.81	0.73	0.57	0.55
\mathbf{x}		0,1	Game	Delay	-	19.7	19.7	26.6	15.8	-	-	-	-	16	32.1	33.1
SB				LOS		В	В	С	В	-		-	-	В	C	C
ઝ				Lanes	-	2>	0	1	2	-	-	-	-	1	2>	0
		-		Volume	-	571	53	127	503	-	-	-	-	121	567	185
2	Ħ	ğ	PM	PHF	0.81	0.88	0.77	0.75	0.72	0.81	0.81	0.81	0.81	0.71	0.94	0.82
ਫ਼		Į.	r ivi	Delay	-	15	15	26.9	14.3	-	-	-	-	20.6	28.8	29
=	S	<u>_</u>		LOS		В	В	C	В	-	-	-	-	C	C	C
Highland	Phase	Signalized		Peds	-	-	14	-	-	27	-	-	0	-	-	3
	Ξ	:22	Pre	PHF	0.81	0.79	0.71	0.7	0.8	0.81	0.81	0.81	0.81	0.73	0.57	0.55
		0,1	Game	Delay	-	17.3	17.3	23.4	14	-	-	-	-	18	44.4	46.6
				LOS	-	В	В	C	В	-	-	-	-	В	D	D

								Υ		M	· · · · · · · · · · · · · · · · · · ·	h 4														Il -6.C	M	f	. A				
Intersection	Scenario	Traffic	Peak			Eastboun	d		Vestbound		lovement	oy Appro Northbour		Sor	thbound		Intersection	Scenario	Traffic	Peak			Eastbound			Level of Serv Westbound	ice per iv		orthbound			Southbound	
		Control	Hour		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH			~~~~~	Control	Hour		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
.53				Lanes	1	3	1	1	3>	0	2	2>	0	1	2>	1					Lanes	1	3>	0	1	2>	0	1	1>	0	0	<1	1
જ		eq		Volume	103	1576	497	90	1235	100	379	755	158	135	737	202			eq		Volume	162	1358	165	21	1325	65	45	135	37	21	48	134
<u>~</u>		e e	PM	PHF	0.89	0.89	0.8	0.77	0.86	0.83	0.79	0.88	0.8	0.62	0.95	0.84			- S	PM	PHF	0.83	0.89	0.74	0.71	0.85	0.74	0.83	0.79	0.79	0.71	0.84	0.85
=	O	:=	1 141	Delay	146.2	39.9	95.6	286.9	32.6	37.4	54.5	48.3	48.7	51.2	37.7	35.3	\simeq	o	:2	1 141	Delay	47.4	1.1	2.1	24.2	51.6	52.8	37.1	32.7	32.7	28.4	28.4	32.4
.≣ .	Phase	gnalize		LOS	F	D	F	F	C	D	D	D	D	D	D	D	el	Phase	gnalize		LOS	D	A	A	С	D	D	D	С	C	C	С	C
\simeq	Ë	뒀		Volume	125	2025	688	88	812	55	202	415	162	118	336	119) /	Ę	50		Volume	208	1256	298	31	972	68	138	131	65	36	35	102
ျှ	Д	Sign	Pre	PHF	0.85	0.95	0.89	0.75	0.92	0.76	0.86	0.87	0.79	0.75	0.77	0.76	- S	Д	Si	Pre	PHF	0.9	0.93	0.92	0.82	0.9	0.78	0.76	0.81	0.85	0.7	0.58	0.74
$\mathbf{\Sigma}$		01	Game	Delay LOS	28.8 C	38	116.4	282.7	5.1	5.9 A	51.1 D	33.7 C	34.8 C	43.3 D	29.2 C	30.7 C	& ip		01	Game	Delay LOS	49.9	1.8	4.3	29.6 C	44.9	45.5	53.8 D	27.1 C	27.1 C	26.9 C	26.9 C	26.3 C
Lac/McKinley 6th					Ċ	D	F	F	A	A 0	D	2:	C	D	2>	Ċ	nley & ' Phillips					D	A 3>	A 0		D 25	D	D	1>	C	C	<1	
وق				Lanes Volume	105	1737	524	95	1467	119	410	819	170	145	780	207	Kinley Phill		_		Volume Volume	176	1590	209	21	1472	72	107	169	48	21	59	141
_		рэ		PHF	0.89	0.89	0.8	0.77	0.86	0.83	0.79	0.88	0.8	0.62	0.95	0.84	n P		g		PHF	0.83	0.89	0.74	0.71	0.85	0.74	0.83	0.79	0.79	0.71	0.84	0.85
=	\exists	Ž.	PM	Delay	168.3	44.7	91.1	324	21	28.7	66.4	59.8	60.8	71.9	46	38.9	ij		.Ž	PM	Delay	73.3	1.4	2.8	25	59.8	63.3	71.2	40.8	40.8	32.3	32.3	36.2
Du	Phase	gnaliz		LOS	F	D	F.	F	C	C	E.	E.	E.	E	D	D	C.F.	Phase	ignaliz		LOS	75.5 E.	Δ	A.	C C	F.	E.	F.	D	D	C	S2.5	D
-	ğ	Ĕ		Volume	128	1983	714	90	954	65	221	455	137	116	331	122	¥	ğ	Ĕ		Volume	218	1413	330	32	1063	75	74	154	72	37	36	100
ond	Ž.	.ಮ	Pre	PHF	0.85	0.95	0.89	0.75	0.92	0.76	0.86	0.87	0.79	0.75	0.77	0.76	~	- 2	.월	Pre	PHF	0.9	0.93	0.92	0.82	0.9	0.78	0.76	0.81	0.85	0.7	0.58	0.74
٥		\mathbf{S}	Game	Delay	30.1	29.3	108.2	261.9	3.9	4.9	94.2	47.3	48.6	41	29.2	30.9			Si.	Game	Delay	31.9	1.9	4.7	32.1	55.2	57.1	53.2	33.3	33.3	33.5	33.5	30.1
<u> </u>				LOS	C	C	F	F	A	A	F	D	D	D	C	C					Los	С	A	A	С	E	E	D	С	С	C	C	C
		Traffic	Peak								lovement	by Appro	oach						Traffic	Peak						Level of Serv	ice per M						
Intersection	Scenario	Control	Peak Hour			Eastboun			Vestbound			Northbour			ithbound		Intersection	Scenario	Control	Hour			Eastbound			Westbound			orthbound			Southbound	
		Control	Houl		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			Control	Houl		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
				Lanes	1	1	1	1	1	1	1	2	1	1	2	1					Lanes	0	<1	-	-	1	1		-	-	1		1
				Volume	151	216	74	171	350	136	58	970	259	164	1006	152	Ø				Volume	71	705	-	-	580	147		-	-	121	-	115
	\Box	eq	PM	PHF	0.92	0.85	0.83	0.84	0.8	0.7	0.83	0.79	0.87	0.72	0.97	0.8			eq	PM	PHF	0.75	0.9	1	1	0.85	0.72	-	-	-	0.58	1	0.84
	7	.2	r ivi	Delay	48.7	32.3	27.5	30.7	52.7	37.6	48.9	35.6	29.3	428.1	19.2	15.2	Ξ		.27	FIVI	Delay	28.3	28.3	-	-	22	13.9		-	-	52.5	-	43.3
	Phase	ignaliz		LOS	D	С	C	С	D	D	D	D	C	F	В	В	Phillip	Phase	Signalize		LOS	С	C	-	-	С	В			-	D	- 7	D
6th	ps	魠		Volume	96	188	65	179	197	128	32	530	352	218	693	196	=	ps	臣		Volume	284	579	-	-	316	223		-	-	199	-	161
E	回	.20	Pre	PHF	0.74	0.85	0.83	0.87	0.88	0.77	0.7	0.79	0.84	0.89	0.88	0.95			155	Pre	PHF	0.7	0.91	1	1	0.88	0.85				0.8	1	0.85
		S	Game	Delay	36.7	33.9	30.7	37.9	24.2	25	23.2	15.4	21.7	68.3	16.2	15.3	~		∞	Game	Delay	197	197			4	3.9				34.9		33.2
જ				LOS	D	C	C	n	C	c	C	В	C.	F.	В	В	el				LOS	E	F			,	Δ.				C.		C.
=			<i></i>	Lanes	1	1	1	1	1	1	1	2	1	1	2	1					Lanes	0	<1			1	1				1		1
Juneau				Volume	154	247	79	216	427	139	65	1072	309	167	1075	155	>				Volume	103	822			748	171			_	163	_	147
Ĕ	_	Ö			0.92	0.85	0.83	0.84		0.7	0.83	0.79	0.87	0.72	0.97	0.8	જ	l 🛏	Ö			0.75	0.9	1	1	0.85	0.72		-	-	0.58	1	0.84
_=	\exists	Ze	PM	PHF					0.8								Ħ		Ze	PM	PHF			1	1	-			-	-		_	
~	Phase	ignalized		Delay	37.6	26.6	22.6	34.3	30	13.7	44.2	26.5	18.3	618.9	24.2	18.2	eal	ပ	Signalized		Delay	392.1	392.1	-	-	21.6	11.6		-	-	45.1	-	36.8
	38	19		LOS	D	С	C	C	С	В	D	C	В	F	С	В	ne	Phase	19		LOS	F	F	-	-	С	В	-	-	-	D		D
	Ę	<u>5</u> 0		Volume	91	191	69	210	292	131	37	567	305	192	737	200	∃	Ę	<u>50</u>		Volume	124	595	-	-	447	151		-	-	228	-	185
	Ъ	Si	Pre	PHF	0.74	0.85	0.83	0.87	0.88	0.77	0.7	0.79	0.84	0.89	0.88	0.95		Д		Pre	PHF	0.7	0.91	1	1	0.88	0.85		-	-	0.8	1	0.85
		• 1	Game	Delay	31.8	34.2	30.8	48.3	49.6	46.7	35.6	25.7	30.6	64.9	14.9	13.9			• • •	Game	Delay	108.5	108.5	-	-	17.5	13.2		-	-	34	-	32.2
				LOS	C	С	С	D	D	D	D	C	C	E	В	В					LOS	F	F	-	-	В	В	-	-	-	C	-	C
		Traffic	Peak			Eastboun			el of Serv Vestbound	ice per M	lovement	by Appro Northbour			ıthbound				Traffic	Peak			Eastbound			Level of Serv	ice per M		Approach			Southbound	
Intersection	Scenario	Control	Hour		Y 700					n n n							Intersection	Scenario	Control	Hour		Y 70		p.m			n.m			n.m	v		Date
			·		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				varana a		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
				Lanes	0	<2>	0	1	1	1	1	2>	1	-	2	1	700				Lanes												
		p		Volume	276	55	169	190	182	29	254	983	312	-	1041	208	ď		p		Volume												
		9	PM	PHF	0.85	0.89	0.89	0.67	0.78	0.78	0.96	0.86	0.74	0.77	0.94	0.9	:=		9	PM	PHF												
	o	:=		Delay	52.3	38.4	24.5	59	21.5	18.4	68.3	18	22.4	-	45.7	37.1	- 3	o	:Ξ		Delay												
ب	as	ja,		LOS	D	D	С	E	C	В	E	В	C	-	D	D	Philli	as	la,		LOS												
6th	Phase	ignalized		Volume	188	38	215	128	51	37	178	689	487	68	732	173		Phase	ignalized		Volume												
	Ъ	Sig	Pre	PHF	0.78	0.73	0.73	0.5	0.52	0.67	0.84	0.85	0.82	0.88	0.89	0.87	R.	Д	Sig	Pre	PHF												
ચ		01	Game	Delay	33.4	30.95	28.5	255.9	18.5	18.4	26.1	1.7	30	27.9	25.5	34.4	el		01	Game	Delay												
p				LOS	C	C	С	F	В	В	C	A	C	С	C	C	Ve				LOS												
Highland				Lanes	0	<2>	0	1	1>	0	1	2>	1	-	2	1					Lanes												
===		Ъ		Volume	282	55	183	191	183	30	274	1135	312	-	1156	213	જ				Volume												
40		ĕ	D) (PHF	0.85	0.89	0.89	0.67	0.78	0.78	0.96	0.86	0.74	0.77	0.94	0.9			ignalized	D) (PHF												
Ë	П	gnalized	PM	Delay	79.6	53.25	26.9	82.3	53.15	24	69.3	18.6	18.5	-	49.8	28.4	ă	П	iZ	PM	Delay												
Ξ.	Se	al		LOS	Е	D	C	F	D	С	E	В	В		D	C	<u> </u>	Se	al		LOS												
	a	Ë		Peds	-	-	82			299	-		1261		-	211	4	la	E.		Peds			161			812			41			0
	Phase	16.	Pre	PHF	0.78	0.73	0.73	0.5	0.52	0.67	0.84	0.85	0.82	0.88	0.89	0.87	ighland	Phase	.00	Pre	PHF												WWW.
	_	Si	Game	Delay	32.7	31.3	29.9	103.3	61.1	18.9	38.9	2.7	13.1	39.1	39.2	51.8	I		Si	Game	Delay												
				LOS	C C	C	C.	F	F.	B	D	Δ.,	B	D	D	D					LOS												
				LUS	-	-	-		E	ь	D	А	ь	D	D	D					LUS												

		Traffic	Peak							ce per M		y Approach	h					Traffic	Peak							vice per M	Iovement l	by Approach				
Intersection	Scenario	Control	Hour			Eastbound			Vestbound			orthbound			hbound	Intersection	Scenario	Control	Hour			Eastbound			Vestbound			Northbound			Southbound	
			<i></i>	¥	LT	TH	RT	LT	TH 2	RT	LT		RT	LT	2 1				<i></i>	*	LT	TH	RT	LT	TH <4>	RT	LT	TH	RT	LT	TH 2	RT
				Lanes Volume	1 143		120	178	627	333	150	1284	-	-	2 1 1237 164					Volume Volume			-	82	1047	2	240	200	-	-	135	30
		ਲ		PHF	0.95	0.81	0.77	0.87	0.77	0.89	0.86		0.81					Ö		PHF	0.81	0.81	0.81	0.87	0.83		0.78	0.86	0.81	0.81	0.83	0.87
	Π	Ze	PM											0.81	0.93 0.83	sd		Ze	PM		0.81		0.81			0.59				0.81		
	še	: <u>=</u>		Delay LOS	50.6	-	20.5 C	14.5 B	8.9	16.4 B	57.6			-	52.3 21.5 D C	· ·=	မွ	Ξ.		Delay LOS		-	-	14.1 B	13.8 B	14.4 B	30.8 C	13 B	-	-	20.1 C	19.8 B
	Phase	Signalized		Volume	D 102		117	81	A 445	209	151			-	_	Phillip	Phase	Signalized		Volume				В	В	В		В				В
4	-S	.50		PHF	183 0.85	0.81	0.78	0.84	0.94	0.88	151 0.86		0.81	0.81	853 242 0.84 0.9		1 2	.50	n	PHF												
6th		\mathbf{S}	Pre Game			0.81							0.81	0.81			_	\mathbf{S}	Pre Game	<i>///</i>												
ચ			Game	Delay LOS	47.4 D		24 C	15 B	9	16.1	24.5 C	19.4 B	-	-	30.9 33.5 C C	\simeq			Game	Delay LOS												
					<u>D</u>	-	0	В	A	В	1	-	-	-	2 1	<u>च</u>				///				0	<4>	0	<i>!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!</i>				2	
State				Lanes	151			102	- 2	252	154		-	-	Z I	7				Lanes	-	-	-	-			242	205	-	-	120	21
ta	Ι	ਲ		Volume	151 0.95	0.81	123 0.77	182 0.87	643 0.77	352 0.89	154		0.81		1398 183		l 🛏	Ö		Volume	0.01	0.81	0.01	84	1082 0.83	2	243	205	0.81	0.81	139 0.83	31 0.87
$\bar{\mathbf{x}}$	Ш	ze	PM	PHF							0.86			0.81	0.93 0.83	-		ze	PM	PHF	0.81		0.81	0.87		0.59	0.78	0.86		0.81	_	
	se	- =		Delay	67.2 E	-	21.9 C	17.9	10.8	23.5 C	47.3 D		-		89.3 21.	<u>.e</u>	Ų	- =		Delay		-	-	14.3	14	14.6	31.9	13.1	-	-	20.2	19.8
	~~~	gnalize		LOS		-	_	B	B		-		-	-	F C	State	Phase	Signalized		LOS				В	В	В	C	В			C	В
	Ph	_50		Volume	171	- 0.01	119	83	452	211	155		0.01	0.01	956 248	S	Į į	<u>-</u> 50	n	Volume												
	4	Si	Pre Game	PHF	0.85	0.81	0.78	0.84	0.94	0.88	0.86				0.84 0.9 36.7 34.9		<u> </u>	$\mathbf{S}$	Pre Game	PHF												
			Game	Delay	40.9	-	23 C	13.7	8.1	14.2	30.1	20.4	-	-					Game	Delay												
				LOS	D		C	B	A of Couri	В	C overment	ov Approacl	-	-	D C		<u> </u>			LOS					Lovel of So			by Approach	<u> </u>			
Intersection	Scenario	Traffic	Peak			Eastbound			Vestbound			orthbound		South	bound	Intersection	Scenario	Traffic	Peak	-		Eastbound	1		Vestbound	vice per iv	iovement i	Northbound		1	Southbound	1
intersection	Secuatio	Control	Hour		LT	TH	RT	LT	TH	RT	LT		RT	LT	TH RT	intersection	Section	Control	Hour		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
				Lanes	1	2>	0	1	2	1	1		1	1	2> 0					Lanes	1	3>	0	1	3>	0	1	3>	0	1	2>	0
			***************************************	Volume	173	518	37	205	208	250	139			219	1276 40	ø.				Volume	56	747	46	76	585	100	75	285	108	76	137	3
	I	pa		PHF	0.84	0.85	0.73	0.93	0.77	0.83	0.71				0.91 0.73	. <u>-</u> 2. ∣		pa		PHF	0.84	0.87	0.81	0.83	0.9	0.77	0.73	0.84	0.88	0.79	0.87	0.67
	П	.ŭ	PM	Delay	36.2	49	0	50.5	37.3	72.3	52.6			52.5	49.3 0			.ŭ	PM	Delay	35.2	28.8	29.6	32.4	17.6	18.4	17.8	16.9	17.7	7.4	4.4	4.4
_	se	ignalized		LOS	D	D	A	D	D	E	D		С	D	D A	Philli	Phase	ignalized		LOS	D	C	C	C	В	В	В	В	В	A	A	A
6th	Phase	Ë		Volume	372	609	82	116	136	180	90		106	246	659 34		)a	Ë		Volume	188	714	56	46	332	81	74	216	89	141	91	26
		.ஹ	_		0.83	0.95	0.89	0.63	0.79	0.69	0.67			0.88	0.87 0.68	~		Sig	Pre	PHF	0.83	0.93	0.58	0.9	0.72	0.91	0.66	0.84	0.8	0.92	0.88	0.64
																														31.2	18.5	19.1
~		Si	Pre Game	PHF		34.6	0	37.1					29	52.7	30.1 0			01	Game	Dolay	43	26.6		25.6					21.2			
n &		S	Pre Game	Delay	67.5	34.6 C	0 A	37.1 D	35.3	55.2	21.4 C		29 C			<b>ा</b>		01	Game	Delay LOS	43 D	26.6 C	28.4	25.6 C	14.1	14.9	24.1 C	19.2	21.2 C	31.2 C		В
		S		Delay LOS		С	A			55.2	21.4	35.3		52.7 <b>D</b>	C A			<b>0</b> 1	Game	LOS		C	28.4 C		14.1 B	14.9 B	24.1	19.2 B	С		В	B 0
				Delay LOS Lanes	67.5 E	C 2>	A 0	<b>D</b>	35.3 D	55.2 E	21.4 C	35.3 D	C 1	<b>D</b>	C A 2> 0	Vel			Game	LOS Lanes	<b>D</b>	C 3>	28.4 C 0	C 1	14.1 B 3>	14.9 B	24.1 C 1	19.2 B 3>	C 0	C 1	B 2>	0 4
			Game	Delay LOS Lanes Volume	67.5 E 1 188	2> 531	A 0 38	1 210	35.3 D 2 213	55.2 E 1 270	21.4 C 1	35.3 D 2 1095	C 1 115	D 1 244	C A 2> 0 1415 44	& Vel				LOS Lanes Volume	D 1 57	C 3> 785	28.4 C 0 47	C 1 78	14.1 B 3> 614	14.9 B 0 101	24.1 C 1	19.2 B 3> 289	0 110	C 1 78	2> 141	4
	Ш			Delay LOS Lanes Volume PHF	67.5 E 1 188 0.84	C 2> 531 0.85	A 0 38 0.73	1 210 0.93	35.3 D 2 213 0.77	55.2 E 1 270 0.83	21.4 C 1 142 0.71	35.3 D 2 1095 0.86	C 1 115 0.9	1 244 0.86	C A 2> 0 1415 44 0.91 0.73	& Vel	Ш		Game	LOS Lanes Volume PHF	1 57 0.84	C 3> 785 0.87	28.4 C 0 47 0.81	78 0.83	14.1 B 3> 614 0.9	14.9 B 0 101 0.77	24.1 C 1 77 0.73	19.2 B 3> 289 0.84	0 110 0.88	78 0.79	B 2> 141 0.87	4 0.67
Kilbourn &	III e		Game	Delay LOS Lanes Volume	67.5 E 1 188	2> 531	A 0 38	1 210	35.3 D 2 213 0.77	55.2 E 1 270	21.4 C 1	35.3 D 2 1095 0.86	C 1 115 0.9	D 1 244	C A 2> 0 1415 44 0.91 0.73 67 0	& Vel	se III			LOS Lanes Volume	D 1 57	C 3> 785	28.4 C 0 47	C 1 78	14.1 B 3> 614	14.9 B 0 101	24.1 C 1	19.2 B 3> 289	0 110	C 1 78	B 2> 141 0.87 4.4	4 0.67 4.4
	ase III		Game	Delay LOS Lanes Volume PHF Delay LOS	67.5 E 1 188 0.84 42 D	2> 531 0.85 51.4 D	A 0 38 0.73 0 A	1 210 0.93 76.9 E	35.3 D 2 213 0.77 38.7 D	55.2 E 1 270 0.83 113.6	21.4 C 1 142 0.71 56.4 E	35.3 D 2 1095 0.86 54.8 D	C 1 115 0.9 28 C	1 244 0.86 64.6 E	C A 2> 0 1415 44 0.91 0.73 67 0 F A	& Vel	nase III			LOS Lanes Volume PHF Delay LOS	D 1 57 0.84 35.9 D	C 3> 785 0.87 29.2 C	28.4 C 0 47 0.81 30.1 C	C 1 78 0.83 34.1 C	14.1 B 3> 614 0.9 17.8 B	14.9 B 0 101 0.77 18.6 B	24.1 C 1 77 0.73 17.9 B	19.2 B 3> 289 0.84 16.9 B	0 110 0.88 17.7 B	78 0.79 7.5 A	B 2> 141 0.87 4.4 A	4 0.67 4.4 A
	ase III	gnalized	PM	Delay LOS Lanes Volume PHF Delay LOS Volume	67.5 E 1 188 0.84 42 D 367	2> 531 0.85 51.4 <b>D</b> 566	A 0 38 0.73 0 A 84	D 1 210 0.93 76.9 E 119	35.3 D 2 213 0.77 38.7	55.2 E 1 270 0.83 113.6 F	21.4 C 1 142 0.71 56.4 E 92	35.3 D 2 1095 0.86 54.8 D 690	C 1 115 0.9 28 C 109	1 244 0.86 64.6 E 274	C A 2> 0 1415 44 0.91 0.73 67 0 F A 735 38	& Vel	Phase III	gnalized	PM	LOS Lanes Volume PHF Delay	D 1 57 0.84 35.9 D	C 3> 785 0.87 29.2 C	28.4 C 0 47 0.81 30.1 C 57	78 0.83 34.1	14.1 B 3> 614 0.9 17.8 B 348	14.9 B 0 101 0.77 18.6 B	24.1 C 1 77 0.73 17.9 B 75	19.2 B 3> 289 0.84 16.9 B 200	0 110 0.88 17.7 B	78 0.79 7.5 A 145	B 2> 141 0.87 4.4 A 93	4 0.67 4.4
	III e		Game	Delay LOS Lanes Volume PHF Delay LOS Volume PHF	67.5 E 1 188 0.84 42 D 367 0.83	2> 531 0.85 51.4 <b>D</b> 566 0.95	A 0 38 0.73 0 A	D 1 210 0.93 76.9 E 119 0.63	35.3 D 2 213 0.77 38.7  D 140 0.79	55.2 E 1 270 0.83 113.6 F 191 0.69	21.4 C 1 142 0.71 56.4 E 92 0.67	35.3 D 2 1095 0.86 54.8 D 690 0.89	C 1 115 0.9 28 C 109 0.88	D 1 244 0.86 64.6 E 274 0.88	C A  2> 0  1415 44  0.91 0.73  67 0  F A  735 38  0.87 0.66	lbourn & Vel	Phase III			LOS Lanes Volume PHF Delay LOS Volume PHF	57 0.84 35.9 D 134 0.83	785 0.87 29.2 C 754 0.93	28.4 C 0 47 0.81 30.1 C 57 0.58	C 1 78 0.83 34.1 C 47 0.9	14.1 B 3> 614 0.9 17.8 B 348 0.72	14.9 B 0 101 0.77 18.6 B 82 0.91	24.1 C 1 77 0.73 17.9 B 75 0.66	19.2 B 3> 289 0.84 16.9 B 200 0.84	0 110 0.88 17.7 B 91 0.8	78 0.79 7.5 A 145 0.92	B 2> 141 0.87 4.4 A 93 0.88	4 0.67 4.4 A 26 0.64
	ase III	gnalized	PM Pre	Delay LOS Lanes Volume PHF Delay LOS Volume	67.5 E 1 188 0.84 42 D 367	2> 531 0.85 51.4 <b>D</b> 566	A 0 38 0.73 0 A 84 0.89	D 1 210 0.93 76.9 E 119	35.3 D 2 213 0.77 38.7  D 140	55.2 E 1 270 0.83 113.6 F	21.4 C 1 142 0.71 56.4 E 92 0.67	35.3 D 2 1095 0.86 54.8 D 690 0.89	C 1 115 0.9 28 C 109 0.88	D 1 244 0.86 64.6 E 274 0.88	C A  2> 0  1415 44  0.91 0.73  67 0  F A  735 38  0.87 0.66	& Vel	Phase III	gnalized	PM Pre	LOS Lanes Volume PHF Delay LOS Volume	D 1 57 0.84 35.9 D	C 3> 785 0.87 29.2 C	28.4 C 0 47 0.81 30.1 C 57	C 1 78 0.83 34.1 C 47	14.1 B 3> 614 0.9 17.8 B 348	14.9 B 0 101 0.77 18.6 B	24.1 C 1 77 0.73 17.9 B 75	19.2 B 3> 289 0.84 16.9 B 200	0 110 0.88 17.7 B	78 0.79 7.5 A 145	B 2> 141 0.87 4.4 A 93	4 0.67 4.4 A 26
	ase III	Signalized	PM Pre Game	Delay LOS Lanes Volume PHF Delay LOS Volume PHF Delay	67.5 E 1 188 0.84 42 D 367 0.83 50.4	C 2> 531 0.85 51.4 <b>D</b> 566 0.95 33.4	A 0 38 0.73 0 A 84 0.89	D 1 210 0.93 76.9 E 119 0.63 30.2 C	35.3 D 2 213 0.77 38.7 D 140 0.79 34.3 C	55.2 E 1 270 0.83 113.6 F 191 0.69 52.8 D	21.4 C 1 142 0.71 56.4 E 92 0.67 26.7 C	35.3 D 2 1095 0.86 54.8 D 690 0.89 41.4	C 1 1115 0.9 28 C 109 0.88 33.5 C	D 244 0.86 64.6 E 274 0.88 51.3	C         A           2>         0           1415         44           0.91         0.72           67         0           F         A           735         38           0.87         0.60           29.7         0	& Vel	Phase III	gnalized	PM Pre	LOS Lanes Volume PHF Delay LOS Volume PHF Delay	57 0.84 35.9 D 134 0.83 36.9	C 3> 785 0.87 29.2 C 754 0.93 27	28.4 C 0 47 0.81 30.1 C 57 0.58 28.7	78 0.83 34.1 C 47 0.9 26.5	14.1 B 3> 614 0.9 17.8 B 348 0.72 14.2	14.9 B 0 101 0.77 18.6 B 82 0.91	24.1 C 1 77 0.73 17.9 B 75 0.66 24.2	19.2 B 3> 289 0.84 16.9 B 200 0.84 19	0 110 0.88 17.7 B 91 0.8 21.3	78 0.79 7.5 A 145 0.92 31.7	B 2> 141 0.87 4.4 A 93 0.88 18.5	4 0.67 4.4 A 26 0.64 19.1
	Phase III	Signalized	PM Pre Game	Delay LOS Lanes Volume PHF Delay LOS Volume PHF Delay	67.5 E 1 188 0.84 42 D 367 0.83 50.4 D	C 2> 531 0.85 51.4 D 566 0.95 33.4 C	A 0 38 0.73 0 A 84 0.89 0 A	D 1 210 0.93 76.9 E 119 0.63 30.2 C Lev	35.3 D 2 213 0.77 38.7  D 140 0.79 34.3 C cl of Servi	55.2 E 1 270 0.83 113.6 F 191 0.69 52.8 D	21.4 C 1 142 0.71 56.4 E 92 0.67 26.7 C	35.3 D 2 1095 0.86 54.8 D 690 0.89 41.4 D Dy Approacl	C 1 115 0.9 28 C 109 0.88 33.5 C	D 1 244 0.86 64.6 E 274 0.88 51.3 D	C A  2> 0  1415 44  0.91 0.73  67 0  F A  735 38  0.87 0.66  29.7 0  C A	& Vel	Phase III	gnalized	PM Pre	LOS Lanes Volume PHF Delay LOS Volume PHF Delay	57 0.84 35.9 D 134 0.83 36.9	C 3> 785 0.87 29.2 C 754 0.93 27	28.4 C 0 47 0.81 30.1 C 57 0.58 28.7	78 0.83 34.1 C 47 0.9 26.5	14.1 B 3> 614 0.9 17.8 B 348 0.72 14.2	14.9 B 0 101 0.77 18.6 B 82 0.91	24.1 C 1 77 0.73 17.9 B 75 0.66 24.2	19.2 B 3> 289 0.84 16.9 B 200 0.84 19	0 110 0.88 17.7 B 91 0.8 21.3	78 0.79 7.5 A 145 0.92 31.7	B 2> 141 0.87 4.4 A 93 0.88 18.5	4 0.67 4.4 A 26 0.64 19.1
Kilbourn	Phase III	Signalized	PM Pre Game	Delay LOS  Lanes  Volume PHF Delay LOS  Volume PHF Delay LOS	67.5 E 1 188 0.84 42 D 367 0.83 50.4	C 2> 531 0.85 51.4 <b>D</b> 566 0.95 33.4 C	A 0 38 0.73 0 A 84 0.89 0 A	D 1 210 0.93 76.9 E 119 0.63 30.2 C Lev	35.3 D 2 213 0.77 38.7 D 140 0.79 34.3 C cel of Serviv	55.2 E 1 270 0.83 113.6 F 191 0.69 52.8 D	21.4 C 1 142 0.71 56.4 E 92 0.67 26.7 C ovement I	35.3 D 2 1095 0.86 54.8 D 690 0.89 41.4 D Dy Approacl	C 1 1115 0.9 28 C 109 0.88 33.5 C	D 1 244 0.86 64.6 E 274 0.88 51.3 D	C A  2> 0  1415 44  0.91 0.73  67 0  F A  735 38  0.87 0.66  29.7 0  C A	& Vel	Phase III	gnalized	PM Pre	LOS Lanes Volume PHF Delay LOS Volume PHF Delay	57 0.84 35.9 D 134 0.83 36.9	C 3> 785 0.87 29.2 C 754 0.93 27	28.4 C 0 47 0.81 30.1 C 57 0.58 28.7	78 0.83 34.1 C 47 0.9 26.5	14.1 B 3> 614 0.9 17.8 B 348 0.72 14.2	14.9 B 0 101 0.77 18.6 B 82 0.91	24.1 C 1 77 0.73 17.9 B 75 0.66 24.2	19.2 B 3> 289 0.84 16.9 B 200 0.84 19	0 110 0.88 17.7 B 91 0.8 21.3	78 0.79 7.5 A 145 0.92 31.7	B 2> 141 0.87 4.4 A 93 0.88 18.5	4 0.67 4.4 A 26 0.64 19.1
Kilbourn	Phase III	Signalized Signalized	PM Pre Game	Delay LOS Lanes Volume PHF Delay LOS Volume PHF Delay LOS	67.5 E 1 188 0.84 42 D 367 0.83 50.4 D	C 2> 531 0.85 51.4 D 566 0.95 33.4 C	A 0 38 0.73 0 A 84 0.89 0 A A	D 1 210 0.93 76.9 E 119 0.63 30.2 C Lev	35.3 D 2 213 0.77 38.7 D 140 0.79 34.3 Cel of Servi Vestbound TH 1>	55.2 E 1 270 0.83 113.6 F 191 0.69 52.8 D RT 0	21.4 C 1 142 0.71 56.4 E 92 0.67 26.7 C C Overment I	35.3 D 2 1095 0.86 54.8 D 690 0.89 41.4 D Dy Approacloorthbound TH	C 1 115 0.9 28 C 109 0.88 33.5 C h	D 1 244 0.86 64.6 E 274 0.88 51.3 D	C A 2> 0 1415 44 0.91 0.7: 67 0 F A 735 38 0.87 0.6: 29.7 0 C A  hbound TH RT 3> 0	& Vel	Phase III	gnalized	PM Pre	LOS Lanes Volume PHF Delay LOS Volume PHF Delay	57 0.84 35.9 D 134 0.83 36.9	C 3> 785 0.87 29.2 C 754 0.93 27	28.4 C 0 47 0.81 30.1 C 57 0.58 28.7	78 0.83 34.1 C 47 0.9 26.5	14.1 B 3> 614 0.9 17.8 B 348 0.72 14.2	14.9 B 0 101 0.77 18.6 B 82 0.91	24.1 C 1 77 0.73 17.9 B 75 0.66 24.2	19.2 B 3> 289 0.84 16.9 B 200 0.84 19	0 110 0.88 17.7 B 91 0.8 21.3	78 0.79 7.5 A 145 0.92 31.7	B 2> 141 0.87 4.4 A 93 0.88 18.5	4 0.67 4.4 A 26 0.64 19.1
Kilbourn	Phase III	Signalized Control	PM Pre Game	Delay LOS  Lanes  Volume PHF Delay LOS  Volume PHF Delay LOS  Lanes  Volume	67.5 E 1 188 0.84 42 D 367 0.83 50.4 D	C 2> 531 0.85 51.4 D 566 0.95 33.4 C Eastbound TH 2 666	A 0 38 0.73 0 A 84 0.89 0 A RT 1	D 1 210 0.93 76.9 E 119 0.63 30.2 C Lev LT 1 78	35.3 D 2 213 0.77 38.7 D 140 0.79 34.3 C cel of Servi Vestbound TH 1> 241	55.2 E 1 270 0.83 113.6 F 191 0.69 52.8 D ice per M	21.4 C 1 142 0.71 56.4 E 92 0.67 26.7 C ovement I	35.3 D 2 1095 0.86 54.8 D 690 0.89 41.4 D Dy Approacl orthbound TH 2 923	C 1 115 0.9 28 C 1109 0.88 333.5 C hh	D 1 244 0.86 64.6 E 274 0.88 51.3 D South LT 1	C         A           2>         0           1415         44           0.91         0.77           67         0           F         A           735         38           29.7         0.66           29.7         0           C         A	Kilbourn & Vel	Phase III	gnalized	PM Pre	LOS Lanes Volume PHF Delay LOS Volume PHF Delay	57 0.84 35.9 D 134 0.83 36.9	C 3> 785 0.87 29.2 C 754 0.93 27	28.4 C 0 47 0.81 30.1 C 57 0.58 28.7	78 0.83 34.1 C 47 0.9 26.5	14.1 B 3> 614 0.9 17.8 B 348 0.72 14.2	14.9 B 0 101 0.77 18.6 B 82 0.91	24.1 C 1 77 0.73 17.9 B 75 0.66 24.2	19.2 B 3> 289 0.84 16.9 B 200 0.84 19	0 110 0.88 17.7 B 91 0.8 21.3	78 0.79 7.5 A 145 0.92 31.7	B 2> 141 0.87 4.4 A 93 0.88 18.5	4 0.67 4.4 A 26 0.64 19.1
Kilbourn	II Phase III	Signalized Control	PM Pre Game	Delay LOS  Lanes  Volume PHF Delay LOS  Volume PHF Delay LOS  Lanes  Volume	67.5 E 1 188 0.84 42 D 367 0.83 50.4 D LT 1 270 0.81	C 2> 531 0.85 51.4 D 566 0.95 33.4 C Eastbound TH 2 666 0.91	A 0 38 0.73 0 A 84 0.89 0 A PT 1 108 0.72	D 1 210 0.93 76.9 E 119 0.63 30.2 C Lev LT 1 78 0.74	35.3 D 2 213 0.77 38.7  D 140 0.79 34.3 Cel of Servi Vestbound TH 1> 241 0.83	55.2 E 1 270 0.83 113.6 F 191 0.69 52.8 D ice per M RT 0 69 0.52	21.4 C 1 142 0.71 56.4 E 92 0.67 26.7 C ovement 1	35.3 D 2 1095 0.86 54.8 D 690 0.89 41.4 D D yy Approact orthbound TH 2 923 0.91	C 1 115 0.9 28 C 109 0.88 33.5 C h h	D 1 244 0.86 64.6 E 274 0.88 51.3 D South LT 1 121 0.67	C         A           2≥         0           1415         44           0.91         0.7.           67         0           F         A           735         38           0.87         0.60           29,7         0           C         A           Abbound         TH           RT         RT           1302         95           0.94         0.64	Kilbourn & Vel	Phase III	gnalized	PM Pre	LOS Lanes Volume PHF Delay LOS Volume PHF Delay	57 0.84 35.9 D 134 0.83 36.9	C 3> 785 0.87 29.2 C 754 0.93 27	28.4 C 0 47 0.81 30.1 C 57 0.58 28.7	78 0.83 34.1 C 47 0.9 26.5	14.1 B 3> 614 0.9 17.8 B 348 0.72 14.2	14.9 B 0 101 0.77 18.6 B 82 0.91	24.1 C 1 77 0.73 17.9 B 75 0.66 24.2	19.2 B 3> 289 0.84 16.9 B 200 0.84 19	0 110 0.88 17.7 B 91 0.8 21.3	78 0.79 7.5 A 145 0.92 31.7	B 2> 141 0.87 4.4 A 93 0.88 18.5	4 0.67 4.4 A 26 0.64 19.1
Kilbourn	II Phase III	Signalized Control	PM Pre Game Peak Hour	Delay LOS Lanes Volume PHF Delay LOS Volume PHF Delay LOS Volume PHF Delay LOS	67.5  E 1 188 0.84 42 D 367 0.83 50.4 D LT 1 270 0.81 72.5	C 2> 531 0.85 51.4 D 566 0.95 33.4 C  Eastbound TH 2 666 0.91 19.9	A 0 38 0.73 0 A 84 0.89 0 A RT 1 108 0.72 17.4	D 1 210 0.93 76.9 E 119 0.63 30.2 C Lev LT 1 78 0.74 35.4	35.3 D 2 213 0.77 38.7  D 140 0.79 34.3  Cel of Servi Vestbound TH 1> 241 0.83 47	55.2 E 1 270 0.83 113.6 F 191 0.69 52.8 D ice per M	21.4 C 1 142 0.71 56.4 E 92 0.67 26.7 C ovement   N LT 0 2 1 23.3	35.3 D 2 1095 0.86 54.8 D 690 0.89 41.4 D D yy Approact orthbound TH 2 923 0.91	C 1 115 0.9 28 C 1109 0.88 33.5 C h 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	D 1 244 0.86 64.6 E 274 0.88 51.3 D South LT 1 1 121 0.67 98.2	C A 2> 0 1415 44 0.91 0.7: 67 0 F A 735 38 0.87 0.6: C A 1302 95 0.94 0.6: 22.1 24.2	Kilbourn & Vel	Phase III	gnalized	PM Pre	LOS Lanes Volume PHF Delay LOS Volume PHF Delay	57 0.84 35.9 D 134 0.83 36.9	C 3> 785 0.87 29.2 C 754 0.93 27	28.4 C 0 47 0.81 30.1 C 57 0.58 28.7	78 0.83 34.1 C 47 0.9 26.5	14.1 B 3> 614 0.9 17.8 B 348 0.72 14.2	14.9 B 0 101 0.77 18.6 B 82 0.91	24.1 C 1 77 0.73 17.9 B 75 0.66 24.2	19.2 B 3> 289 0.84 16.9 B 200 0.84 19	0 110 0.88 17.7 B 91 0.8 21.3	78 0.79 7.5 A 145 0.92 31.7	B 2> 141 0.87 4.4 A 93 0.88 18.5	4 0.67 4.4 A 26 0.64 19.1
Kilbourn	II Phase III	Signalized Control	PM Pre Game Peak Hour	Delay LOS  Lanes  Volume PHF Delay LOS  Volume PHF Delay LOS  Lanes  Volume	67.5 E 1 188 0.84 42 D 367 0.83 50.4 D LT 1 270 0.81	C 2> 531 0.85 51.4 D 566 0.95 33.4 C Eastbound TH 2 666 0.91	A 0 38 0.73 0 A 84 0.89 0 A PT 1 108 0.72	D 1 210 0.93 76.9 E 119 0.63 30.2 C Lev LT 1 78 0.74	35.3 D 2 213 0.77 38.7  D 140 0.79 34.3 Cel of Servi Vestbound TH 1> 241 0.83	55.2 E 1 270 0.83 113.6 F 191 0.69 52.8 D ice per M RT 0 69 0.52 58.6 E	21.4 C 1 142 0.71 56.4 E 92 0.67 C 0.67 C 0.00 Verment 1	35.3 D 2 1095 0.86 54.8 D 690 0.89 41.4 D 923 oorthbound TH 2 923 0.91 24.7 C	C 1 115 0.9 28 C 109 0.88 33.5 C h h	D 1 244 0.86 64.6 E 274 0.88 51.3 D South LT 1 121 0.67	C         A           2≥         0           1415         44           0.91         0.7.           67         0           F         A           735         38           0.87         0.60           29,7         0           C         A           Abbound         TH           RT         RT           1302         95           0.94         0.64	Kilbourn & Vel	Phase III	gnalized	PM Pre	LOS Lanes Volume PHF Delay LOS Volume PHF Delay	57 0.84 35.9 D 134 0.83 36.9	C 3> 785 0.87 29.2 C 754 0.93 27	28.4 C 0 47 0.81 30.1 C 57 0.58 28.7	78 0.83 34.1 C 47 0.9 26.5	14.1 B 3> 614 0.9 17.8 B 348 0.72 14.2	14.9 B 0 101 0.77 18.6 B 82 0.91	24.1 C 1 77 0.73 17.9 B 75 0.66 24.2	19.2 B 3> 289 0.84 16.9 B 200 0.84 19	0 110 0.88 17.7 B 91 0.8 21.3	78 0.79 7.5 A 145 0.92 31.7	B 2> 141 0.87 4.4 A 93 0.88 18.5	4 0.67 4.4 A 26 0.64 19.1
Kilbourn	Phase III	Signalized Signalized	PM Pre Game Peak Hour	Delay LOS  Lanes  Volume PHF Delay LOS  Volume PHF Delay LOS  Lanes  Volume PHF Delay LOS	67.5 E 1 188 0.84 42 D 367 0.83 50.4 D LT 1 270 0.81 72.5 E	C 2> 531 0.85 51.4 D 566 0.95 33.4 C Eastbound TH 2 666 0.91 19.9 B	A 0 38 0.73 0 A 84 0.89 0 A 1108 0.72 17.4 B	D 1 210 0.93 76.9 E 119 0.63 30.2 C Lev LT 1 78 0.74 35.4 D	35.3  D 2 213 0.77 38.7  D 140 0.79 34.3 C el of Servi Vestbound TH 1> 241 0.83 47 D 107	55.2 E 1 270 0.83 113.6 F 191 0.69 52.8 D ice per M RT 0 69 0.52	21.4 C 1 142 0.71 56.4 E 92 0.67 26.7 C ovement   N LT 0 2 1 23.3	35.3 D 2 1095 0.86 54.8 D 0.89 41.4 D 0.89 41.4 D 2 923 0.91	C 1 115 0.0.9 2.8 C 109 0.88 33.5 C h 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	D 1 244 0.86 64.6 E 274 0.88 51.3 D South LT 1 121 0.67 98.2 F 111 0.83	C A 2> 0 1415 44 0.91 0.7: 67 0 67 0 67 A 735 38 0.87 0.6: 29.7 0 C A 60 60 60 60 60 60 60 60 60 60 60 60 60	Kilbourn & Vel	Phase III	gnalized	PM Pre	LOS Lanes Volume PHF Delay LOS Volume PHF Delay	57 0.84 35.9 D 134 0.83 36.9	C 3> 785 0.87 29.2 C 754 0.93 27	28.4 C 0 47 0.81 30.1 C 57 0.58 28.7	78 0.83 34.1 C 47 0.9 26.5	14.1 B 3> 614 0.9 17.8 B 348 0.72 14.2	14.9 B 0 101 0.77 18.6 B 82 0.91	24.1 C 1 77 0.73 17.9 B 75 0.66 24.2	19.2 B 3> 289 0.84 16.9 B 200 0.84 19	0 110 0.88 17.7 B 91 0.8 21.3	78 0.79 7.5 A 145 0.92 31.7	B 2> 141 0.87 4.4 A 93 0.88 18.5	4 0.67 4.4 A 26 0.64 19.1

| 1 | 3 > 0 | 133 | 1426 | 104 | 0.67 | 0.94 | 0.66 | 257.3 | 28.1 | 32.4 | 122 | 706 | 110 | 0.83 | 0.82 | 0.82 | 42.1 | 18 | 19.1 | 18 | B |

2 989 1 0.91 29.1 32 C C

98 0.82 17.5 B

247 74 0.83 0.52 41.5 49.8

51 109 52 3 652 0.8 0.81 0.75 1 0.86 25.2 26.1 27 34.3 37.3 C C C C D

Signalized

Volume PHF Delay LOS 289 0.81 58.3

187 0.86 22.9 C 110 80 0.72 0.74 15.2 33.2 B C

66 0.82 16.7 B

		Traffic	Peak					Level	of Servi	ice per M	ovemer	t by App	proach						Traffic	Dools					Level of	Service	per Mo	vement	by Appro	ach			
Intersection	Scenario	Control	Peak Hour		F	Eastbour	nd	V	Westbou	ınd	N	orthbou	nd	5	outhbo	und	Intersection	Scenario	Control	Peak Hour			Eastbound			Vestboui	nd		Northbo	und	Sou	thbound	
		Control	Hour		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			Control	Hour		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
				Lanes	1	2	1	1	2	1	1	2>	0	1	2	0					Lanes	1	2	1	1	2>	0	1	2	1	1	2	1
		р		Volume	141	1128	147	85	1025	43	125	358	42	108	576				gnalized		Volume	389	643	220	43	458	20	291	894	63	21		348
, S2		Signalized	PM	PHF	0.85	0.9	0.77	0.83	0.83	0.6	0.87	0.87	0.63	0.81	0.95			П	, e	PM	PHF	0.93	0.9	0.78	0.8	0.74	0.79	0.94	0.91	0.82	0.81		0.91
જ	ပ	. <u>:2</u>	rivi	Delay	39.5	48.7	23	27.4	46	20.1	33.6	7	7.1	29	50.3	52.3			- 23	r ivi	Delay	175.9	21.4	22.1	30.3	32.7	32.6	51.4	4.1	2.5	24.1	31.5	53.7
D D	SI	ਰ		LOS	D	D	C	C	D	C	C	A	A	C	D	D	ē	S	ਰ		LOS	F	C	C	C	C	C	D	A	A	C	C	D
그고	Phase	£		Volume	97	1084	177	197	722	22	105	239	31	49	331	244	ate	Phase	E		Volume	387	579	216	37	284	9	164	583	83	11	576	463
0	Б	.55	Pre	PHF	0.85	0.94	0.85	0.94	0.89	0.31	0.79	0.91	0.71	0.71	0.68	0.79	Š	$\Box$	Sig	Pre	PHF	0.94	0.93	0.81	0.8	0.78	0.5	0.79	0.86	0.73	0.81		0.86
Knapp World		S	Game	Delay	22.3	50.6	26.8	42.7	26.1	19.9	30.7	6.7	6.8	25.4	47	52.9	<b>→</b>		$\infty$	Game	Delay	53.8	20.5	21.7	28.7	30.5	30.5		3.1	2.7	22.9		165.7
¥.				LOS	C	D	С	D	С	В	C	A	A	C	D	D	ચ				LOS	D	C	C	C	C	C	C	A	A	C	C	F
McKinley/Knapp 3rd/Old World				Lanes	1	2	1	1	2	1	1	2>	0	1	2>	0					Lanes	1	2	1	1	2>	0	1	2	1	1	2	1
= 0		Q		Volume	170	1350	174	91	1159	45	140	385	45	110	600		ď	_	ę		Volume	460	760	258	45	516	20	328	940	65	21		393
	$\equiv$	Ze Ze	PM	PHF	0.85	0.9	0.77	0.83	0.83	0.6	0.87	0.87	0.63	0.81	0.95		nap	$\equiv$	l Se	PM	PHF	0.93	0.9	0.78	0.8	0.74	0.79	0.94	0.91	0.82	0.81		0.91
		:≌		Delay	45.2	48.8	19.3	31.2	46.5	17.7	51	11.7	11.8	35.1	128.9	131.5	Ë	43	:≌		Delay	394.7	25.4	26.5	39.5	41.1	40.8	65.3	12.5	8.9	23.2		57.3
ြာ က	Š	12		LOS	D	D	В	C	D	В	D	В	В	D	F	F	$\succeq$	Š	13		LOS	F	С	C	D	D	D	E	В	A	C	C	E
<b>S</b>	Phase	Signalized		Volume	111	1229	201	135	800	22	116	253	34	50	301			Phase	gnalize		Volume	436	652	243	38	283	10	181	608	85	12	599	462
_	교	:57	Pre	PHF	0.85	0.94	0.85	0.94	0.89	0.31	0.79	0.91	0.71	0.71				五	Sig	Pre	PHF	0.94	0.93	0.81	0.8	0.78	0.5	0.79	0.86	0.73	0.81		0.86
		01	Game	Delay	24.4	46.6	23.7	49.2	26.5	19.1	37.2	6.8	6.9	24.6					0,1	Game	Delay	61	21.3	22.8	33.5	35.8	35.8	26	3.1	2.7	23		164.7
				LOS	C	D	С	D	С	В	D	A	A	С	D	D					LOS	E	С	С	C	D	D	С	A	A	C	С	F
		Traffic	Peak							ice per M									Traffic	Peak			P 4 1						by Appro				
Intersection	Scenario	Control	Hour			Eastbou			Westbou			orthbou			outhbo		Intersection	Scenario	Control	Hour			Eastbound			Vestboui			Northbo			ithbound	
			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH							LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
				Lanes	1	1	1	1	1	1	1	1	1	1	1	1					Lanes	1	2>	0	1	2>	0	1	2	1	1	2	1
7		ਰ		Volume	112	584	153	68	527	84	65	320	87	65	595				ਚ		Volume	158	414	192	55	346	34	200	1057	77	20		114
Ī		õ	PM	PHF	0.82	0.91	0.67	0.75	0.83	0.78	0.65	0.83	0.78	0.81	0.92	0.83		П	ĕ	PM	PHF	0.76	0.87	0.81	0.88	0.84	0.6	0.82	0.87	0.66	0.75	0.91	0.77
5		.21	rivi	Delay	72.1	36.9	25.7	62.3	36.3	22.5	73.2	10.4	7.4	25.8	42.2	21		<u></u>	12.	r ivi	Delay	54.9	35.3	36.6	42.1	24.9	25.1	30.2	1.8	0.4	18.3	23.6	19.3
≥	Phase	Signalized		LOS	E	D	C	E	D	С	E	В	A	C	D	C	<u> </u>	Phase	Signalized		LOS	D	D	D	D	C	C	C	A	A	В	C	В
	13	턵		Volume	80	439	277	96	360	113	44	328	93	39	411	144	ater	33	E,		Volume	131	336	201	56	278	49	105	650	92	26	680	123
<u> </u>	교	.55	Pre	PHF	0.65	0.94	0.64	0.77	0.9	0.76	0.57	0.91	0.84	0.75	0.79	0.97	~~	五	.53	Pre	PHF	0.8	0.93	0.78	0.79	0.83	0.67	0.91	0.86	0.91	0.63	0.96	0.83
		$\infty$	Game	Delav	41.8	28.5	32.6	50.4	26.7	22.9	52.9	27.1	22	33.2			≩		$\infty$	Game	Delay	38	19.6	21.5	34.1		21.9	14.5	0.7	0.4	18.1		19.4
3rd/Old World				LOS	D	C.	C.	D	C.	C	D	C.	C	C	D	C					LOS	D	В	C	C	C	C	В	A	A	В	C	В
;				Lanes	1	1	1	1	1	1	1	1	1	1	1	1	- જ				Lanes	1	2>	0	1	2>	0	1	2	1	1	2	1
					125	711	104	- (0	(02		70	220	00	(7	(22	164	=								- 1			221		70	20	051	107
જ		р		Volume	135	711	184	69	683	86	72	339	89	67	633		ea	_	р		Volume	185	485	226	56	471	35	221	1113	79	20	851	127
	Ħ	2	PM	PHF	0.82	0.91	0.67	0.75	0.83	0.78	0.65	0.83	0.78	0.81	0.92		= =	$\equiv$	2	PM	PHF	0.76	0.87	0.81	0.88	0.84	0.6	0.82	0.87	0.66	0.75		0.77
□ ☴ □	(a)	:3		Delay	52.5	36.8	23.4	59.9	63.2	20.3	265.1	20.5	13	38.6		1 27.5	un	(1)	:::		Delay	34.9	9.8	10.4	25.6	21	21	43.4	7.2	3.1	26.5		30.4
Juneau	Phase	Signalized		LOS	D	D	С	E	E	С	F	С	В	D	F	C	Ţ	Phase III	Signalized		LOS	C	A	В	C	С	C	D	A	A	C	D	C
<b>=</b>	ps	护		Volume	87	470	296	98	402	83	51	226	96	40	440	159		ps	F6		Volume	145	340	221	58	279	50	105	680	94	27	719	135
	교	:57	Pre	PHF	0.65	0.94	0.64	0.77	0.9	0.76	0.57	0.91	0.84	0.75	0.79	0.97		五	:57	Pre	PHF	0.8	0.93	0.78	0.79	0.83	0.67	0.91	0.86	0.91	0.63	0.96	0.83
		01	Game	Delay	45.4	29.4	34.1	54.5	27.9	21.6	78.8	32.6	30.3	30	39.7	25.5			0,1	Game	Delay	31.6	20.8	23.1	36.9	24.3	24.7	14.9	0.7	0.4	18.3	21.9	19.8
				LOS	D	C	C	D	С	C	E	С	C	С	D	С					LOS	C	C	C	D	С	C	В	Α	A	В	C	В
								Level	of Servi	ice per M	ovemer	t by Ap	proach																				
Intersection	Scenario	Traffic	Peak		F	Eastbour	nd	V	Westbou	ınd	N	orthbou	nd	5	outhbo	und																	
		Control	Hour		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT																	
				Lanes	0	<1	1	0	<1>	0	1	1	1	1	1	1	Ĭ																
p				Volume	25	2	178	17	1	1	102	454	18	1	704	71																	
T	_	þ		PHF	0.79	0.33	0.78	0.5	1	0.55	0.83	0.86	0.7	0.38	0.94		l																
0,	I	Ň	PM		23.3	29.3	35.3	24.6	12.3	0.55	11.3	12.5	8	2.2	3.6		l																
3rd/Old World	Phase	Signalized		Delay LOS	23.3 C	29.3 C	D	C C	B	A	В	В	-	A	3.0 A	0.5 A	l																
-	ğ	ns							1			411	A	A			l																
i i	2	90	_	Volume	127	6	168	16	1	3	119		10	0.25	592		l																
Q		S	Pre	PHF	0.84	1	0.85	0.33	1	0.75	0.68	0.92	0.6	0.25			l																
7			Game	Delay	28.5		48.2	32.3	16.15	0	32.4	11.4	7.9	13.5		9.3	1																
Ę			,,,,,,,,,,	LOS	C	D	D	С	В	A	С	В	A	В	В	A	Į.																
				Lanes	0	<1			<1>	0				1 1	- 1	1																	

Highland & 3rd/

Signalized

Phase III

25 2 182 17 1 1 0.79 0.33 0.78 0.5 1 0.55 23.3 29.6 35.9 24.6 12.3 0 C C D C B A

104 483 18 0.83 0.86 0.7 11.7 13 8 B B A

		Traffic	Peak					Level of	Service	per Mo	vement	by Appr	oach			
Intersection	Scenario	Control	Hour			Eastbound			Vestboui			Northbo			thbound	
		Control			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
				Lanes	-	-	-	0	<4>	0	1	2	-	-	2>	0
		-		Volume	-	-	-	59	671	74	112	1245	-	-	899	136
		ĕ	PM	PHF	-	-	-	0.71	0.76	0.89	0.85	0.9	0.81	0.81	0.92	0.94
		.12	1 101	Delay	-	-	-	22.8	21.4	22.4	26.1	23.6	-	-	50.5	51.6
• .	Š	al		LOS	-		-	С	C	C	C	C		-	D	D
Water	Phase	Signalized		Volume	-	-	-	39	271	58	76	790	-	-	698	132
a t	Д	318	Pre	PHF	-	-	-	0.84	0.87	0.78	0.85	0.88	0.81	0.81	0.92	0.94
$\geq$		01	Game	Delay	-		-	19.3	18.9	19.4	17	17.3	-	-	16.3	16.4
				LOS	-			В	В	В	В	В		-	В	В
જ				Lanes	-		-	0	<4>	0	- 1	2	-	-	2>	0
بو		-		Volume	-	-	-	61	697	75	115	1322	-	-	983	139
at a	Η	ĕ	PM	PHF	-	-	-	0.71	0.76	0.89	0.85	0.9	0.81	0.81	0.92	0.94
State			Pivi	Delay	-	-	-	26.6	24.6	26.1	24.3	20.9	-	-	52.2	53.6
• •	Se	al		LOS	-		-	С	C	C	С	C	-	-	D	D
	Phase	Signalized		Volume	-	-	-	40	285	59	78	821	-	-	753	136
	呂	318	Pre	PHF	-	-	-	0.84	0.87	0.78	0.85	0.88	0.81	0.81	0.92	0.94
		91	Game	Delay	-	-	-	19.4	19	19.5	17.9	17.6	-	-	18.3	18.4
				LOS	-	-	-	В	В	В	В	В	-	-	В	В