

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:

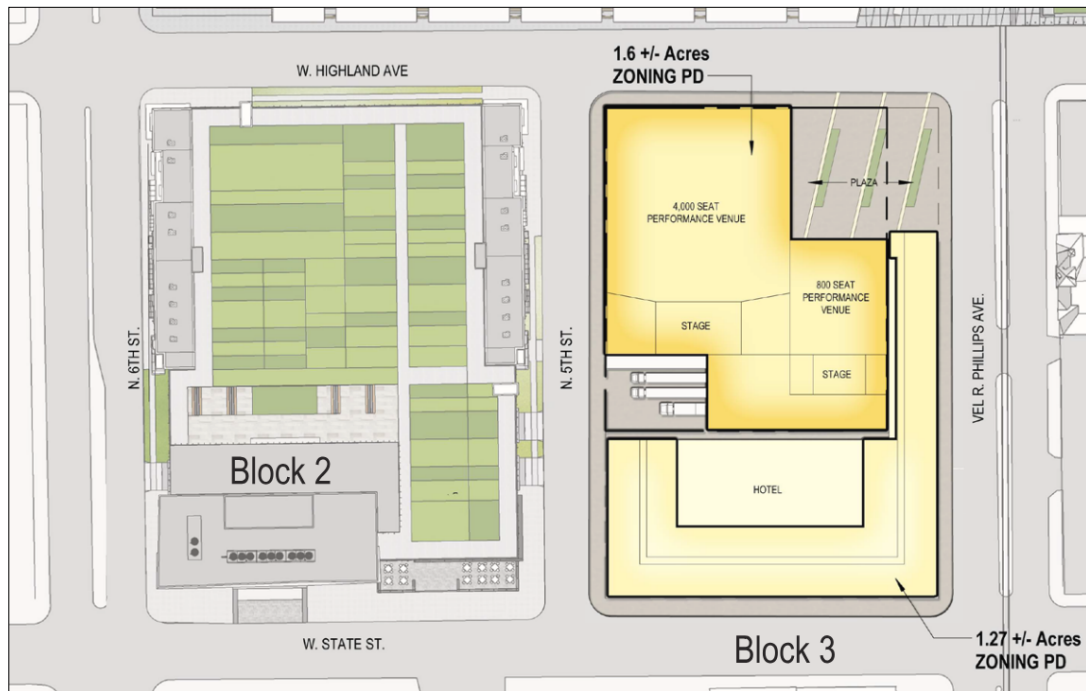
- Juneau Avenue and Vel R. Phillips Avenue: this intersection has been reconfigured with only one eastbound lane, a shared through/left turn lane, bike lanes, and valet parking lanes. Eastbound through vehicles queue behind left turning vehicles waiting for a gap at Vel R. Phillips Avenue. Pedestrian 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.

Table 1: Originally Proposed Development Trip Generation – October 2015

Block	ITE Code	Development Type	Size	Daily Trips	PM Peak Hour			Pregame Peak Hour*			Postgame Peak Hour*		
					In	Out	Total	In	Out	Total	In	Out	Total
1	--	NBA Arena	--	Not calculated. Assumed to replace trips generated by current Arena.									
2	220	Apartments	102 units	678	40	25	65	25	15	40	5	5	10
	220	Student Housing	62 units	412	25	15	40	15	10	25	5	5	10
	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
	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
5	220	Apartments	215 units	1,430	90	45	135	55	25	80	15	10	25
	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
6	220	Apartments	55 units	366	25	10	35	15	5	20	5	0	5
	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
7	220	Apartments	70 units	466	30	15	45	20	10	30	5	5	10
	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
8	710	Office	30,000 sq. ft.	331	10	35	45	5	20	25	0	5	5
	--	Practice Facility	45,000 sq. ft.	Not calculated. Assumed no trip generation during PM, Pregame, & Postgame peak hours on gamedays.									
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

Table 2: Updated Proposed Development Trip Generation – October 2022

Block	ITE Code	Development Type	Size	Daily Trips	PM Peak Hour			Pregame Peak Hour		
					In	Out	Total	In	Out	Total
1	--	NBA Arena	--	Not calculated. Assumed to replace trips generated by current Arena.						
2	220	Apartments	102 units	678	40	25	65	25	15	40
	220	Student Housing	62 units	412	25	15	40	15	10	25
	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
3	310	Hotel	300 rooms	2,451	90	90	180	55	55	110
	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
5	220	Apartments	215 units	1,430	90	45	135	55	25	80
	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
6	220	Apartments	55 units	366	25	10	35	15	5	20
	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
7	220	Apartments	112 units	745	45	25	70	25	15	40
	820	Retail	22,000 sq. ft.	939	40	40	80	30	30	60
8	710	Office	40,000 sq. ft.	441	10	50	60	5	30	35
	--	Practice Facility	45,000 sq. ft.	Not calculated. Assumed no trip generation during PM & Pregame peak hours on 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

Table 3: Updated Proposed Development Trip Generation Changes – October 2022

Block	ITE Code	Development Type	Size	Daily Trips	PM Peak Hour			Pregame Peak Hour		
					In	Out	Total	In	Out	Total
1	--	NBA Arena	--		--					
2	220	Apartments	0	0	0	0	0	0	0	0
	220	Student Housing	0	0	0	0	0	0	0	0
	820	Retail	0	0	0	0	0	0	0	0
	710	Office	0	0	0	0	0	0	0	0
3	310	Hotel	0	0	0	0	0	0	0	0
	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
	220	Apartments	-48 units	-319	-20	-10	-30	-10	-5	-15
5	220	Apartments	0	0	0	0	0	0	0	0
	820	Retail	0	0	0	0	0	0	0	0
	710	Office	0	0	0	0	0	0	0	0
6	220	Apartments	0	0	0	0	0	0	0	0
	710	Office	0	0	0	0	0	0	0	0
	820	Retail	-12,000 sq. ft.	-512	-20	-25	-45	-15	-20	-35
	310	Hotel	+205 rooms	+ 1675	+ 65	+ 60	+ 125	+ 40	+ 35	+ 75
7	220	Apartments	+42 units	+ 279	+ 15	+ 10	+ 25	+ 5	+ 5	+ 10
	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
8	710	Office	+10,000 sq. ft.	+ 110	+ 0	+ 15	+ 15	+ 0	+ 10	+ 10
	--	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	Movement	Phase 2		Phase 3	
		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 Avenue & IH 43 SB ramp	WBL	+82	+10	+82	+10
	WBT	+82	+10	+97	+10
Highland Avenue & 6 th Street	WBT	+130	+0	+130	+0
State Street & 6 th Street	NBT	+26	+13	+96	+58
	WBR	+145	+90	+160	+90
	SBT	+42	+28	+142	+93
Kilbourn Avenue & 6 th Street	NBT	+19	+8	+68	+34
	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

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

- **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.

Table 5: Future Intersection Peak Hour Traffic Operations – McKinley Avenue intersections

Intersection & Improvements	Traffic Control	Scenario	Peak Hour	Level of Service per Movement by Approach												
				Int. LOS	Eastbound			Westbound			Northbound			Southbound		
					LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
McKinley Ave & 6 th Street • City of Milwaukee: monotubes installed • Adjust timings • LOS issues identified without Arena development	Traffic Signal	2015 Existing	PM	D	D	C	D	E	A	A	F	E	E	F	C	C
			Pregame	D	D	C	F	F	C	C	E	D	D	D	C	C
			Postgame	F	C	B	B	C	C	C	F	C	C	D	C	C
		Phase 1	PM	D	F	C	E	F	C	D	F	D	D	E	C	C
			Pregame	D	D	D	F	F	B	B	E	D	D	D	C	C
			Postgame	F	D	B	B	C	C	C	F	C	D	C	C	C
		Phase 2	PM	D	F	C	F	F	C	C	E	E	E	D	D	D
			Pregame	D	C	C	F	F	A	A	E	D	D	D	C	C
		Phase 3	PM	E	F	D	F	F	C	C	E	E	E	E	D	D
			Pregame	D	C	C	F	F	A	A	F	D	D	D	C	C
		Phase 2 update	PM	D	F	D	F	F	C	D	D	D	D	D	D	D
			Pregame	D	C	D	F	F	A	A	D	C	C	D	C	C
		Phase 3 update	PM	D	F	D	F	F	C	C	E	E	E	E	D	D
			Pregame	D	C	C	F	F	A	A	F	D	D	D	C	C
McKinley Ave & Vel R. Phillips Avenue • Remove NBLT protected phasing • Add EBLT protected phasing • Reduce NB approach to LT bay and shared TH/RT lane • Adjust timings	Traffic Signal	2015 Existing	PM	C	F	B	C	E	D	D	B	A	A	C	C	C
			Pregame	B	C	B	C	E	A	A	B	A	A	C	C	C
			Postgame	B	B	B	B	A	A	A	C	A	A	C	C	C
		Phase 1	PM	C	D	A	A	C	D	D	B	B	B	C	C	C
			Pregame	B	C	A	A	C	D	D	B	B	B	C	C	C
			Postgame	C	C	C	C	B	C	C	C	B	B	B	B	B
		Phase 2	PM	B	C	A	A	A	B	B	B	B	B	C	C	C
			Pregame	A	B	A	A	A	A	A	D	C	C	C	C	C
		Phase 3	PM	C	D	A	A	C	D	D	D	C	C	C	C	D
			Pregame	C	D	A	A	C	D	D	D	D	C	C	C	C
		Phase 2 update	PM	C	D	A	A	C	D	D	D	C	C	C	C	C
			Pregame	C	D	A	A	C	D	D	D	C	C	C	C	C
		Phase 3 update	PM	C	E	A	A	C	E	E	E	D	D	C	C	D
			Pregame	C	C	A	A	C	E	E	D	C	C	C	C	C

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

Intersection & Improvements	Traffic Control	Scenario	Peak Hour	Level of Service per Movement by Approach												
				Int. LOS	Eastbound			Westbound			Northbound			Southbound		
					LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
McKinley Ave & Old World 3 rd Street <ul style="list-style-type: none"> • Add WBLT protected phasing • Adjust timings 	Traffic Signal	2015 Existing	PM	C	E	A	A	C	C	B	C	A	A	C	D	D
			Pregame	B	B	A	A	C	B	B	B	A	A	C	D	D
			Postgame	B	A	A	A	B	B	B	B	A	A	C	C	C
		Phase 1	PM	D	C	D	C	C	D	C	C	A	A	C	D	D
			Pregame	C	C	D	C	D	C	B	C	A	A	C	D	D
			Postgame	B	B	B	B	B	C	C	C	A	A	C	C	C
		Phase 2	PM	D	C	D	C	C	D	C	D	C	C	C	D	E
			Pregame	D	C	D	C	D	C	B	C	C	C	C	D	D
		Phase 3	PM	D	D	D	B	C	C	B	D	B	B	C	F	F
			Pregame	D	C	D	C	D	C	C	C	A	A	C	D	D
		Phase 2 update	PM	D	D	D	C	C	D	C	C	A	A	C	D	D
			Pregame	D	C	D	C	D	C	B	C	A	A	C	D	D
		Phase 3 update	PM	E	D	D	B	C	D	B	D	B	B	D	F	F
			Pregame	D	C	D	C	D	C	B	D	A	A	C	D	D

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.

Table 7: Future Intersection Peak Hour Traffic Operations – IH 43 intersections

Intersection	Traffic Control	Scenario	Peak Hour	Level of Service per Movement by Approach												
				Int. LOS	Eastbound			Westbound			Northbound			Southbound		
					LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Highland Ave & IH 43 SB ramp/ SB frontage road • Adjust timings	Traffic Signal	2015 Existing	PM	B	-	B	B	B	B	-	-	-	-	B	C	C
			Pregame	B	-	B	B	B	B	-	-	-	-	B	C	C
			Postgame	B	-	B	B	B	B	-	-	-	-	B	B	C
		Phase 1	PM	B	-	B	B	B	B	-	-	-	-	C	C	C
			Pregame	C	-	B	B	C	B	-	-	-	-	B	D	D
			Postgame	C	-	B	B	B	B	-	-	-	-	B	C	C
		Phase 2	PM	B	-	B	B	B	B	-	-	-	-	C	C	C
			Pregame	D	-	B	B	C	B	-	-	-	-	B	D	D
		Phase 3	PM	C	-	B	B	B	B	-	-	-	-	C	C	C
			Pregame	D	-	B	B	C	B	-	-	-	-	B	D	D
		Phase 2 update	PM	C	-	B	B	C	B	-	-	-	-	C	C	C
			Pregame	C	-	B	B	C	B	-	-	-	-	B	C	C
		Phase 3 update	PM	C	-	B	B	C	B	-	-	-	-	C	C	C
			Pregame	C	-	B	B	C	B	-	-	-	-	B	D	D

Table 8: Future Intersection Peak Hour Traffic Operations – Juneau Avenue intersections

Intersection & Improvements	Traffic Control	Scenario	Peak Hour	Level of Service per Movement by Approach												
				Int. LOS	Eastbound			Westbound			Northbound			Southbound		
					LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Juneau Ave & 6 th Street • EB and WB approaches include 1 LT bay, 1 TH lane, 1 RT lane • Add EBLT & WBLT protected phasing • Adjust timings	Traffic Signal	2015 Existing	PM	C	D	C	A	C	C	C	D	C	C	F	B	B
			Pregame	B	C	C	A	C	C	C	C	B	B	C	B	B
			Postgame	C	E	C	A	C	C	D	B	B	B	C	B	A
		Phase 1	PM	D	D	C	A	D	C	C	D	C	C	F	B	B
			Pregame	C	C	C	A	D	C	C	C	B	C	D	B	B
			Postgame	F	C	B	A	D	C	F	C	C	C	C	B	B
		Phase 2	PM	D	D	C	A	D	D	C	D	D	C	F	B	B
			Pregame	C	C	D	A	D	D	D	C	C	C	E	B	B
		Phase 3	PM	D	D	C	A	D	D	C	D	B	B	F	B	B
			Pregame	C	C	D	A	D	D	D	C	C	C	D	B	B
		Phase 2 update	PM	D	D	C	C	C	D	D	D	D	C	F	B	B
			Pregame	C	D	C	C	D	C	C	C	B	C	E	B	B
		Phase 3 update	PM	D	D	C	C	C	C	B	D	C	B	F	C	B
			Pregame	C	C	C	C	D	D	D	D	C	C	E	B	B
Juneau Ave & Vel R. Phillips Avenue* • SB approach reduced to LT bay and RT lane • EB approach reduced to 1 shared lane • Adjust timings to maximize EB/WB green time	Traffic Signal	2015 Existing	PM	B	C	B	B	C	B	B	A	A	A	B	B	B
			Pregame	B	B	C	C	B	A	A	A	A	A	B	B	B
			Postgame	B	C	B	B	A	A	A	A	A	A	B	B	B
		Phase 1	PM	C	D	D	-	-	C	B	-	-	-	C	-	C
			Pregame	C	D	D	-	-	C	B	-	-	-	C	-	D
			Postgame	C	D	D	-	-	B	B	-	-	-	B	-	B
		Phase 2	PM	C	D	D	-	-	C	B	-	-	-	C	-	C
			Pregame	C	C	C	-	-	B	B	-	-	-	C	-	C
		Phase 3	PM	C	D	D	-	-	B	A	-	-	-	E	-	E
			Pregame	D	F	D	-	-	B	B	-	-	-	C	-	D
		Phase 2 update	PM	C	C	C	-	-	C	B	-	-	-	D	-	D
			Pregame	F	F	F	-	-	A	A	-	-	-	C	-	C
		Phase 3 update	PM	F	F	F	-	-	C	B	-	-	-	D	-	D
			Pregame	E	F	F	-	-	B	B	-	-	-	C	-	C

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.

Table 9: Future Intersection Peak Hour Traffic Operations – Juneau Avenue intersections

Intersection & Improvements	Traffic Control	Scenario	Peak Hour	Level of Service per Movement by Approach													
				Int. LOS	Eastbound			Westbound			Northbound			Southbound			
					LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Juneau Ave & Old World 3 rd Street • Change WB approach to 1 LT, 1 TH, 1 RT lane • EB and WB reduced to 1 lane east of intersection • Add EBLT protected phasing • Adjust timings	Traffic Signal	2015 Existing	PM	C	D	C	C	D	C	C	A	A	A	B	B	B	
			Pregame	C	D	C	D	D	C	C	C	C	C	C	C	B	B
			Postgame	C	D	C	C	D	C	C	D	D	C	C	C	B	B
		Phase 1	PM	C	E	C	C	D	C	C	D	C	B	C	C	C	C
			Pregame	C	D	C	C	D	C	C	D	D	D	D	C	C	C
			Postgame	C	D	C	C	C	C	C	D	C	C	C	C	B	B
		Phase 2	PM	C	E	C	C	D	D	C	D	D	C	C	C	C	C
			Pregame	C	D	C	C	D	C	C	D	D	C	D	C	C	C
		Phase 3	PM	D	D	C	C	D	D	C	F	A	C	D	D	D	D
			Pregame	C	D	C	C	D	C	C	E	A	D	D	C	C	C
		Phase 2 update	PM	C	E	D	C	E	D	C	E	B	A	C	D	C	C
			Pregame	C	D	C	C	D	C	C	D	C	C	C	D	C	C
		Phase 3 update	PM	E	D	D	C	E	E	C	F	C	B	D	F	C	C
			Pregame	C	D	C	C	D	C	C	E	C	C	C	D	C	C

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

Intersection & Improvements	Traffic Control	Scenario	Peak Hour	Level of Service per Movement by Approach												
				Int. LOS	Eastbound			Westbound			Northbound			Southbound		
					LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Highland Ave & 6 th Street* • NB approach includes LT bay, TH lane, TH/RT lane & RT bay • WB approach includes LT bay, & TH/RT lane (Phase 3) • Adjust timings • LOS issues identified without Arena development	Traffic Signal	2015 Existing	PM	D	F	F	C	E	E	A	C	B	B	E	D	C
			Pregame	D	F	F	C	F	F	A	B	A	A	D	C	C
			Postgame	C	C	C	B	E	E	A	B	A	A	C	C	C
		Phase 1	PM	C	C	C	C	C	C	B	D	C	C	A	D	D
			Pregame	C	D	C	C	D	C	B	C	A	C	C	D	D
			Postgame	B	C	C	C	A	C	C	B	A	A	C	C	D
		Phase 2	PM	C	C	C	C	D	C	B	D	B	B	D	D	D
			Pregame	C	D	C	C	F	B	B	C	A	D	D	D	D
		Phase 3	PM	C	D	C	C	D	C	B	D	B	C	D	D	C
			Pregame	C	C	C	C	F	B	B	C	A	B	D	D	D
		Phase 2 update	PM	D	D	D	C	E	C	B	E	B	C	A	D	D
			Pregame	D	C	C	C	F	B	B	C	A	C	C	C	C
		Phase 3 update	PM	D	E	D	C	F	D	C	E	B	B	A	D	C
			Pregame	C	C	C	C	F	E	B	D	A	B	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.

Table 11: Future Intersection Peak Hour Traffic Operations – State Street intersections

Intersection & Improvements	Traffic Control	Scenario	Peak Hour	Level of Service per Movement by Approach												
				Int. LOS	Eastbound			Westbound			Northbound			Southbound		
					LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
State Street & 6 th Street* • Remove NBLT protected phasing during Postgame • Adjust timings	Traffic Signal	2015 Existing	PM	C	D	-	C	B	B	B	C	B	-	-	C	C
			Pregame	C	D	-	C	C	B	C	B	B	-	-	C	C
			Postgame	B	C	-	C	C	B	B	B	B	-	-	C	C
		Phase 1	PM	C	D	-	C	B	B	B	C	C	-	-	D	C
			Pregame	C	D	-	C	B	A	B	C	B	-	-	C	C
			Postgame	C	A	-	A	C	A	A	D	C	-	-	C	C
		Phase 2	PM	C	E	-	C	B	A	A	D	C	-	-	D	C
			Pregame	C	D	-	C	B	A	B	C	B	-	-	C	D
		Phase 3	PM	C	E	-	C	C	B	B	D	C	-	-	D	C
			Pregame	C	D	-	C	B	A	B	C	B	-	-	C	D
		Phase 2 update	PM	C	D	-	C	B	A	B	E	C	-	-	D	C
			Pregame	C	D	-	C	B	A	B	C	B	-	-	C	C
		Phase 3 update	PM	D	E	-	C	B	B	C	D	C	-	-	F	C
			Pregame	C	D	-	C	B	A	B	C	C	-	-	D	C

*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.

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

Intersection	Traffic Control	Scenario	Peak Hour	Level of Service per Movement by Approach														
				Int. LOS	Eastbound			Westbound			Northbound			Southbound				
					LT	TH	RT	LT	TH	RT	LT	T H	RT	LT	TH	RT		
Kilbourn Ave & 6 th Street • Adjust timings	Traffic Signal	Existing	PM	D	C	C	A	D	C	D	D	D	C	D	D	A		
			Pregame	C	D	C	A	C	C	D	B	C	C	C	C	C	A	
			Postgame	C	C	C	A	C	D	D	C	C	C	B	D	A		
		Phase 1	PM	D	C	C	A	D	C	D	D	D	C	D	D	A		
			Pregame	D	D	C	A	D	D	D	C	C	C	D	C	A		
			Postgame	C	C	C	A	C	C	D	C	C	C	C	B	A		
		Phase 2	PM	D	D	D	A	D	D	E	D	D	C	D	D	A		
			Pregame	D	E	C	A	D	D	D	C	D	C	D	C	A		
		Phase 3	PM	D	D	D	A	E	D	F	D	D	C	D	D	A		
			Pregame	D	D	C	A	C	D	D	C	D	C	D	C	A		
		Phase 2 update	PM	D	D	D	A	D	D	E	D	D	C	D	D	A		
			Pregame	D	E	C	A	D	D	E	C	D	C	D	C	A		
		Phase 3 update	PM	E	D	D	A	E	D	F	E	D	C	E	F*	A		
			Pregame	D	D	C	A	C	C	D	C	D	C	D	C	A		
		Wells Street & 6 th Street • Adjust timings	Traffic Signal	Existing	PM	C	E	B	B	C	C	D	C	C	B	E	C	C
					Pregame	C	C	B	B	C	C	C	C	C	C	D	B	B
					Postgame	C	C	B	B	C	C	C	B	B	B	B	B	B
				Phase 1	PM	C	E	B	B	C	C	D	C	C	B	E	C	C
Pregame	C				C	B	B	C	C	C	C	D	C	D	B	B		
Postgame	C				C	B	B	C	C	D	B	B	B	B	B	C		
Phase 2	PM			C	E	B	B	C	D	D	C	C	B	F	C	C		
	Pregame			C	C	B	B	C	C	C	B	C	B	D	B	B		
Phase 3	PM			C	E	B	B	D	D	E	C	C	B	F	C	C		
	Pregame			C	C	B	B	C	C	C	C	D	C	D	B	B		
Phase 2 update	PM			C	E	B	B	D	D	E	C	C	B	F	C	C		
	Pregame			C	C	B	B	C	C	C	B	C	B	D	B	B		
Phase 3 update	PM			D	E	B	B	C	D	D	C	C	B	F	C	C		
	Pregame			C	C	B	B	C	C	C	C	D	C	D	B	B		

*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

Intersection	Movement	Phase 2		Phase 3	
		PM	Pregame	PM	Pregame
McKinley Avenue & Vel R. Phillips Avenue	WBT	+107	+70	+125	+80
		B→D	A→D	D→E	D→E
McKinley Avenue & 3 rd Street	WBT	+79	+49	+92	+55
		D→D	C→C	C→D	C→C
Juneau Avenue & Vel R. Phillips Avenue	EBT	+155	+94	+176	+105
		D→C	C→F	D→F	D→F
Juneau Avenue & 3 rd Street	EBT	+99	+49	+114	+57
		C→D	C→C	C→D	C→C
Highland Avenue & IH 43 SB ramp	WBL	+82	+10	+82	+10
		B→C	C→C	B→C	C→C
	WBT	+82	+10	+97	+10
		B→B	B→B	B→B	B→B
Highland Avenue & 6 th Street	WBT	+130	+0	+130	+0
		C→C	B→B	C→C	B→B
State Street & 6 th Street	NBT	+26	+13	+96	+58
		C→C	B→B	C→C	B→C
	WBR	+145	+90	+160	+90
		A→B	B→B	B→C	B→B
	SBT	+42	+28	+142	+93
		D→D	C→C	D→F	C→D
Kilbourn Avenue & 6 th Street	NBT	+19	+8	+68	+34
		D→D	D→D	D→D	D→D
	SBT	+14	+5	+97	+51
		D→D	C→C	D→F*	C→C
Wells Street & 6 th Street	SBT	+12	+4	+83	+38
		C→C	B→B	C→C	B→B

*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 6th 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

Vehicle Level of Service

Intersection	Scenario	Traffic Control	Peak Hour	Level of Service per Movement by Approach												Intersection	Scenario	Traffic Control	Peak Hour	Level of Service per Movement by Approach																
				Eastbound			Westbound			Northbound			Southbound							Eastbound			Westbound			Northbound			Southbound							
				LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
Fond Du Lac & SB I-43 Ramps	Phase II	Signalized	PM	Lanes	-	2	1	2	2	-	-	-	2	<1	1	Fond Du Lac & NB I-43 Ramps	Phase II	Signalized	PM	Lanes	1	3	-	-	4	1	1	<1	-	-	-	-	-	-	-	-
				Volume	-	519	494	713	965	-	-	-	313	83	39					46	787	-	-	1246	569	432	66	-	-	-	-	-				
				PHF	0.81	0.95	0.89	0.88	0.9	0.81	-	-	0.64	0.78	0.73					0.75	0.84	0.81	0.81	0.9	0.85	0.96	0.88	0.89	-	-	-	-	-			
			Delay	-	40.2	0	18.3	0.9	-	-	-	31.4	30.6	0	6.8	0.2			-	-	11.9	0	46.2	46.2	-	-	-	-	-	-						
			LOS	-	D	A	B	A	-	-	-	C	C	A	A	A			-	-	B	A	D	D	-	-	-	-	-	-						
			Pre Game	Volume	-	457	387	609	405	-	-	678	12	67	43	1091			-	-	798	336	216	10	-	-	-	-	-	-						
	PHF	0.81	0.72	0.92	0.89	0.84	0.81	-	-	0.84	0.55	0.88	0.94	0.83	0.81	0.81	0.91	0.76	0.87	0.56	0.92	-	-	-	-	-										
	Delay	-	30.3	0	36.4	0.4	-	-	-	32.6	16.3	0	5.7	0.3	-	-	10.4	0	35	35	-	-	-	-	-	-										
	LOS	-	C	A	D	A	-	-	-	C	B	A	A	A	-	-	B	A	C	C	-	-	-	-	-	-										
	Phase III	Signalized	PM	Lanes	-	2	1	2	2	-	-	-	2	<1	1	Fond Du Lac & NB I-43 Ramps	Phase III	Signalized	PM	Lanes	1	3	-	-	4	1	1	<1	-	-	-	-	-	-	-	-
				Volume	-	564	506	795	1078	-	-	-	340	85	40					47	858	-	-	1430	654	443	68	-	-	-	-	-				
				PHF	0.81	0.95	0.89	0.88	0.9	0.81	-	-	0.64	0.78	0.73					0.75	0.84	0.81	0.81	0.9	0.85	0.96	0.88	0.89	-	-	-	-				
Delay			-	45.4	0	20.2	1.1	-	-	-	32.1	31.1	0	7.5	0.2	-			-	12.2	0	47.5	47.5	-	-	-	-	-								
LOS			-	D	A	C	A	-	-	-	C	C	A	A	A	-			-	B	A	D	D	-	-	-	-	-								
Pre Game			Volume	-	455	397	682	453	-	-	675	13	69	45	1085	-			-	913	385	222	11	-	-	-	-	-								
PHF	0.81	0.72	0.92	0.89	0.84	0.81	-	-	0.84	0.55	0.88	0.94	0.83	0.81	0.81	0.91	0.76	0.87	0.56	0.92	-	-	-	-												
Delay	-	30.2	0	47.6	0.4	-	-	-	32.6	16.3	0	5.9	0.3	-	-	10.7	0	35.2	35.2	-	-	-	-	-												
LOS	-	C	A	D	A	-	-	-	C	B	A	A	A	-	-	B	A	D	D	-	-	-	-	-												

Intersection	Scenario	Traffic Control	Peak Hour	Level of Service per Movement by Approach											
				Eastbound			Westbound			Northbound			Southbound		
				LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Highland & SB Frontage	Phase II	Signalized	PM	Lanes	-	2>	0	1	2	-	-	-	1	2>	0
				Volume	-	549	52	126	478	-	-	-	119	553	180
				PHF	0.81	0.88	0.77	0.75	0.72	0.81	0.81	0.81	0.81	0.71	0.94
			Delay	-	14.8	14.8	25.9	14	-	-	-	20.6	28.2	28.5	
			LOS	-	B	B	C	B	-	-	-	C	C	C	
			Pre Game	Volume	-	462	43	60	157	-	-	-	133	553	180
	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		
	Delay	-	19.7	19.7	26.6	15.8	-	-	-	16	32.1	33.1			
	LOS	-	B	B	C	B	-	-	-	B	C	C			
	Phase III	Signalized	PM	Lanes	-	2>	0	1	2	-	-	-	1	2>	0
				Volume	-	571	53	127	503	-	-	-	121	567	185
				PHF	0.81	0.88	0.77	0.75	0.72	0.81	0.81	0.81	0.81	0.71	0.94
Delay			-	15	15	26.9	14.3	-	-	-	20.6	28.8	29		
LOS			-	B	B	C	B	-	-	-	C	C	C		
Pre Game			Peds	-	14	-	-	27	-	-	0	-	-	3	
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			
Delay	-	17.3	17.3	23.4	14	-	-	-	18	44.4	46.6				
LOS	-	B	B	C	B	-	-	-	B	D	D				

Vehicle Level of Service

Intersection	Scenario	Traffic Control	Peak Hour	Level of Service per Movement by Approach												Intersection	Scenario	Traffic Control	Peak Hour	Level of Service per Movement by Approach											
				Eastbound			Westbound			Northbound			Southbound							Eastbound			Westbound			Northbound			Southbound		
				LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Fond Du Lac/McKinley & 6th	Phase II	Signalized	Lanes	1	3	1	1	3	0	2	2	0	1	2	1	Lanes	1	3	0	1	2	0	1	1	0	0	0	1			
			Volume	103	1576	497	90	1235	100	379	755	158	135	737	202	Volume	162	1358	165	21	1325	65	45	135	37	21	48	134			
			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	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			
	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	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					
	LOS	F	D	F	F	C	D	D	D	D	D	D	D	LOS	D	A	A	C	D	D	D	C	C	C	C	C					
	Pre Game	Volume	125	2025	688	88	812	55	202	415	162	118	336	119	Volume	208	1256	298	31	972	68	138	131	65	36	35	102				
Phase III	Signalized	Lanes	1	3	1	1	3	0	2	2	0	1	2	1	Lanes	1	3	0	1	2	0	1	1	0	0	0	1				
		Volume	105	1737	524	95	1467	119	410	819	170	145	780	207	Volume	176	1590	209	21	1472	72	107	169	48	21	59	141				
		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	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				
	Delay	168.3	44.7	91.1	324	21	28.7	66.4	59.8	60.8	71.9	46	38.9	Delay	73.3	1.4	2.8	25	59.8	63.3	71.2	40.8	40.8	32.3	32.3	36.2					
	LOS	F	D	F	F	C	C	E	E	E	E	D	D	LOS	E	A	A	C	E	E	E	D	D	C	C	D					
	Pre Game	Volume	128	1983	714	90	954	65	221	455	137	116	331	122	Volume	218	1413	330	32	1063	75	74	154	72	37	36	100				
Phase II	Signalized	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	Volume	71	705	-	-	580	147	-	-	-	121	-	115				
		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	PHF	0.75	0.9	1	1	0.85	0.72	-	-	-	0.58	1	0.84				
	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	Delay	28.3	28.3	-	-	22	13.9	-	-	-	52.5	-	43.3					
	LOS	D	C	C	C	D	D	D	D	D	F	B	B	LOS	C	C	-	-	C	B	-	-	-	D	-	D					
	Pre Game	Volume	96	188	65	179	197	128	32	530	352	218	693	196	Volume	284	579	-	-	316	223	-	-	-	199	-	161				
Phase III	Signalized	Lanes	1	1	1	1	1	1	1	2	1	1	2	1	Lanes	0	<1	-	-	1	1	-	-	-	1	-	1				
		Volume	154	247	79	216	427	139	65	1072	309	167	1075	155	Volume	103	822	-	-	748	171	-	-	-	163	-	147				
		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	PHF	0.75	0.9	1	1	0.85	0.72	-	-	-	0.58	1	0.84				
	Delay	37.6	26.6	22.6	34.3	30	13.7	44.2	26.5	18.3	618.9	24.2	18.2	Delay	392.1	392.1	-	-	21.6	11.6	-	-	-	45.1	-	36.8					
	LOS	D	C	C	C	C	B	D	C	B	F	C	B	LOS	F	F	-	-	C	B	-	-	-	D	-	D					
	Pre Game	Volume	91	191	69	210	292	131	37	567	305	192	737	200	Volume	124	595	-	-	447	151	-	-	-	228	-	185				
Phase II	Signalized	Lanes	0	<2>	0	1	1	1	1	2	1	-	2	1	Lanes	0	<2>	0	1	2	1	-	2	1	-	2	1				
		Volume	276	55	169	190	182	29	254	983	312	-	1041	208	Volume	276	55	169	190	182	29	254	983	312	-	1041	208				
		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	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				
	Delay	52.3	38.4	24.5	59	21.5	18.4	68.3	18	22.4	-	45.7	37.1	Delay	52.3	38.4	24.5	59	21.5	18.4	68.3	18	22.4	-	45.7	37.1					
	LOS	D	D	C	C	E	C	B	E	B	C	D	D	LOS	D	D	C	C	E	C	B	E	B	C	D	D					
	Pre Game	Volume	188	38	215	128	51	37	178	689	487	68	732	173	Volume	188	38	215	128	51	37	178	689	487	68	732	173				
Phase III	Signalized	Lanes	0	<2>	0	1	1	1	1	2	1	-	2	1	Lanes	0	<2>	0	1	2	1	-	2	1	-	2	1				
		Volume	282	55	183	191	183	30	274	1135	312	-	1156	213	Volume	282	55	183	191	183	30	274	1135	312	-	1156	213				
		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	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				
	Delay	79.6	53.25	26.9	82.3	53.15	24	69.3	18.6	18.5	-	49.8	28.4	Delay	79.6	53.25	26.9	82.3	53.15	24	69.3	18.6	18.5	-	49.8	28.4					
	LOS	E	D	C	F	D	C	E	B	B	D	C	C	LOS	E	D	C	F	D	C	E	B	B	D	C	C					
	Pre Game	Peds	-	-	82	-	-	299	-	-	1261	-	-	211	Peds	-	-	82	-	-	299	-	-	1261	-	-	211				
Phase II	Signalized	Lanes	0	<2>	0	1	1	1	1	2	1	-	2	1	Lanes	0	<2>	0	1	2	1	-	2	1	-	2	1				
		Volume	32.7	31.3	29.9	103.3	61.1	18.9	38.9	2.7	13.1	0.88	0.89	0.87	Volume	32.7	31.3	29.9	103.3	61.1	18.9	38.9	2.7	13.1	0.88	0.89	0.87				
		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	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				
	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	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					
	LOS	C	C	C	F	E	B	D	A	B	D	D	D	LOS	C	C	C	F	E	B	D	A	B	D	D	D					
	Pre Game	Volume	32.7	31.3	29.9	103.3	61.1	18.9	38.9	2.7	13.1	39.1	39.2	51.8	Volume	32.7	31.3	29.9	103.3	61.1	18.9	38.9	2.7	13.1	39.1	39.2	51.8				
Phase III	Signalized	Lanes	0	<2>	0	1	1	1	1	2	1	-	2	1	Lanes	0	<2>	0	1	2	1	-	2	1	-	2	1				
		Volume	32.7	31.3	29.9	103.3	61.1	18.9	38.9	2.7	13.1	39.1	39.2	51.8	Volume	32.7	31.3	29.9	103.3	61.1	18.9	38.9	2.7	13.1	39.1	39.2	51.8				
		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	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				
	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	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					
	LOS	C	C	C	F	E	B	D	A	B	D	D	D	LOS	C	C	C	F	E	B	D	A	B	D	D	D					
	Pre Game	Volume	32.7	31.3	29.9	103.3	61.1	18.9	38.9	2.7	13.1	39.1	39.2	51.8	Volume	32.7	31.3	29.9	103.3	61.1	18.9	38.9	2.7	13.1	39.1	39.2	51.8				

Vehicle Level of Service

Intersection	Scenario	Traffic Control	Peak Hour	Level of Service per Movement by Approach												Intersection	Scenario	Traffic Control	Peak Hour	Level of Service per Movement by Approach											
				Eastbound			Westbound			Northbound			Southbound							Eastbound			Westbound			Northbound			Southbound		
				LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
State & 6th	Phase II	Signalized	PM	Lanes	1	-	0	1	2	1	1	2	-	2	1	-	-	-	0	<->	0	1	2	-	-	-	2	1			
				Volume	143	-	120	178	627	333	150	1284	-	-	-	1237	164	-	-	82	1047	2	240	200	-	-	135	30			
				PHF	0.95	0.81	0.77	0.87	0.77	0.89	0.86	0.86	0.81	0.81	0.83	0.93	0.83	0.81	0.81	0.87	0.83	0.59	0.78	0.86	0.81	0.81	0.83	0.87			
				Delay	50.6	-	20.5	14.5	8.9	16.4	57.6	27.9	-	-	-	52.3	21.5	-	-	14.1	13.8	14.4	30.8	13	-	-	20.1	19.8			
			LOS	D	-	C	B	A	B	E	C	-	-	-	D	C	-	-	B	B	B	C	B	-	-	C	B				
			Pre Game	Volume	183	-	117	81	445	209	151	1093	-	-	-	853	242	-	-	-	-	-	-	-	-	-	-	-			
	PHF	0.85	0.81	0.78	0.84	0.94	0.88	0.86	0.86	0.81	0.81	0.81	0.84	0.9	0.84	0.84	-	-	-	-	-	-	-	-	-						
	Delay	47.4	-	24	15	9	16.1	24.5	19.4	-	-	-	30.9	33.9	-	-	-	-	-	-	-	-	-	-	-						
	LOS	D	-	C	B	A	B	C	B	-	-	-	-	C	C	C	-	-	-	-	-	-	-	-	-						
	Phase III	Signalized	PM	Lanes	1	-	0	1	2	1	1	2	-	2	1	-	-	-	0	<->	0	1	2	-	-	-	2	1			
				Volume	151	-	123	182	643	352	154	1399	-	-	-	1398	183	-	-	84	1082	2	243	205	-	-	139	31			
				PHF	0.95	0.81	0.77	0.87	0.77	0.89	0.86	0.86	0.81	0.81	0.83	0.93	0.83	0.81	0.81	0.87	0.83	0.59	0.78	0.86	0.81	0.81	0.83	0.87			
Delay				67.2	-	21.9	17.9	10.8	23.5	47.3	31.1	-	-	-	89.3	21.7	-	-	14.3	14	14.6	31.9	13.1	-	-	20.2	19.8				
LOS			E	-	C	B	B	C	D	C	-	-	-	F	C	-	-	B	B	B	C	B	-	-	C	B					
Pre Game			Volume	171	-	119	83	452	211	155	1093	-	-	-	956	248	-	-	-	-	-	-	-	-	-	-	-				
PHF	0.85	0.81	0.78	0.84	0.94	0.88	0.86	0.86	0.81	0.81	0.81	0.84	0.9	0.84	0.84	-	-	-	-	-	-	-	-	-							
Delay	40.9	-	23	13.7	8.1	14.2	30.1	20.4	-	-	-	36.7	34.9	-	-	-	-	-	-	-	-	-	-	-							
LOS	D	-	C	B	A	B	C	C	-	-	-	-	D	C	C	-	-	-	-	-	-	-	-	-							
Kilbourn & 6th	Phase II	Signalized	PM	Lanes	1	2>	0	1	2	1	1	2	1	1	2>	0	1	3>	0	1	2	1	1	2>	0	1	2>	0			
				Volume	173	518	37	205	208	250	139	1011	112	219	1276	40	73	56	747	46	76	585	100	75	285	108	76	137	3		
				PHF	0.84	0.85	0.73	0.93	0.77	0.83	0.71	0.86	0.9	0.86	0.91	0.73	0.67	0.84	0.87	0.81	0.83	0.9	0.77	0.73	0.84	0.88	0.79	0.87	0.67		
				Delay	36.2	49	0	50.5	37.3	72.3	52.6	46.1	27.9	52.5	49.3	0	4.4	35.2	28.8	29.6	32.4	17.6	18.4	17.8	16.9	17.7	7.4	4.4	4.4		
			LOS	D	D	A	D	D	E	D	D	C	D	D	A	A	D	C	C	C	B	B	B	B	B	A	A	A			
			Pre Game	Volume	372	609	82	116	136	180	90	692	106	246	659	34	26	0.83	0.95	0.89	0.63	0.79	0.69	0.67	0.89	0.88	0.88	0.87	0.68		
	PHF	0.83	0.95	0.89	0.63	0.79	0.69	0.67	0.89	0.88	0.88	0.87	0.68	0.68	67.5	34.6	0	37.1	35.3	55.2	21.4	35.3	29	52.7	30.1	0					
	Delay	67.5	34.6	0	37.1	35.3	55.2	21.4	35.3	29	52.7	30.1	0	0	LOS	E	C	A	D	D	E	C	D	C	D	C	A				
	LOS	E	C	A	D	D	E	C	D	C	D	C	A	A	D	C	C	C	B	B	B	B	B	A	A	A					
	Phase III	Signalized	PM	Lanes	1	2>	0	1	2	1	1	2	1	1	2>	0	1	3>	0	1	2	1	1	2>	0	1	2>	0			
				Volume	188	531	38	210	213	270	142	1095	115	244	1415	44	4	0.84	0.85	0.73	0.93	0.77	0.83	0.71	0.86	0.9	0.86	0.91	0.73		
				PHF	0.84	0.85	0.73	0.93	0.77	0.83	0.71	0.86	0.9	0.86	0.91	0.73	0.67	42	51.4	0	76.9	38.7	113.6	56.4	54.8	28	64.6	67	0		
Delay				42	51.4	0	76.9	38.7	113.6	56.4	54.8	28	64.6	67	0	0	LOS	D	D	A	E	D	F	E	D	C	E	F	A		
LOS			D	D	A	E	D	F	E	D	C	D	C	A	A	D	C	C	C	B	B	B	B	B	A	A	A				
Pre Game			Volume	367	566	84	119	140	191	92	690	109	274	735	38	26	0.83	0.95	0.89	0.63	0.79	0.69	0.67	0.89	0.88	0.88	0.87	0.68			
PHF	0.83	0.95	0.89	0.63	0.79	0.69	0.67	0.89	0.88	0.88	0.87	0.68	0.68	50.4	33.4	0	30.2	34.3	52.8	26.7	41.4	33.5	51.3	29.7	0						
Delay	50.4	33.4	0	30.2	34.3	52.8	26.7	41.4	33.5	51.3	29.7	0	0	LOS	D	C	A	C	D	C	D	D	C	D	C	A					
LOS	D	C	A	C	D	C	D	D	C	D	C	A	A	D	C	C	C	B	B	B	B	B	A	A	A						
Wells & 6th	Phase II	Signalized	PM	Lanes	1	2	1	1	1>	0	0	2	1	1	3>	0	1	2	1	1	2	1	1	2	1	1	2	1			
				Volume	270	666	108	78	241	69	2	923	95	121	1302	95	10	0.81	0.91	0.72	0.74	0.83	0.52	1	0.91	0.82	0.67	0.94	0.66		
				PHF	0.81	0.91	0.72	0.74	0.83	0.52	1	0.91	0.82	0.67	0.94	0.66	0.66	72.5	19.9	17.4	35.4	47	58.6	23.3	24.7	15.4	98.2	22.1	24.3		
				Delay	72.5	19.9	17.4	35.4	47	58.6	23.3	24.7	15.4	98.2	22.1	24.3	24.3	LOS	E	B	B	D	D	E	C	C	B	F	C	C	
			LOS	E	B	B	D	D	E	C	C	B	F	C	C	C	Volume	186	448	64	50	107	52	3	650	87	111	646	100	100	
			Pre Game	PHF	0.86	0.92	0.82	0.8	0.81	0.75	1	0.86	0.68	0.83	0.82	0.82	0.82	21.7	17.6	16	24.3	25.2	26.1	19.7	20.3	15.9	36.7	17.8	18.9		
	Delay	21.7	17.6	16	24.3	25.2	26.1	19.7	20.3	15.9	36.7	17.8	18.9	18.9	LOS	C	B	B	C	C	C	B	C	B	D	B	B				
	LOS	C	B	B	C	C	C	B	C	B	D	B	B	B	Lanes	1	2	1	1	1>	0	0	2	1	1	3>	0				
	Phase III	Signalized	PM	Lanes	1	2	1	1	1>	0	0	2	1	1	3>	0	1	2	1	1	2	1	1	2	1	1	2	1			
				Volume	289	683	110	80	247	74	2	989	98	133	1426	104	10	0.81	0.91	0.72	0.74	0.83	0.52	1	0.91	0.82	0.67	0.94	0.66		
				PHF	0.81	0.91	0.72	0.74	0.83	0.52	1	0.91	0.82	0.67	0.94	0.66	0.66	58.3	17.5	15.2	33.2	41.5	49.8	29.1	32	17.5	257.3	28.1	32.4		
				Delay	58.3	17.5	15.2	33.2	41.5	49.8	29.1	32	17.5	257.3	28.1	32.4	32.4	LOS	E	B	B	C	D	D	C	C	B	F	C	C	
LOS			E	B	B	C	D	D	C	C	B	F	C	C	C	Volume	187	460	66	51	109	52	3	652	89	122	706	110	110		
Pre Game			PHF	0.86	0.92	0.82	0.8	0.81	0.75	1	0.86	0.68	0.83	0.82	0.82	0.82	22.9	18.4	16.7	25.2	26.1	27	34.3	37.3	26	42.1	18	19.1			
Delay	22.9	18.4	16.7	25.2	26.1	27	34.3	37.3	26	42.1	18	19.1	19.1	LOS	C	B	B	C	C	C	C	D	C	D	B	B					
LOS	C	B	B	C	C	C	C	D	C	D	B	B	B																		

Vehicle Level of Service

Intersection	Scenario	Traffic Control	Peak Hour	Level of Service per Movement by Approach												
				Eastbound			Westbound			Northbound			Southbound			
				LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
McKinley/Knapp & 3rd/Old World	Phase II	Signalized	PM	Lanes	1	2	1	1	2	1	1	2	0	1	2	0
				Volume	141	1128	147	85	1025	43	125	358	42	108	576	256
				PHF	0.85	0.9	0.77	0.83	0.83	0.6	0.87	0.87	0.63	0.81	0.95	0.86
				Delay	39.5	48.7	23	27.4	46	20.1	33.6	7	7.1	29	50.3	52.3
			LOS	D	D	C	C	D	C	C	A	A	C	D	D	
			Pre Game	Volume	97	1084	177	197	722	22	105	239	31	49	331	244
	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			
	Delay	22.3	50.6	26.8	42.7	26.1	19.9	30.9	6.7	6.8	25.4	47	52.9			
	LOS	C	D	C	D	C	B	C	A	A	C	D	D			
	Phase III	Signalized	PM	Lanes	1	2	1	1	2	1	1	2	0	1	2	0
				Volume	170	1350	174	91	1159	45	140	385	45	110	600	289
				PHF	0.85	0.9	0.77	0.83	0.83	0.6	0.87	0.87	0.63	0.81	0.95	0.86
Delay				45.2	48.8	19.3	31.2	46.5	17.7	51	11.7	11.8	35.1	128.9	131.5	
LOS			D	D	B	C	D	B	D	B	B	D	F	F		
Pre Game			Volume	111	1229	201	135	800	22	116	253	34	50	301	268	
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				
Delay	24.4	46.6	23.7	49.2	26.5	19.1	37.2	6.8	6.9	24.6	40.9	50				
LOS	C	D	C	D	C	B	D	A	A	C	D	D				
Knapp & Water	Phase II	Signalized	PM	Lanes	1	2	1	1	2	1	1	2	0	1	2	1
				Volume	389	643	220	43	458	20	43	458	20	291	894	63
				PHF	0.93	0.9	0.78	0.8	0.74	0.79	0.8	0.74	0.79	0.94	0.91	0.82
				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
			LOS	F	C	C	C	C	C	C	C	C	D	A	A	
			Pre Game	Volume	387	579	216	37	284	9	164	583	83	11	576	463
	PHF	0.94	0.93	0.81	0.8	0.78	0.5	0.79	0.86	0.73	0.81	0.94	0.86			
	Delay	53.8	20.5	21.7	28.7	30.5	30.5	23.1	3.1	2.7	22.9	29	165.7			
	LOS	D	C	C	C	C	C	C	A	A	C	C	F			
	Phase III	Signalized	PM	Lanes	1	2	1	1	2	1	1	2	1	1	2	1
				Volume	460	760	258	45	516	20	328	940	65	21	695	393
				PHF	0.93	0.9	0.78	0.8	0.74	0.79	0.94	0.91	0.82	0.81	0.91	0.91
Delay				394.7	25.4	26.5	39.5	41.1	40.8	65.3	12.5	8.9	23.2	29.5	57.3	
LOS			F	C	C	D	D	D	E	B	A	C	C	E		
Pre Game			Volume	436	652	243	38	283	10	181	608	85	12	599	462	
PHF	0.94	0.93	0.81	0.8	0.78	0.5	0.79	0.86	0.73	0.81	0.94	0.86				
Delay	61	21.3	22.8	33.5	35.8	35.8	26	3.1	2.7	23	29.4	164.7				
LOS	F	C	C	C	D	D	C	A	A	C	C	F				
Juneau & 3rd/Old World	Phase II	Signalized	PM	Lanes	1	1	1	1	1	1	1	1	1	1	1	1
				Volume	112	584	153	68	527	84	65	320	87	65	595	146
				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
				Delay	72.1	36.9	25.7	62.3	36.3	22.5	73.2	10.4	7.4	25.8	42.2	21
			LOS	E	D	C	E	D	C	E	A	A	C	D	C	
			Pre Game	Volume	80	439	277	96	360	113	44	328	93	39	411	144
	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			
	Delay	41.8	28.5	32.6	50.4	26.7	22.9	52.9	27.1	22	33.2	35.6	24.7			
	LOS	D	C	C	D	C	C	D	C	C	C	D	C			
	Phase III	Signalized	PM	Lanes	1	1	1	1	1	1	1	1	1	1	1	1
				Volume	135	711	184	69	683	86	72	339	89	67	633	164
				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
Delay				52.5	36.8	23.4	59.9	63.2	20.3	265.1	20.5	13	38.6	118.4	27.5	
LOS			D	D	C	E	E	C	F	C	B	D	F	C		
Pre Game			Volume	87	470	296	98	402	83	51	226	96	40	440	159	
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				
Delay	45.4	29.4	34.1	54.5	27.9	21.6	78.8	32.6	30.3	30	39.7	25.5				
LOS	D	C	C	D	C	C	E	C	C	C	D	C				
Juneau & Water	Phase II	Signalized	PM	Lanes	1	2	0	1	2	0	1	2	1	1	2	1
				Volume	158	414	192	55	346	34	200	1057	77	20	798	114
				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
				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
			LOS	D	D	D	D	C	C	C	A	A	B	C	B	
			Pre Game	Volume	131	336	201	56	278	49	105	650	92	26	680	123
	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			
	Delay	38	19.6	21.5	34.1	27.6	21.9	14.5	0.7	0.4	18.1	21.4	19.4			
	LOS	D	B	C	C	C	C	B	A	A	B	C	B			
	Phase III	Signalized	PM	Lanes	1	2	0	1	2	0	1	2	1	1	2	1
				Volume	185	485	226	56	471	35	221	1113	79	20	851	127
				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
Delay				34.9	9.8	10.4	25.6	21	21	43.4	7.2	3.1	26.5	47.6	30.4	
LOS			C	A	B	C	C	C	D	A	A	C	D	C		
Pre Game			Volume	145	340	221	58	279	50	105	680	94	27	719	135	
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				
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	C	C	C	D	C	C	B	A	A	B	C	B				
Highland & 3rd/Old World	Phase II	Signalized	PM	Lanes	0	<1	1	0	<1	0	1	1	1	1	1	1
				Volume	25	2	178	17	1	1	102	454	18	1	704	71
				PHF	0.79	0.33	0.78	0.5	1	0.55	0.83	0.86	0.7	0.38	0.94	0.72
				Delay	23.3	29.3	35.3	24.6	12.3	0	11.3	12.5	8	2.2	3.6	0.3
			LOS	C	C	D	C	B	A	B	B	A	A	A	A	
			Pre Game	Volume	127	6	168	16	1	3	119	411	10	1	592	109
	PHF	0.84	1	0.85	0.33	1	0.75	0.68	0.92	0.6	0.25	0.89	0.69			
	Delay	28.5	38.35	48.2	32.3	16.15	0	32.4	11.4	7.9	13.5	14.5	9.3			
	LOS	C	D	D	C	B	A	C	B	A	B	B	A			
	Phase III	Signalized	PM	Lanes	0	<1	1	0	<1	0	1	1	1	1	1	1
				Volume	25	2	182	17	1	1	104	483	18	1	772	73
				PHF	0.79	0.33	0.78	0.5	1	0.55	0.83	0.86	0.7	0.38	0.94	0.72
Delay				23.3	29.6	35.9	24.6	12.3	0	11.7	13	8	2.6	4.9	0.3	
LOS			C	C	D	C	B	A	B	B	A	A	A	A		
Pre Game			Peds	-	-	306	-	-	129	-	-	166	-	-	136	
PHF	0.84	1	0.85	0.33	1	0.75	0.68	0.92	0.6	0.25	0.89	0.69				
Delay	25.2	43	60.8	28.4	14.2	0	42.1	11.2	8	13.2	16.2	9.4				
LOS	C	D	E	C	B	A	D	B	A	B	B	A				

Vehicle Level of Service

Intersection	Scenario	Traffic Control	Peak Hour	Level of Service per Movement by Approach												
				Eastbound			Westbound			Northbound			Southbound			
				LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
State & Water	Phase II	Signalized	Lanes	-	-	-	0	<-4>	0	1	2	-	-	2>	0	
			PM	Volume	-	-	-	59	671	74	112	1245	-	-	899	136
			PHF	-	-	-	0.71	0.76	0.89	0.85	0.9	0.81	0.81	0.92	0.94	
			Delay	-	-	-	22.8	21.4	22.4	26.1	23.6	-	-	50.5	51.6	
			LOS	-	-	-	C	C	C	C	C	-	-	D	D	
			Pre Game	Volume	-	-	-	39	271	58	76	790	-	-	698	132
	PHF	-	-	-	0.84	0.87	0.78	0.85	0.88	0.81	0.81	0.92	0.94			
	Delay	-	-	-	19.3	18.9	19.4	17	17.3	-	-	16.3	16.4			
	LOS	-	-	-	B	B	B	B	B	-	-	B	B			
	Lanes	-	-	-	0	<-4>	0	1	2	-	-	2>	0			
	PM	Volume	-	-	-	61	697	75	115	1322	-	-	983	139		
	PHF	-	-	-	0.71	0.76	0.89	0.85	0.9	0.81	0.81	0.92	0.94			
Delay	-	-	-	26.6	24.6	26.1	24.3	20.9	-	-	52.2	53.6				
LOS	-	-	-	C	C	C	C	C	-	-	D	D				
Pre Game	Volume	-	-	-	40	285	59	78	821	-	-	753	136			
PHF	-	-	-	0.84	0.87	0.78	0.85	0.88	0.81	0.81	0.92	0.94				
Delay	-	-	-	19.4	19	19.5	17.9	17.6	-	-	18.3	18.4				
LOS	-	-	-	B	B	B	B	B	-	-	B	B				