

APPENDIX C

OPERATIONAL ANALYSIS - 2020 CONDITIONS

Crash Severity

	FATAL	A	B	C	No Inj	Total
Persons	0	0	2	16	134	152
Crashes	0	0	2	9	49	60

Alcohol in Crashes

	FATAL	PI	PD	Total
Drinking	0	0	1	1
Not Drinking	0	11	48	59
Total	0	11	49	60

Crashes per Hour by Day

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Unknown	Total
12a - 1a	0	0	0	0	0	0	0	0	0
1a - 2a	0	0	0	0	0	0	0	0	0
2a - 3a	0	0	0	0	0	0	0	0	0
3a - 4a	0	0	0	0	0	0	0	0	0
4a - 5a	0	0	0	0	0	0	0	0	0
5a - 6a	0	1	0	0	0	0	0	0	1
6a - 7a	0	0	0	0	0	0	0	0	0
7a - 8a	0	1	2	0	0	1	0	0	4
8a - 9a	0	1	2	1	1	0	0	0	5
9a - 10a	0	0	1	0	1	0	0	0	2
10a - 11a	0	0	0	1	1	1	0	0	3
11a - 12p	0	1	1	0	2	1	0	0	5
12p - 1p	0	3	0	0	1	0	1	0	5
1p - 2p	1	0	0	0	0	1	0	0	2
2p - 3p	0	0	2	2	0	1	0	0	5
3p - 4p	1	0	0	0	0	2	0	0	3
4p - 5p	1	0	1	2	1	2	0	0	7
5p - 6p	0	0	0	2	1	1	0	0	4
6p - 7p	0	0	1	2	0	1	0	0	4
7p - 8p	1	2	0	0	1	1	0	0	5
8p - 9p	0	0	2	0	0	0	0	0	2
9p - 10p	0	0	0	1	0	0	0	0	1
10p - 11p	0	0	0	0	1	0	1	0	2
11p - 12a	0	0	0	0	0	0	0	0	0
Unknown Time	0	0	0	0	0	0	0	0	0
Total	4	9	12	11	10	12	2	0	60

Lanes, Volumes, Timings
1: Commerce Rd & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	404	70	62	317	662	327
Future Volume (vph)	404	70	62	317	662	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Storage Length (ft)	500	500	0			0
Storage Lanes	1	0	0			1
Taper Length (ft)	50		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Fr _t		0.850				0.850
Fl _t Protected	0.950			0.992		
Satd. Flow (prot)	1678	1501	0	3329	1766	1501
Fl _t Permitted	0.950			0.617		
Satd. Flow (perm)	1678	1501	0	2070	1766	1501
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		67				285
Link Speed (mph)	35			35	35	
Link Distance (ft)	916			721	733	
Travel Time (s)	17.8			14.0	14.3	
Peak Hour Factor	0.91	0.91	0.92	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	444	77	67	348	727	359
Shared Lane Traffic (%)						
Lane Group Flow (vph)	444	77	0	415	727	359
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	R NA
Median Width(ft)	11			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	30			16	60	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Over	pm+pt	NA	NA	Perm

Lanes, Volumes, Timings
 1: Commerce Rd & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases		5	5	2	6	
Permitted Phases	8		2			6
Detector Phase	8	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.8	23.8	23.8	23.8	23.8	23.8
Total Split (s)	39.0	23.8	23.8	81.0	57.2	57.2
Total Split (%)	32.5%	19.8%	19.8%	67.5%	47.7%	47.7%
Maximum Green (s)	33.5	18.0	18.0	75.2	51.4	51.4
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.9	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.5	5.8		5.8	5.8	5.8
Lead/Lag		Lead	Lead		Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Min	Min	Min	C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	33.0	10.3		75.7	59.6	59.6
Actuated g/C Ratio	0.28	0.09		0.63	0.50	0.50
v/c Ratio	0.96	0.41		0.29	0.83	0.40
Control Delay	76.9	22.1		10.0	30.2	3.8
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	76.9	22.1		10.0	30.2	3.8
LOS	E	C		B	C	A
Approach Delay	68.8			10.0	21.5	
Approach LOS	E			B	C	

Intersection Summary






















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 43 (36%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 31.3
 Intersection LOS: C
 Intersection Capacity Utilization 82.0%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 1: Commerce Rd & Orchard Lake Rd



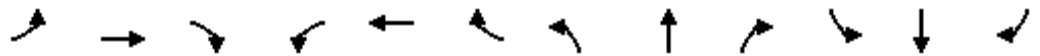
Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/14/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	644	5	0	616	114	16	5	14	539	6	350
Future Volume (vph)	90	644	5	0	616	114	16	5	14	539	6	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	190		0	100		435	0		0	125		300
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	50			50			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Fr _t		0.999				0.850		0.946				0.850
Fl _t Protected	0.950							0.978		0.950	0.953	
Satd. Flow (prot)	1694	3385	0	1783	3388	1516	0	1707	0	1665	1670	1568
Fl _t Permitted	0.153							0.978		0.950	0.953	
Satd. Flow (perm)	273	3385	0	1783	3388	1516	0	1707	0	1665	1670	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				137		16				393
Link Speed (mph)		35			35			35				35
Link Distance (ft)		701			1268			549				607
Travel Time (s)		13.7			24.7			10.7				11.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	101	724	6	0	692	128	18	6	16	606	7	393
Shared Lane Traffic (%)										49%		
Lane Group Flow (vph)	101	730	0	0	692	128	0	40	0	309	304	393
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			20				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		20			40			16				16
Two way Left Turn Lane												Yes
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		pm+pt	NA	custom	Split	NA		Split	NA	pm+ov

Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/14/2021

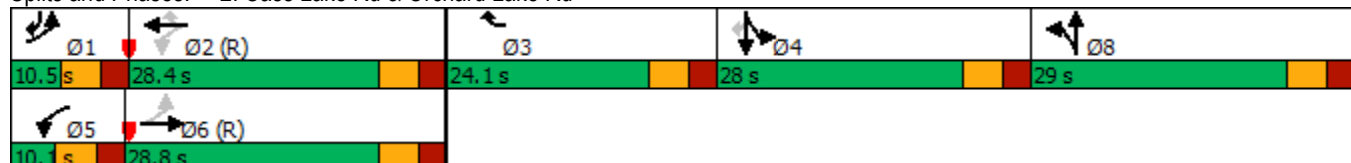


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6		5	2	3	8	8		4	4	1
Permitted Phases	6			2		2						4
Detector Phase	1	6		5	2	3	8	8		4	4	1
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0	10.0	7.0	7.0		7.0	7.0	4.0
Minimum Split (s)	10.5	28.0		10.1	28.4	24.1	29.0	29.0		28.0	28.0	10.5
Total Split (s)	10.5	28.8		10.1	28.4	24.1	29.0	29.0		28.0	28.0	10.5
Total Split (%)	8.8%	24.0%		8.4%	23.7%	20.1%	24.2%	24.2%		23.3%	23.3%	8.8%
Maximum Green (s)	4.4	22.7		4.0	22.3	18.0	23.0	23.0		22.0	22.0	4.4
Yellow Time (s)	3.6	3.6		3.6	3.6	3.6	3.5	3.5		3.5	3.5	3.6
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.0		6.0	6.0	6.1
Lead/Lag	Lead	Lag		Lead	Lag	Lead				Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes				Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Min	C-Min		Min	C-Min	Min	Min	Min		Min	Min	Min
Walk Time (s)		7.0			7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	47.2	36.6		30.9	47.0			7.9		29.7	29.7	40.8
Actuated g/C Ratio	0.39	0.30		0.26	0.39			0.07		0.25	0.25	0.34
v/c Ratio	0.42	0.71		0.79	0.19			0.31		0.75	0.74	0.50
Control Delay	30.3	46.8		53.4	10.2			42.6		54.4	53.4	3.8
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	30.3	46.8		53.4	10.2			42.6		54.4	53.4	3.8
LOS	C	D		D	B			D		D	D	A
Approach Delay		44.8			46.7			42.6			34.3	
Approach LOS		D			D			D			C	

Intersection Summary






















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 41.4
 Intersection LOS: D
 Intersection Capacity Utilization 59.7%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 2: Cass Lake Rd & Orchard Lake Rd



Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/12/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	644	5	0	616	114	16	5	14	539	6	350
Future Volume (vph)	90	644	5	0	616	114	16	5	14	539	6	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	190		0	100		435	0		0	125		300
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	50			50			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Fr _t		0.999				0.850		0.946				0.850
Fl _t Protected	0.950							0.978		0.950	0.953	
Satd. Flow (prot)	1694	3385	0	1783	3388	1516	0	1707	0	1665	1670	1568
Fl _t Permitted	0.153							0.978		0.950	0.953	
Satd. Flow (perm)	273	3385	0	1783	3388	1516	0	1707	0	1665	1670	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				137		16				393
Link Speed (mph)		35			35			35				35
Link Distance (ft)		701			1268			549				607
Travel Time (s)		13.7			24.7			10.7				11.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	101	724	6	0	692	128	18	6	16	606	7	393
Shared Lane Traffic (%)										49%		
Lane Group Flow (vph)	101	730	0	0	692	128	0	40	0	309	304	393
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			20				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		20			40			16				16
Two way Left Turn Lane												Yes
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		pm+pt	NA	custom	Split	NA		Split	NA	pm+ov

Lanes, Volumes, Timings
 2: Cass Lake Rd & Orchard Lake Rd

01/12/2021

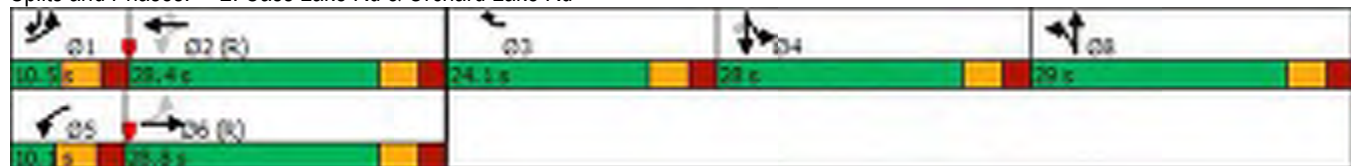


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6		5	2	3	8	8		4	4	1
Permitted Phases	6			2		2						4
Detector Phase	1	6		5	2	3	8	8		4	4	1
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0	10.0	7.0	7.0		7.0	7.0	4.0
Minimum Split (s)	10.5	28.0		10.1	28.4	24.1	29.0	29.0		28.0	28.0	10.5
Total Split (s)	10.5	28.8		10.1	28.4	24.1	29.0	29.0		28.0	28.0	10.5
Total Split (%)	8.8%	24.0%		8.4%	23.7%	20.1%	24.2%	24.2%		23.3%	23.3%	8.8%
Maximum Green (s)	4.4	22.7		4.0	22.3	18.0	23.0	23.0		22.0	22.0	4.4
Yellow Time (s)	3.6	3.6		3.6	3.6	3.6	3.5	3.5		3.5	3.5	3.6
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.0		6.0	6.0	6.1
Lead/Lag	Lead	Lag		Lead	Lag	Lead				Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes				Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Min	C-Min		Min	C-Min	Min	Min	Min		Min	Min	Min
Walk Time (s)		7.0			7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	47.2	36.6		30.9	47.0		7.9			29.7	29.7	40.8
Actuated g/C Ratio	0.39	0.30		0.26	0.39		0.07			0.25	0.25	0.34
v/c Ratio	0.42	0.71		0.79	0.19		0.31			0.75	0.74	0.50
Control Delay	30.3	46.8		53.4	10.2		42.6			54.4	53.4	3.8
Queue Delay	0.0	0.0		0.0	0.0		0.0			0.0	0.0	0.0
Total Delay	30.3	46.8		53.4	10.2		42.6			54.4	53.4	3.8
LOS	C	D		D	B		D			D	D	A
Approach Delay		44.8			46.7			42.6			34.3	
Approach LOS		D			D			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 41.4
 Intersection LOS: D
 Intersection Capacity Utilization 59.7%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 2: Cass Lake Rd & Orchard Lake Rd



Lanes, Volumes, Timings
7: Orchard Lake Rd & Wards Point Dr

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	7	5	2	703	955	3
Future Volume (vph)	7	5	2	703	955	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Fr't	0.942					
Flt Protected	0.972					
Satd. Flow (prot)	1673	0	0	3471	3471	0
Flt Permitted	0.972			0.954		
Satd. Flow (perm)	1673	0	0	3311	3471	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6				1	
Link Speed (mph)	25			35	35	
Link Distance (ft)	486			946	708	
Travel Time (s)	13.3			18.4	13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	8	6	2	781	1061	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	0	0	783	1064	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (ft)	20		20	100	100	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	20		20	6	6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						

Lanes, Volumes, Timings
7: Orchard Lake Rd & Wards Point Dr

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	23.8		23.3	23.3	23.3	
Total Split (s)	26.0		94.0	94.0	94.0	
Total Split (%)	21.7%		78.3%	78.3%	78.3%	
Maximum Green (s)	20.2		88.7	88.7	88.7	
Yellow Time (s)	3.5		3.6	3.6	3.6	
All-Red Time (s)	2.3		1.7	1.7	1.7	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.8			5.3	5.3	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Min		C-Min	C-Min	C-Min	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	6.3			102.6	102.6	
Actuated g/C Ratio	0.05			0.86	0.86	
v/c Ratio	0.15			0.28	0.36	
Control Delay	43.4			5.4	9.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	43.4			5.4	9.5	
LOS	D			A	A	
Approach Delay	43.4			5.4	9.5	
Approach LOS	D			A	A	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 114 (95%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.36
 Intersection Signal Delay: 8.0
 Intersection LOS: A
 Intersection Capacity Utilization 39.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 7: Orchard Lake Rd & Wards Point Dr



Lanes, Volumes, Timings
9: Orchard Lake Rd & Warwick St

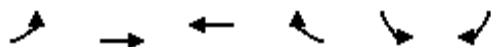
01/12/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↔		↔↕	
Traffic Volume (vph)	3	1239	746	0	18	2
Future Volume (vph)	3	1239	746	0	18	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt					0.988	
Flt Protected					0.957	
Satd. Flow (prot)	0	3355	3355	0	1727	0
Flt Permitted		0.954			0.957	
Satd. Flow (perm)	0	3201	3355	0	1727	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					2	
Link Speed (mph)		35	35		25	
Link Distance (ft)		794	1452		338	
Travel Time (s)		15.5	28.3		9.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	3	1392	838	0	20	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1395	838	0	22	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		35	30		30	
Two way Left Turn Lane			Yes			
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	
Detector Template	Left	Thru	Thru		Left	
Leading Detector (ft)	20	100	100		20	
Trailing Detector (ft)	0	0	0		0	
Detector 1 Position(ft)	0	0	0		0	
Detector 1 Size(ft)	20	6	6		20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Perm	
Protected Phases		6	2			
Permitted Phases	6				4	
Detector Phase	6	6	2		4	

Lanes, Volumes, Timings
 9: Orchard Lake Rd & Warwick St

01/12/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		7.0	
Minimum Split (s)	23.7	23.7	23.7		24.0	
Total Split (s)	95.0	95.0	95.0		25.0	
Total Split (%)	79.2%	79.2%	79.2%		20.8%	
Maximum Green (s)	89.3	89.3	89.3		19.0	
Yellow Time (s)	3.6	3.6	3.6		3.5	
All-Red Time (s)	2.1	2.1	2.1		2.5	
Lost Time Adjust (s)		0.0	0.0		0.0	
Total Lost Time (s)		5.7	5.7		6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	C-Min	C-Min	C-Min		Min	
Walk Time (s)	7.0	7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0		0	
Act Effct Green (s)		100.7	100.7		7.6	
Actuated g/C Ratio		0.84	0.84		0.06	
v/c Ratio		0.52	0.30		0.20	
Control Delay		3.7	2.1		53.8	
Queue Delay		0.0	0.0		0.0	
Total Delay		3.7	2.1		53.8	
LOS		A	A		D	
Approach Delay		3.7	2.1		53.8	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 38 (32%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.52
 Intersection Signal Delay: 3.6
 Intersection Capacity Utilization 51.9%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

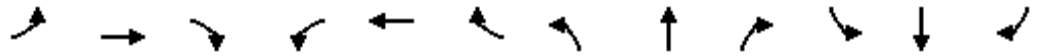
Splits and Phases: 9: Orchard Lake Rd & Warwick St



Lanes, Volumes, Timings

11: Middlebelt Rd/Inverness St & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1072	148	238	681	5	63	4	199	8	14	20
Future Volume (vph)	16	1072	148	238	681	5	63	4	199	8	14	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Storage Length (ft)	100		200	200		0	100		500	50		0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850		0.999				0.850		0.911	
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1678	3355	1501	1678	3352	0	1620	1705	1449	1620	1553	0
Fl _t Permitted	0.309			0.212			0.733			0.755		
Satd. Flow (perm)	546	3355	1501	374	3352	0	1250	1705	1449	1287	1553	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			139		1				216			22
Link Speed (mph)		35			35			40				25
Link Distance (ft)		1026			825			884				562
Travel Time (s)		20.0			16.1			15.1				15.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	17	1165	161	259	740	5	68	4	216	9	15	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1165	161	259	745	0	68	4	216	9	37	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			10				10
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		55			16			25				25
Two way Left Turn Lane		Yes			Yes			Yes				
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	NA	

Lanes, Volumes, Timings
 11: Middlebelt Rd/Inverness St & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6		5	2			8				4
Permitted Phases	6		6	2			8		8	4		
Detector Phase	1	6	6	5	2		8	8	8	4		4
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	7.9		7.0	7.0	7.0	7.0		7.0
Minimum Split (s)	10.1	37.0	37.0	11.1	24.1		24.4	24.4	24.4	24.4		24.4
Total Split (s)	10.2	65.0	65.0	28.0	82.8		27.0	27.0	27.0	27.0		27.0
Total Split (%)	8.5%	54.2%	54.2%	23.3%	69.0%		22.5%	22.5%	22.5%	22.5%		22.5%
Maximum Green (s)	4.1	58.9	58.9	21.9	76.7		20.6	20.6	20.6	20.6		20.6
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.9	3.9	3.9	3.9		3.9
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5		2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1		6.4	6.4	6.4	6.4		6.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	Min	C-Min	C-Min	Min	C-Min		Min	Min	Min	Min		Min
Walk Time (s)		7.0	7.0		7.0		7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)		11.0	11.0		11.0		11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)		0	0		0		0	0	0	0		0
Act Effct Green (s)	69.3	69.3	69.3	83.3	83.3		12.0	12.0	12.0	12.0		12.0
Actuated g/C Ratio	0.58	0.58	0.58	0.69	0.69		0.10	0.10	0.10	0.10		0.10
v/c Ratio	0.05	0.60	0.17	0.54	0.32		0.55	0.02	0.64	0.07		0.21
Control Delay	17.7	26.0	7.7	24.1	8.1		66.8	46.0	15.4	47.5		28.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	17.7	26.0	7.7	24.1	8.1		66.8	46.0	15.4	47.5		28.5
LOS	B	C	A	C	A		E	D	B	D		C
Approach Delay		23.7			12.2			27.9				32.2
Approach LOS		C			B			C				C

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 114 (95%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.64
 Intersection Signal Delay: 20.0
 Intersection LOS: B
 Intersection Capacity Utilization 68.5%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 11: Middlebelt Rd/Inverness St & Orchard Lake Rd



Lanes, Volumes, Timings
 15: Orchard Lake Rd & Summers Rd

01/12/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	29	0	705	16	0	960
Future Volume (vph)	29	0	705	16	0	960
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Fr _t	0.997					
Fl _t Protected	0.950					
Satd. Flow (prot)	1770	0	3529	0	0	3539
Fl _t Permitted	0.950					
Satd. Flow (perm)	1770	0	3529	0	0	3539
Link Speed (mph)	25		35		35	
Link Distance (ft)	592		733		946	
Travel Time (s)	16.1		14.3		18.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	0	766	17	0	1043
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	783	0	0	1043
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	R NA
Median Width(ft)	12		0		0	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	16		16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.5%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
 17: Willow Beach St & Orchard Lake Rd

01/12/2021



















Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	710	0	24	958	0	29
Future Volume (vph)	710	0	24	958	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr t					0.865	
Flt Protected				0.999		
Satd. Flow (prot)	3539	0	0	3536	1611	0
Flt Permitted				0.999		
Satd. Flow (perm)	3539	0	0	3536	1611	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	708			701	392	
Travel Time (s)	13.8			13.7	10.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	772	0	26	1041	0	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	772	0	0	1067	32	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	5			10	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.7%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
 19: Maddy Ln & Orchard Lake Rd

01/12/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1197	0	0	730	18	0	0	45	0	0	0
Future Volume (vph)	0	1197	0	0	730	18	0	0	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.996			0.865				
Fl _t Protected												
Satd. Flow (prot)	0	3539	0	0	3525	0	0	1611	0	0	1863	0
Fl _t Permitted												
Satd. Flow (perm)	0	3539	0	0	3525	0	0	1611	0	0	1863	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1268			794			484			384	
Travel Time (s)		24.7			15.5			13.2			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1301	0	0	793	20	0	0	49	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1301	0	0	813	0	0	49	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			5			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	43.1%					ICU Level of Service A						
Analysis Period (min)	15											

Lanes, Volumes, Timings
1: Commerce Rd & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	364	34	49	713	517	491
Future Volume (vph)	364	34	49	713	517	491
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Storage Length (ft)	500	500	0			0
Storage Lanes	1	0	0			1
Taper Length (ft)	50		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Fr _t		0.850				0.850
Fl _t Protected	0.950			0.997		
Satd. Flow (prot)	1711	1531	0	3411	1801	1531
Fl _t Permitted	0.950			0.805		
Satd. Flow (perm)	1711	1531	0	2754	1801	1531
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		37				525
Link Speed (mph)	35			35	35	
Link Distance (ft)	916			721	733	
Travel Time (s)	17.8			14.0	14.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	391	37	53	767	556	528
Shared Lane Traffic (%)						
Lane Group Flow (vph)	391	37	0	820	556	528
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	R NA
Median Width(ft)	11			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	30			16	60	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Over	pm+pt	NA	NA	Perm
Protected Phases		5	5	2	6	

Lanes, Volumes, Timings
1: Commerce Rd & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8		2			6
Detector Phase	8	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.8	23.8	23.8	23.8	23.8	23.8
Total Split (s)	42.0	23.8	23.8	78.0	54.2	54.2
Total Split (%)	35.0%	19.8%	19.8%	65.0%	45.2%	45.2%
Maximum Green (s)	36.5	18.0	18.0	72.2	48.4	48.4
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.9	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.5	5.8		5.8	5.8	5.8
Lead/Lag		Lead	Lead		Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Min	Min	Min	C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	31.6	10.0		77.1	61.3	61.3
Actuated g/C Ratio	0.26	0.08		0.64	0.51	0.51
v/c Ratio	0.87	0.23		0.45	0.60	0.51
Control Delay	61.8	19.5		11.8	10.7	3.0
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	61.8	19.5		11.8	10.7	3.0
LOS	E	B		B	B	A
Approach Delay	58.2			11.8	7.0	
Approach LOS	E			B	A	

Intersection Summary






















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 64 (53%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 18.1
 Intersection Capacity Utilization 82.8%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service E

Splits and Phases: 1: Commerce Rd & Orchard Lake Rd



Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/14/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	351	730	8	2	839	588	5	20	6	301	13	204
Future Volume (vph)	351	730	8	2	839	588	5	20	6	301	13	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	190		0	100		435	0		0	125		300
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	50			50			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Fr _t		0.998				0.850		0.972				0.850
Fl _t Protected	0.950			0.950				0.993		0.950	0.956	
Satd. Flow (prot)	1711	3414	0	1711	3421	1531	0	1798	0	1681	1692	1583
Fl _t Permitted	0.141			0.349				0.993		0.950	0.956	
Satd. Flow (perm)	254	3414	0	628	3421	1531	0	1798	0	1681	1692	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				639		7				222
Link Speed (mph)		35			35			35				35
Link Distance (ft)		701			1268			549				607
Travel Time (s)		13.7			24.7			10.7				11.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	382	793	9	2	912	639	5	22	7	327	14	222
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	382	802	0	2	912	639	0	34	0	170	171	222
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			20				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		20			40			16				16
Two way Left Turn Lane												Yes
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		pm+pt	NA	custom	Split	NA		Split	NA	pm+ov
Protected Phases	1	6		5	2	3	8	8		4	4	1

Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/14/2021

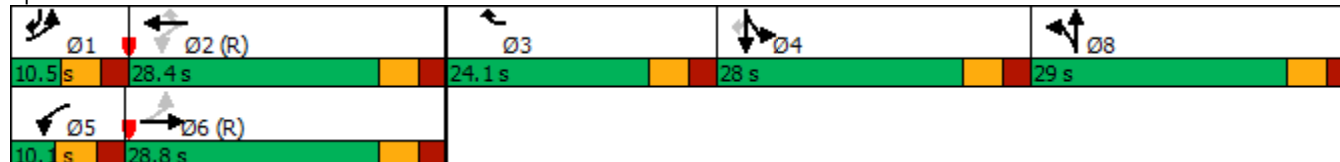


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	6			2		2						4
Detector Phase	1	6		5	2	3	8	8		4	4	1
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0	10.0	7.0	7.0		7.0	7.0	4.0
Minimum Split (s)	10.5	28.0		10.1	28.4	24.1	29.0	29.0		28.0	28.0	10.5
Total Split (s)	10.5	28.8		10.1	28.4	24.1	29.0	29.0		28.0	28.0	10.5
Total Split (%)	8.8%	24.0%		8.4%	23.7%	20.1%	24.2%	24.2%		23.3%	23.3%	8.8%
Maximum Green (s)	4.4	22.7		4.0	22.3	18.0	23.0	23.0		22.0	22.0	4.4
Yellow Time (s)	3.6	3.6		3.6	3.6	3.6	3.5	3.5		3.5	3.5	3.6
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.0		6.0	6.0	6.1
Lead/Lag	Lead	Lag		Lead	Lag	Lead				Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes				Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Min	C-Min		Min	C-Min	Min	Min	Min		Min	Min	Min
Walk Time (s)		7.0			7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	60.4	48.7		27.9	22.3	38.4		7.9		17.5	17.5	49.4
Actuated g/C Ratio	0.50	0.41		0.23	0.19	0.32		0.07		0.15	0.15	0.41
v/c Ratio	0.74	0.58		0.01	1.44	0.69		0.27		0.69	0.70	0.28
Control Delay	41.8	26.0		22.5	236.9	10.8		50.0		62.9	62.8	2.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	41.8	26.0		22.5	236.9	10.8		50.0		62.9	62.8	2.7
LOS	D	C		C	F	B		D		E	E	A
Approach Delay		31.1			143.6			50.0			39.1	
Approach LOS		C			F			D			D	

Intersection Summary






















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.44
 Intersection Signal Delay: 85.0
 Intersection Capacity Utilization 76.9%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service D

Splits and Phases: 2: Cass Lake Rd & Orchard Lake Rd



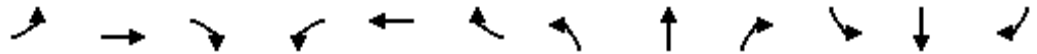
Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/12/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	351	730	8	2	839	588	5	20	6	301	13	204
Future Volume (vph)	351	730	8	2	839	588	5	20	6	301	13	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	190		0	100		435	0		0	125		300
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	50			50			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Fr _t		0.998				0.850		0.972				0.850
Fl _t Protected	0.950			0.950				0.993		0.950	0.956	
Satd. Flow (prot)	1711	3414	0	1711	3421	1531	0	1798	0	1681	1692	1583
Fl _t Permitted	0.141			0.349				0.993		0.950	0.956	
Satd. Flow (perm)	254	3414	0	628	3421	1531	0	1798	0	1681	1692	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				639		7				222
Link Speed (mph)		35			35			35				35
Link Distance (ft)		701			1268			549				607
Travel Time (s)		13.7			24.7			10.7				11.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	382	793	9	2	912	639	5	22	7	327	14	222
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	382	802	0	2	912	639	0	34	0	170	171	222
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			20				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		20			40			16				16
Two way Left Turn Lane												Yes
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		pm+pt	NA	custom	Split	NA		Split	NA	pm+ov
Protected Phases	1	6		5	2	3	8	8		4	4	1

Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/12/2021

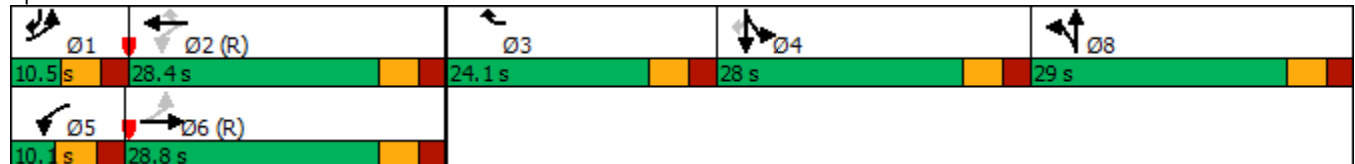


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	6			2		2						4
Detector Phase	1	6		5	2	3	8	8		4	4	1
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	10.0	10.0	7.0	7.0		7.0	7.0	4.0
Minimum Split (s)	10.5	28.0		10.1	28.4	24.1	29.0	29.0		28.0	28.0	10.5
Total Split (s)	10.5	28.8		10.1	28.4	24.1	29.0	29.0		28.0	28.0	10.5
Total Split (%)	8.8%	24.0%		8.4%	23.7%	20.1%	24.2%	24.2%		23.3%	23.3%	8.8%
Maximum Green (s)	4.4	22.7		4.0	22.3	18.0	23.0	23.0		22.0	22.0	4.4
Yellow Time (s)	3.6	3.6		3.6	3.6	3.6	3.5	3.5		3.5	3.5	3.6
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1	6.1		6.0		6.0	6.0	6.1
Lead/Lag	Lead	Lag		Lead	Lag	Lead				Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes				Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Min	C-Min		Min	C-Min	Min	Min	Min		Min	Min	Min
Walk Time (s)		7.0			7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	60.4	48.7		27.9	22.3	38.4		7.9		17.5	17.5	49.4
Actuated g/C Ratio	0.50	0.41		0.23	0.19	0.32		0.07		0.15	0.15	0.41
v/c Ratio	0.74	0.58		0.01	1.44	0.69		0.27		0.69	0.70	0.28
Control Delay	41.8	26.0		22.5	236.9	10.8		50.0		62.9	62.8	2.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	41.8	26.0		22.5	236.9	10.8		50.0		62.9	62.8	2.7
LOS	D	C		C	F	B		D		E	E	A
Approach Delay		31.1			143.6			50.0			39.1	
Approach LOS		C			F			D			D	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.44
 Intersection Signal Delay: 85.0
 Intersection Capacity Utilization 76.9%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service D

Splits and Phases: 2: Cass Lake Rd & Orchard Lake Rd



Lanes, Volumes, Timings
7: Orchard Lake Rd & Wards Point Dr

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	10	11	1047	1003	12
Future Volume (vph)	11	10	11	1047	1003	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Fr't	0.935				0.998	
Flt Protected	0.975			0.999		
Satd. Flow (prot)	1698	0	0	3536	3532	0
Flt Permitted	0.975			0.939		
Satd. Flow (perm)	1698	0	0	3323	3532	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	11				3	
Link Speed (mph)	25			35	35	
Link Distance (ft)	486			946	708	
Travel Time (s)	13.3			18.4	13.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	12	11	12	1114	1067	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	0	0	1126	1080	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1		1	2	2	
Detector Template	Left		Left	Thru	Thru	
Leading Detector (ft)	20		20	100	100	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	20		20	6	6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	

Lanes, Volumes, Timings
7: Orchard Lake Rd & Wards Point Dr

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	23.8		23.3	23.3	23.3	
Total Split (s)	27.0		93.0	93.0	93.0	
Total Split (%)	22.5%		77.5%	77.5%	77.5%	
Maximum Green (s)	21.2		87.7	87.7	87.7	
Yellow Time (s)	3.5		3.6	3.6	3.6	
All-Red Time (s)	2.3		1.7	1.7	1.7	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.8			5.3	5.3	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Min		C-Min	C-Min	C-Min	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	6.7			102.2	102.2	
Actuated g/C Ratio	0.06			0.85	0.85	
v/c Ratio	0.22			0.40	0.36	
Control Delay	40.5			4.0	4.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	40.5			4.0	4.5	
LOS	D			A	A	
Approach Delay	40.5			4.0	4.5	
Approach LOS	D			A	A	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 37 (31%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.40
 Intersection Signal Delay: 4.6
 Intersection Capacity Utilization 50.1%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 7: Orchard Lake Rd & Wards Point Dr



Lanes, Volumes, Timings
9: Orchard Lake Rd & Warwick St

01/12/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↔		↔↕	
Traffic Volume (vph)	11	1050	1445	6	5	8
Future Volume (vph)	11	1050	1445	6	5	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.913	
Flt Protected		0.999			0.982	
Satd. Flow (prot)	0	3418	3418	0	1670	0
Flt Permitted		0.927			0.982	
Satd. Flow (perm)	0	3171	3418	0	1670	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			1		9	
Link Speed (mph)		35	35		25	
Link Distance (ft)		794	1452		338	
Travel Time (s)		15.5	28.3		9.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	12	1117	1537	6	5	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1129	1543	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		35	30		30	
Two way Left Turn Lane			Yes			
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	
Detector Template	Left	Thru	Thru		Left	
Leading Detector (ft)	20	100	100		20	
Trailing Detector (ft)	0	0	0		0	
Detector 1 Position(ft)	0	0	0		0	
Detector 1 Size(ft)	20	6	6		20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Perm	
Protected Phases		6	2			
Permitted Phases	6				4	
Detector Phase	6	6	2		4	
Switch Phase						

Lanes, Volumes, Timings
 9: Orchard Lake Rd & Warwick St

01/12/2021

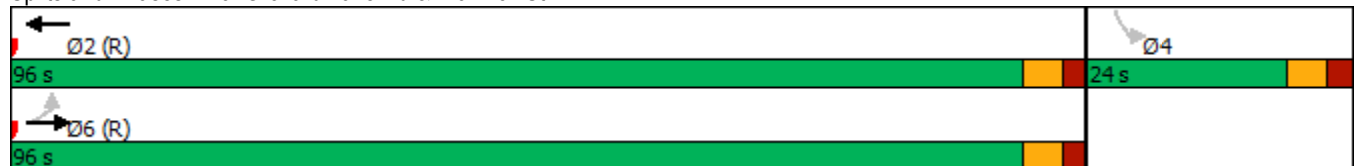


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	10.0	10.0		7.0	
Minimum Split (s)	23.7	23.7	23.7		24.0	
Total Split (s)	96.0	96.0	96.0		24.0	
Total Split (%)	80.0%	80.0%	80.0%		20.0%	
Maximum Green (s)	90.3	90.3	90.3		18.0	
Yellow Time (s)	3.6	3.6	3.6		3.5	
All-Red Time (s)	2.1	2.1	2.1		2.5	
Lost Time Adjust (s)		0.0	0.0		0.0	
Total Lost Time (s)		5.7	5.7		6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	C-Min	C-Min	C-Min		Min	
Walk Time (s)	7.0	7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0		0	
Act Effct Green (s)		101.2	101.2		7.1	
Actuated g/C Ratio		0.84	0.84		0.06	
v/c Ratio		0.42	0.54		0.13	
Control Delay		1.3	1.9		36.5	
Queue Delay		0.0	0.0		0.0	
Total Delay		1.3	1.9		36.5	
LOS		A	A		D	
Approach Delay		1.3	1.9		36.5	
Approach LOS		A	A		D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	80 (67%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.54
Intersection Signal Delay:	1.9
Intersection LOS:	A
Intersection Capacity Utilization:	55.7%
ICU Level of Service:	B
Analysis Period (min):	15

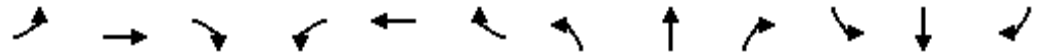
Splits and Phases: 9: Orchard Lake Rd & Warwick St



Lanes, Volumes, Timings

11: Middlebelt Rd/Inverness St & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	925	85	180	1188	24	236	26	267	30	16	33
Future Volume (vph)	31	925	85	180	1188	24	236	26	267	30	16	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Storage Length (ft)	100		200	200		0	100		500	50		0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.997				0.850		0.899	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1694	3388	1516	1694	3378	0	1636	1722	1463	1636	1548	0
Flt Permitted	0.078			0.246			0.723			0.739		
Satd. Flow (perm)	139	3388	1516	439	3378	0	1245	1722	1463	1272	1548	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			86		2				287			35
Link Speed (mph)		35			35			40				25
Link Distance (ft)		1026			825			884				562
Travel Time (s)		20.0			16.1			15.1				15.3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	33	995	91	194	1277	26	254	28	287	32	17	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	995	91	194	1303	0	254	28	287	32	52	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			10				10
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		55			16			25				25
Two way Left Turn Lane		Yes			Yes			Yes				
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1		2
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20		100
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0		0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0		0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20		6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm		NA

Lanes, Volumes, Timings
 11: Middlebelt Rd/Inverness St & Orchard Lake Rd

01/12/2021

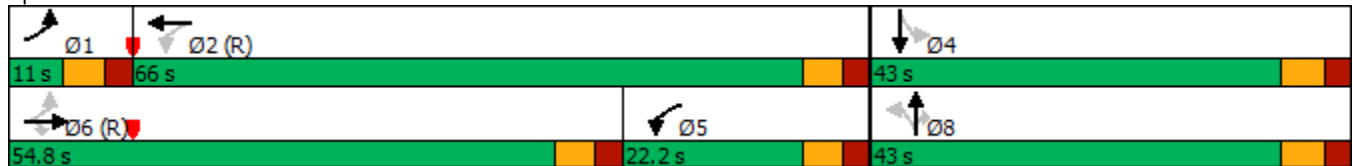


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2			8		8	4		
Detector Phase	1	6	6	5	2		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	7.9		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	10.1	37.0	37.0	11.1	24.1		24.4	24.4	24.4	24.4	24.4	
Total Split (s)	11.0	54.8	54.8	22.2	66.0		43.0	43.0	43.0	43.0	43.0	
Total Split (%)	9.2%	45.7%	45.7%	18.5%	55.0%		35.8%	35.8%	35.8%	35.8%	35.8%	
Maximum Green (s)	4.9	48.7	48.7	16.1	59.9		36.6	36.6	36.6	36.6	36.6	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.9	3.9	3.9	3.9	3.9	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1		6.4	6.4	6.4	6.4	6.4	
Lead/Lag	Lead	Lead	Lead	Lag	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Min	C-Min	C-Min	Min	C-Min		Min	Min	Min	Min	Min	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)		11.0	11.0		11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0		0	0	0	0	0	
Act Effct Green (s)	57.3	57.3	57.3	66.0	66.0		29.3	29.3	29.3	29.3	29.3	
Actuated g/C Ratio	0.48	0.48	0.48	0.55	0.55		0.24	0.24	0.24	0.24	0.24	
v/c Ratio	0.23	0.62	0.12	0.49	0.70		0.84	0.07	0.50	0.10	0.13	
Control Delay	29.7	34.2	15.8	30.1	23.6		65.6	32.1	6.9	33.0	15.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	29.7	34.2	15.8	30.1	23.6		65.6	32.1	6.9	33.0	15.4	
LOS	C	C	B	C	C		E	C	A	C	B	
Approach Delay		32.5			24.4			34.3			22.1	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 19 (16%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 28.9
 Intersection LOS: C
 Intersection Capacity Utilization 72.2%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 11: Middlebelt Rd/Inverness St & Orchard Lake Rd



Lanes, Volumes, Timings
15: Orchard Lake Rd & Summers Rd

01/12/2021



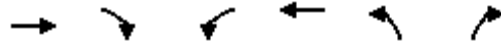
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	48	0	1058	19	53	960
Future Volume (vph)	48	0	1058	19	53	960
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Fr _t	0.997					
Fl _t Protected	0.950					0.997
Satd. Flow (prot)	1770	0	3529	0	0	3529
Fl _t Permitted	0.950					0.997
Satd. Flow (perm)	1770	0	3529	0	0	3529
Link Speed (mph)	25		35			35
Link Distance (ft)	592		733			946
Travel Time (s)	16.1		14.3			18.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	0	1150	21	58	1043
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	1171	0	0	1101
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	R NA
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	71.3%
Analysis Period (min)	15
	ICU Level of Service C

Lanes, Volumes, Timings
 17: Willow Beach St & Orchard Lake Rd

01/12/2021



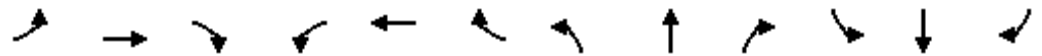
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	1058	0	33	1015	0	31
Future Volume (vph)	1058	0	33	1015	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr t					0.865	
Fl t Protected				0.998		
Satd. Flow (prot)	3539	0	0	3532	1611	0
Fl t Permitted				0.998		
Satd. Flow (perm)	3539	0	0	3532	1611	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	708			701	392	
Travel Time (s)	13.8			13.7	10.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1150	0	36	1103	0	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1150	0	0	1139	34	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	5			10	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.0%
ICU Level of Service	B
Analysis Period (min)	15

Lanes, Volumes, Timings
 19: Maddy Ln & Orchard Lake Rd

01/12/2021



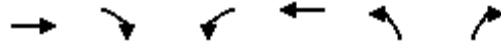
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Traffic Volume (vph)	0	1037	0	0	1429	24	0	0	24	0	0	0
Future Volume (vph)	0	1037	0	0	1429	24	0	0	24	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.998			0.865				
Fl _t Protected												
Satd. Flow (prot)	0	3539	0	0	3532	0	0	1611	0	0	1863	0
Fl _t Permitted												
Satd. Flow (perm)	0	3539	0	0	3532	0	0	1611	0	0	1863	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1268			794			484			384	
Travel Time (s)		24.7			15.5			13.2			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1127	0	0	1553	26	0	0	26	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1127	0	0	1579	0	0	26	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			5			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.3%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
22: Figa Ave & Orchard Lake Rd

01/12/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	1041	14	6	1451	0	0
Future Volume (vph)	1041	14	6	1451	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.998					
Flt Protected						
Satd. Flow (prot)	3414	0	0	3421	1863	0
Flt Permitted						
Satd. Flow (perm)	3414	0	0	3421	1863	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	1452			1026	225	
Travel Time (s)	28.3			20.0	6.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1132	15	7	1577	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1147	0	0	1584	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	5			10	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.6%
	ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
1: Commerce Rd & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	404	70	62	317	662	327
Future Volume (vph)	404	70	62	317	662	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Storage Length (ft)	500	500	150			450
Storage Lanes	1	0	1			1
Taper Length (ft)	50		50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.850				0.850
Fl _t Protected	0.950		0.950			
Satd. Flow (prot)	1678	1501	1678	1766	1766	1501
Fl _t Permitted	0.950		0.140			
Satd. Flow (perm)	1678	1501	247	1766	1766	1501
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		60				359
Link Speed (mph)	35			35	35	
Link Distance (ft)	916			721	733	
Travel Time (s)	17.8			14.0	14.3	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	444	77	68	348	727	359
Shared Lane Traffic (%)						
Lane Group Flow (vph)	444	77	68	348	727	359
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	R NA
Median Width(ft)	11			11	11	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	30			16	60	
Two way Left Turn Lane					Yes	
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Over	pm+pt	NA	NA	Perm

Lanes, Volumes, Timings
 1: Commerce Rd & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases		5	5	2	6	
Permitted Phases	8		2			6
Detector Phase	8	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.5	15.8	15.8	23.8	23.8	23.8
Total Split (s)	44.4	15.8	15.8	79.8	64.0	64.0
Total Split (%)	35.7%	12.7%	12.7%	64.3%	51.5%	51.5%
Maximum Green (s)	38.9	10.0	10.0	74.0	58.2	58.2
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.9	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.8	5.8	5.8	5.8	5.8
Lead/Lag		Lead	Lead		Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Min	Min	Min	C-Min	C-Min	C-Min
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	36.0	10.0	76.9	76.9	61.1	61.1
Actuated g/C Ratio	0.29	0.08	0.62	0.62	0.49	0.49
v/c Ratio	0.91	0.44	0.25	0.32	0.84	0.39
Control Delay	66.8	27.2	12.6	12.8	38.5	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.8	27.2	12.6	12.8	38.5	3.2
LOS	E	C	B	B	D	A
Approach Delay	60.9			12.7	26.8	
Approach LOS	E			B	C	

Intersection Summary

Area Type: Other
 Cycle Length: 124.2
 Actuated Cycle Length: 124.2
 Offset: 43 (35%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 32.7
 Intersection LOS: C
 Intersection Capacity Utilization 79.8%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 1: Commerce Rd & Orchard Lake Rd



Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	644	5	0	616	114	16	5	14	539	6	350
Future Volume (vph)	90	644	5	0	616	114	16	5	14	539	6	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	190		100	100		435	0		0	125		300
Storage Lanes	1		1	1		1	0		0	1		1
Taper Length (ft)	50			50			25			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.946				0.850
Flt Protected	0.950							0.978		0.950		
Satd. Flow (prot)	1694	1783	1516	1783	1783	1516	0	1707	0	1752	1845	1568
Flt Permitted	0.950							0.978		0.950		
Satd. Flow (perm)	1694	1783	1516	1783	1783	1516	0	1707	0	1752	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			193			137			16			393
Link Speed (mph)		35			35			35				35
Link Distance (ft)		701			1268			549				607
Travel Time (s)		13.7			24.7			10.7				11.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	101	724	6	0	692	128	18	6	16	606	7	393
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	724	6	0	692	128	0	40	0	606	7	393
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			20				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		20			40			16				16
Two way Left Turn Lane		Yes			Yes							Yes
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA	Perm	Prot	NA	custom	Split	NA		Split	NA	pm+ov

Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/12/2021

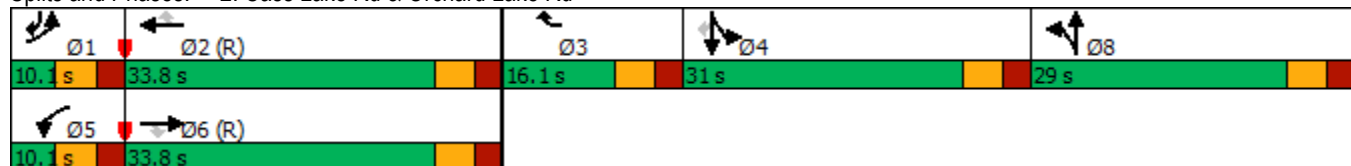


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6		5	2	3	8	8		4	4	1
Permitted Phases			6			2						4
Detector Phase	1	6	6	5	2	3	8	8		4	4	1
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	7.0	7.0		7.0	7.0	4.0
Minimum Split (s)	10.1	28.0	28.0	10.1	28.0	16.1	29.0	29.0		28.0	28.0	10.1
Total Split (s)	10.1	33.8	33.8	10.1	33.8	16.1	29.0	29.0		31.0	31.0	10.1
Total Split (%)	8.4%	28.2%	28.2%	8.4%	28.2%	13.4%	24.2%	24.2%		25.8%	25.8%	8.4%
Maximum Green (s)	4.0	27.7	27.7	4.0	27.7	10.0	23.0	23.0		25.0	25.0	4.0
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5		3.5	3.5	3.6
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1		6.0		6.0	6.0	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead				Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Min	C-Min	C-Min	Min	C-Min	Min	Min	Min		Min	Min	Min
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0	11.0		11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	17.8	41.3	41.3		29.0	45.1		7.9		25.0	25.0	42.7
Actuated g/C Ratio	0.15	0.34	0.34		0.24	0.38		0.07		0.21	0.21	0.36
v/c Ratio	0.40	1.18	0.01		1.61	0.20		0.31		1.66	0.02	0.49
Control Delay	53.0	131.4	0.0		313.3	7.7		42.6		340.6	38.0	3.8
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	53.0	131.4	0.0		313.3	7.7		42.6		340.6	38.0	3.8
LOS	D	F	A		F	A		D		F	D	A
Approach Delay		120.9			265.6			42.6			206.9	
Approach LOS		F			F			D			F	

Intersection Summary












Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
 Natural Cycle: 145
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.66
 Intersection Signal Delay: 195.8
 Intersection LOS: F
 Intersection Capacity Utilization 89.1%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 2: Cass Lake Rd & Orchard Lake Rd



Lanes, Volumes, Timings
8: Orchard Lake Rd & Wards Point Dr

01/12/2021

						
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	2	703	955	3	7	5
Future Volume (vph)	2	703	955	3	7	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	14	12
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.942	
Fl _t Protected	0.950				0.972	
Satd. Flow (prot)	1678	1766	1766	0	1784	0
Fl _t Permitted	0.225				0.822	
Satd. Flow (perm)	397	1766	1766	0	1509	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					6	
Link Speed (mph)		35	35		25	
Link Distance (ft)		1020	743		595	
Travel Time (s)		19.9	14.5		16.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	2	781	1061	3	8	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	781	1064	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		11	11		14	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		50	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.04	1.04	1.04	1.04	0.92	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	
Detector Template	Left	Thru	Thru		Left	
Leading Detector (ft)	20	100	100		20	
Trailing Detector (ft)	0	0	0		0	
Detector 1 Position(ft)	0	0	0		0	
Detector 1 Size(ft)	20	6	6		20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	custom	NA	NA		Perm	

Lanes, Volumes, Timings
8: Orchard Lake Rd & Wards Point Dr

01/12/2021



Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Protected Phases						
Permitted Phases	2	2	2		4	
Detector Phase	2	2	2		4	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		7.0	
Minimum Split (s)	23.3	23.3	23.3		23.8	
Total Split (s)	96.2	96.2	96.2		23.8	
Total Split (%)	80.2%	80.2%	80.2%		19.8%	
Maximum Green (s)	90.9	90.9	90.9		18.0	
Yellow Time (s)	3.6	3.6	3.6		3.5	
All-Red Time (s)	1.7	1.7	1.7		2.3	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.3	5.3	5.3		5.8	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	C-Min	C-Min	C-Min		Min	
Walk Time (s)	7.0	7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0		0	
Act Effct Green (s)	101.7	101.7	101.7		7.2	
Actuated g/C Ratio	0.85	0.85	0.85		0.06	
v/c Ratio	0.01	0.52	0.71		0.15	
Control Delay	1.5	3.9	18.1		43.2	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	1.5	3.9	18.1		43.2	
LOS	A	A	B		D	
Approach Delay		3.9	18.1		43.2	
Approach LOS		A	B		D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	114 (95%), Referenced to phase 2:NBSB and 6:, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	12.3
Intersection LOS:	B
Intersection Capacity Utilization:	65.5%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 8: Orchard Lake Rd & Wards Point Dr



Lanes, Volumes, Timings
9: Orchard Lake Rd & Warwick St

01/12/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	1239	746	0	18	2
Future Volume (vph)	3	1239	746	0	18	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.988	
Fl _t Protected	0.950				0.957	
Satd. Flow (prot)	1678	1766	1766	0	1727	0
Fl _t Permitted	0.319				0.957	
Satd. Flow (perm)	563	1766	1766	0	1727	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					2	
Link Speed (mph)		35	35		25	
Link Distance (ft)		794	1452		338	
Travel Time (s)		15.5	28.3		9.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	3	1392	838	0	20	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	1392	838	0	22	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		35	30		30	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	
Detector Template	Left	Thru	Thru		Left	
Leading Detector (ft)	20	100	100		20	
Trailing Detector (ft)	0	0	0		0	
Detector 1 Position(ft)	0	0	0		0	
Detector 1 Size(ft)	20	6	6		20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Perm	

Lanes, Volumes, Timings
9: Orchard Lake Rd & Warwick St

01/12/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		6	2			
Permitted Phases	6				4	
Detector Phase	6	6	2		4	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	
Minimum Split (s)	22.5	22.5	22.5		22.5	
Total Split (s)	97.5	97.5	97.5		22.5	
Total Split (%)	81.3%	81.3%	81.3%		18.8%	
Maximum Green (s)	93.0	93.0	93.0		18.0	
Yellow Time (s)	3.5	3.5	3.5		3.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.5	4.5	4.5		4.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	C-Min	C-Min	C-Min		Min	
Walk Time (s)	7.0	7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0		0	
Act Effct Green (s)	104.0	104.0	104.0		7.0	
Actuated g/C Ratio	0.87	0.87	0.87		0.06	
v/c Ratio	0.01	0.91	0.55		0.22	
Control Delay	0.0	10.8	1.5		54.6	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	0.0	10.8	1.5		54.6	
LOS	A	B	A		D	
Approach Delay		10.8	1.5		54.6	
Approach LOS		B	A		D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	38 (32%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	7.8
Intersection LOS:	A
Intersection Capacity Utilization	76.9%
ICU Level of Service	D
Analysis Period (min)	15

























Splits and Phases: 9: Orchard Lake Rd & Warwick St



Lanes, Volumes, Timings

11: Middlebelt Rd/Inverness St & Orchard Lake Rd

01/12/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1072	148	238	681	5	63	4	199	8	14	20
Future Volume (vph)	16	1072	148	238	681	5	63	4	199	8	14	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Storage Length (ft)	100		200	200		0	100		500	50		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.911	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1678	1766	1501	1678	1766	1501	1620	1705	1449	1620	1553	0
Flt Permitted	0.366			0.050			0.733			0.755		
Satd. Flow (perm)	646	1766	1501	88	1766	1501	1250	1705	1449	1287	1553	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			100			55			195			22
Link Speed (mph)		35			35			40				25
Link Distance (ft)		1026			825			884				562
Travel Time (s)		20.0			16.1			15.1				15.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	17	1165	161	259	740	5	68	4	216	9	15	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1165	161	259	740	5	68	4	216	9	37	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			10				10
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		55			16			25				25
Two way Left Turn Lane		Yes			Yes			Yes				
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	

Lanes, Volumes, Timings
 11: Middlebelt Rd/Inverness St & Orchard Lake Rd

01/12/2021

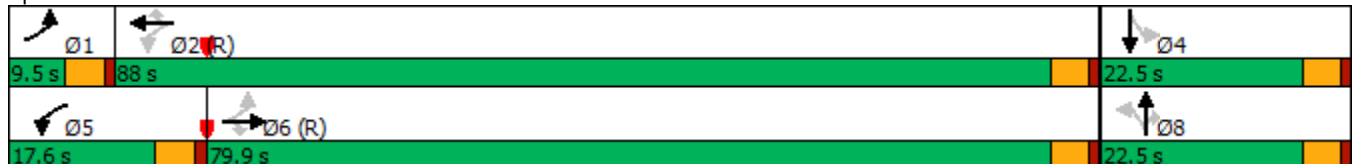


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		
Detector Phase	1	6	6	5	2	2	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	9.5	79.9	79.9	17.6	88.0	88.0	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	7.9%	66.6%	66.6%	14.7%	73.3%	73.3%	18.8%	18.8%	18.8%	18.8%	18.8%	18.8%
Maximum Green (s)	5.0	75.4	75.4	13.1	83.5	83.5	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Min	C-Min	C-Min	Min	C-Min	C-Min	Min	Min	Min	Min	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	81.1	75.4	75.4	99.2	89.0	89.0	11.8	11.8	11.8	11.8	11.8	11.8
Actuated g/C Ratio	0.68	0.63	0.63	0.83	0.74	0.74	0.10	0.10	0.10	0.10	0.10	0.10
v/c Ratio	0.04	1.05	0.16	0.79	0.57	0.00	0.55	0.02	0.68	0.07	0.22	
Control Delay	2.8	57.9	4.3	52.0	9.6	0.0	67.3	46.0	20.5	47.5	28.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	2.8	57.9	4.3	52.0	9.6	0.0	67.3	46.0	20.5	47.5	28.6	
LOS	A	E	A	D	A	A	E	D	C	D	C	
Approach Delay		50.8			20.5			31.9			32.3	
Approach LOS		D			C			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 114 (95%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.05
 Intersection Signal Delay: 37.1
 Intersection LOS: D
 Intersection Capacity Utilization 91.0%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 11: Middlebelt Rd/Inverness St & Orchard Lake Rd



Lanes, Volumes, Timings
15: Orchard Lake Rd & Summers Rd

01/12/2021



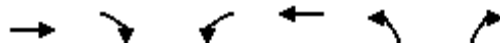
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	29	0	705	16	0	960
Future Volume (vph)	29	0	705	16	0	960
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1857	0	1863	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1857	0	1863	1863
Link Speed (mph)	25		35			35
Link Distance (ft)	592		733			1020
Travel Time (s)	16.1		14.3			19.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	0	766	17	0	1043
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	783	0	0	1043
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	R NA
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	60.5%
ICU Level of Service	B
Analysis Period (min)	15

Lanes, Volumes, Timings
 17: Willow Beach St & Orchard Lake Rd

01/12/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↙	↑	↘	
Traffic Volume (vph)	710	0	24	958	0	29
Future Volume (vph)	710	0	24	958	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected			0.950			
Satd. Flow (prot)	1863	0	1770	1863	1611	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	0	1770	1863	1611	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	743			701	392	
Travel Time (s)	14.5			13.7	10.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	772	0	26	1041	0	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	772	0	26	1041	32	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 60.4% ICU Level of Service B
 Analysis Period (min) 15

Lanes, Volumes, Timings
 19: Maddy Ln & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1197	0	0	730	18	0	0	45	0	0	0
Future Volume (vph)	0	1197	0	0	730	18	0	0	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.996			0.865				
Flt Protected												
Satd. Flow (prot)	1863	1863	0	1863	1855	0	0	1611	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	1863	1863	0	1863	1855	0	0	1611	0	0	1863	0
Link Speed (mph)		35			35			25				25
Link Distance (ft)		1268			794			484				384
Travel Time (s)		24.7			15.5			13.2				10.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1301	0	0	793	20	0	0	49	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1301	0	0	813	0	0	49	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type: Other

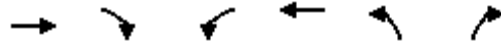
Control Type: Unsignalized

Intersection Capacity Utilization 73.0% ICU Level of Service C

Analysis Period (min) 15

Lanes, Volumes, Timings
22: Figa Ave & Orchard Lake Rd

01/12/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1236	21	18	746	0	0
Future Volume (vph)	1236	21	18	746	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.998					
Fl _t Protected			0.950			
Satd. Flow (prot)	1797	0	1711	1801	1863	0
Fl _t Permitted			0.950			
Satd. Flow (perm)	1797	0	1711	1801	1863	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	1452			1026	225	
Travel Time (s)	28.3			20.0	6.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1343	23	20	811	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1366	0	20	811	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	69.7%
ICU Level of Service	C
Analysis Period (min)	15

Lanes, Volumes, Timings
1: Commerce Rd & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	364	34	49	713	517	491
Future Volume (vph)	364	34	49	713	517	491
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Storage Length (ft)	500	500	150			450
Storage Lanes	1	0	1			1
Taper Length (ft)	50		50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.850				0.850
Fl _t Protected	0.950		0.950			
Satd. Flow (prot)	1678	1501	1678	1766	1766	1501
Fl _t Permitted	0.950		0.268			
Satd. Flow (perm)	1678	1501	473	1766	1766	1501
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		32				540
Link Speed (mph)	35			35	35	
Link Distance (ft)	916			721	733	
Travel Time (s)	17.8			14.0	14.3	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	400	37	54	784	568	540
Shared Lane Traffic (%)						
Lane Group Flow (vph)	400	37	54	784	568	540
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	R NA
Median Width(ft)	11			11	11	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	30			16	60	
Two way Left Turn Lane					Yes	
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Over	pm+pt	NA	NA	Perm

Lanes, Volumes, Timings
1: Commerce Rd & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases		5	5	2	6	
Permitted Phases	8		2			6
Detector Phase	8	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.5	15.8	15.8	23.8	23.8	23.8
Total Split (s)	44.4	15.8	15.8	79.8	64.0	64.0
Total Split (%)	35.7%	12.7%	12.7%	64.3%	51.5%	51.5%
Maximum Green (s)	38.9	10.0	10.0	74.0	58.2	58.2
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.9	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.8	5.8	5.8	5.8	5.8
Lead/Lag		Lead	Lead		Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Min	Min	Min	C-Min	C-Min	C-Min
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	33.8	10.0	79.1	79.1	63.3	63.3
Actuated g/C Ratio	0.27	0.08	0.64	0.64	0.51	0.51
v/c Ratio	0.88	0.25	0.14	0.70	0.63	0.52
Control Delay	63.5	24.9	10.6	20.1	27.1	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.5	24.9	10.6	20.1	27.1	3.6
LOS	E	C	B	C	C	A
Approach Delay	60.3			19.4	15.7	
Approach LOS	E			B	B	

Intersection Summary























Area Type: Other
 Cycle Length: 124.2
 Actuated Cycle Length: 124.2
 Offset: 43 (35%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 25.2
 Intersection LOS: C
 Intersection Capacity Utilization 70.0%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Commerce Rd & Orchard Lake Rd



Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/12/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	351	730	8	2	839	588	5	20	6	301	13	204
Future Volume (vph)	351	730	8	2	839	588	5	20	6	301	13	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	190		100	100		435	0		0	125		300
Storage Lanes	1		1	1		1	0		0	1		1
Taper Length (ft)	50			50			25			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.973				0.850
Flt Protected	0.950			0.950				0.992		0.950		
Satd. Flow (prot)	1694	1783	1516	1694	1783	1516	0	1780	0	1752	1845	1568
Flt Permitted	0.950			0.950				0.992		0.950		
Satd. Flow (perm)	1694	1783	1516	1694	1783	1516	0	1780	0	1752	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			193			609		7				229
Link Speed (mph)		35			35			35				35
Link Distance (ft)		701			1268			549				607
Travel Time (s)		13.7			24.7			10.7				11.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	394	820	9	2	943	661	6	22	7	338	15	229
Shared Lane Traffic (%)												
Lane Group Flow (vph)	394	820	9	2	943	661	0	35	0	338	15	229
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			20				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		20			40			16				16
Two way Left Turn Lane		Yes			Yes							Yes
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA	Perm	Prot	NA	custom	Split	NA		Split	NA	pm+ov

Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/12/2021

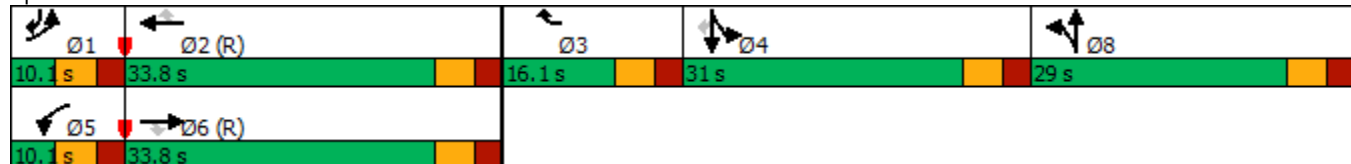


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6		5	2	3	8	8		4	4	1
Permitted Phases			6			2						4
Detector Phase	1	6	6	5	2	3	8	8		4	4	1
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	7.0	7.0		7.0	7.0	4.0
Minimum Split (s)	10.1	28.0	28.0	10.1	28.0	16.1	29.0	29.0		28.0	28.0	10.1
Total Split (s)	10.1	33.8	33.8	10.1	33.8	16.1	29.0	29.0		31.0	31.0	10.1
Total Split (%)	8.4%	28.2%	28.2%	8.4%	28.2%	13.4%	24.2%	24.2%		25.8%	25.8%	8.4%
Maximum Green (s)	4.0	27.7	27.7	4.0	27.7	10.0	23.0	23.0		25.0	25.0	4.0
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5		3.5	3.5	3.6
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1		6.0		6.0	6.0	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead				Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Min	C-Min	C-Min	Min	C-Min	Min	Min	Min		Min	Min	Min
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0	11.0		11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	19.5	41.4	41.4	5.8	27.7	43.8		8.0		24.6	24.6	43.9
Actuated g/C Ratio	0.16	0.34	0.34	0.05	0.23	0.36		0.07		0.20	0.20	0.37
v/c Ratio	1.44	1.33	0.01	0.02	2.29	0.70		0.28		0.94	0.04	0.32
Control Delay	247.5	191.8	0.0	60.0	605.8	4.6		50.4		82.3	38.5	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	247.5	191.8	0.0	60.0	605.8	4.6		50.4		82.3	38.5	3.3
LOS	F	F	A	E	F	A		D		F	D	A
Approach Delay		208.3			357.7			50.4			50.1	
Approach LOS		F			F			D			D	

Intersection Summary












Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
 Natural Cycle: 145
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.29
 Intersection Signal Delay: 249.6
 Intersection LOS: F
 Intersection Capacity Utilization 102.1%
 ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 2: Cass Lake Rd & Orchard Lake Rd



Lanes, Volumes, Timings
8: Orchard Lake Rd & Wards Point Dr

01/12/2021

						
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	11	1047	1003	12	11	10
Future Volume (vph)	11	1047	1003	12	11	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	14	12
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.998		0.935	
Fl _t Protected	0.950				0.975	
Satd. Flow (prot)	1678	1766	1762	0	1777	0
Fl _t Permitted	0.200				0.830	
Satd. Flow (perm)	353	1766	1762	0	1512	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			1		11	
Link Speed (mph)		35	35		25	
Link Distance (ft)		1020	743		595	
Travel Time (s)		19.9	14.5		16.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	12	1163	1114	13	12	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	1163	1127	0	23	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		11	11		14	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		50	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.04	1.04	1.04	1.04	0.92	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	
Detector Template	Left	Thru	Thru		Left	
Leading Detector (ft)	20	100	100		20	
Trailing Detector (ft)	0	0	0		0	
Detector 1 Position(ft)	0	0	0		0	
Detector 1 Size(ft)	20	6	6		20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	custom	NA	NA		Perm	

Lanes, Volumes, Timings
8: Orchard Lake Rd & Wards Point Dr

01/12/2021



Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Protected Phases						
Permitted Phases	2	2	2		4	
Detector Phase	2	2	2		4	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		7.0	
Minimum Split (s)	23.3	23.3	23.3		23.8	
Total Split (s)	96.2	96.2	96.2		23.8	
Total Split (%)	80.2%	80.2%	80.2%		19.8%	
Maximum Green (s)	90.9	90.9	90.9		18.0	
Yellow Time (s)	3.6	3.6	3.6		3.5	
All-Red Time (s)	1.7	1.7	1.7		2.3	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.3	5.3	5.3		5.8	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	C-Min	C-Min	C-Min		Min	
Walk Time (s)	7.0	7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0		0	
Act Effct Green (s)	101.5	101.5	101.5		7.4	
Actuated g/C Ratio	0.85	0.85	0.85		0.06	
v/c Ratio	0.04	0.78	0.76		0.22	
Control Delay	1.9	9.0	24.9		40.5	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	1.9	9.0	24.9		40.5	
LOS	A	A	C		D	
Approach Delay		8.9	24.9		40.5	
Approach LOS		A	C		D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	114 (95%), Referenced to phase 2:NBSB and 6:, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.78
Intersection Signal Delay:	17.0
Intersection LOS:	B
Intersection Capacity Utilization:	70.2%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 8: Orchard Lake Rd & Wards Point Dr



Lanes, Volumes, Timings
9: Orchard Lake Rd & Warwick St

01/12/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	1050	1445	6	5	8
Future Volume (vph)	11	1050	1445	6	5	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.999		0.919	
Fl _t Protected	0.950				0.980	
Satd. Flow (prot)	1678	1766	1764	0	1645	0
Fl _t Permitted	0.038				0.980	
Satd. Flow (perm)	67	1766	1764	0	1645	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			1		9	
Link Speed (mph)		35	35		25	
Link Distance (ft)		794	1452		338	
Travel Time (s)		15.5	28.3		9.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	12	1180	1624	7	6	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	1180	1631	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		35	30		30	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	
Detector Template	Left	Thru	Thru		Left	
Leading Detector (ft)	20	100	100		20	
Trailing Detector (ft)	0	0	0		0	
Detector 1 Position(ft)	0	0	0		0	
Detector 1 Size(ft)	20	6	6		20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Perm	

Lanes, Volumes, Timings
 9: Orchard Lake Rd & Warwick St

01/12/2021

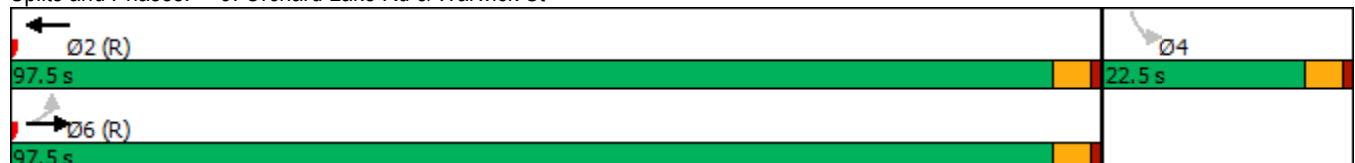


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		6	2			
Permitted Phases	6				4	
Detector Phase	6	6	2		4	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	
Minimum Split (s)	22.5	22.5	22.5		22.5	
Total Split (s)	97.5	97.5	97.5		22.5	
Total Split (%)	81.3%	81.3%	81.3%		18.8%	
Maximum Green (s)	93.0	93.0	93.0		18.0	
Yellow Time (s)	3.5	3.5	3.5		3.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.5	4.5	4.5		4.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	C-Min	C-Min	C-Min		Min	
Walk Time (s)	7.0	7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0		0	
Act Effct Green (s)	104.7	104.7	104.7		6.3	
Actuated g/C Ratio	0.87	0.87	0.87		0.05	
v/c Ratio	0.21	0.77	1.06		0.16	
Control Delay	1.8	6.8	36.8		38.2	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	1.8	6.8	36.8		38.2	
LOS	A	A	D		D	
Approach Delay		6.7	36.8		38.2	
Approach LOS		A	D		D	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 38 (32%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.06
 Intersection Signal Delay: 24.2
 Intersection LOS: C
 Intersection Capacity Utilization 88.1%
 ICU Level of Service E
 Analysis Period (min) 15

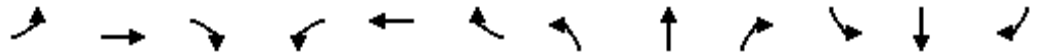
Splits and Phases: 9: Orchard Lake Rd & Warwick St



Lanes, Volumes, Timings

11: Middlebelt Rd/Inverness St & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	925	85	180	1188	24	236	26	267	30	16	33
Future Volume (vph)	31	925	85	180	1188	24	236	26	267	30	16	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Storage Length (ft)	100		200	200		0	100		500	50		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.898	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1678	1766	1501	1678	1766	1501	1620	1705	1449	1620	1531	0
Flt Permitted	0.051			0.105			0.722			0.739		
Satd. Flow (perm)	90	1766	1501	185	1766	1501	1231	1705	1449	1260	1531	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			55			230			36
Link Speed (mph)		35			35			40				25
Link Distance (ft)		1026			825			884				562
Travel Time (s)		20.0			16.1			15.1				15.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	34	1005	92	196	1291	26	257	28	290	33	17	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	1005	92	196	1291	26	257	28	290	33	53	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			10				10
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		55			16			25				25
Two way Left Turn Lane		Yes			Yes			Yes				
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	

Lanes, Volumes, Timings
 11: Middlebelt Rd/Inverness St & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2		2	8		8	4		
Detector Phase	1	6	6	5	2	2	8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	9.5	79.9	79.9	17.6	88.0	88.0	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	7.9%	66.6%	66.6%	14.7%	73.3%	73.3%	18.8%	18.8%	18.8%	18.8%	18.8%	18.8%
Maximum Green (s)	5.0	75.4	75.4	13.1	83.5	83.5	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Min	C-Min	C-Min	Min	C-Min	C-Min	Min	Min	Min	Min	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	82.7	77.7	77.7	92.4	83.5	83.5	18.0	18.0	18.0	18.0	18.0	18.0
Actuated g/C Ratio	0.69	0.65	0.65	0.77	0.70	0.70	0.15	0.15	0.15	0.15	0.15	0.15
v/c Ratio	0.27	0.88	0.09	0.71	1.05	0.02	1.40	0.11	0.70	0.17	0.20	0.20
Control Delay	11.7	35.0	3.1	26.6	60.0	0.3	246.5	45.4	21.8	47.3	22.6	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.7	35.0	3.1	26.6	60.0	0.3	246.5	45.4	21.8	47.3	22.6	22.6
LOS	B	C	A	C	E	A	F	D	C	D	C	C
Approach Delay		31.7			54.7			123.4				32.1
Approach LOS		C			D			F				C

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 114 (95%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.40
 Intersection Signal Delay: 58.2
 Intersection LOS: E
 Intersection Capacity Utilization 97.7%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 11: Middlebelt Rd/Inverness St & Orchard Lake Rd



Lanes, Volumes, Timings
15: Orchard Lake Rd & Summers Rd

01/12/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	48	0	1058	19	53	960
Future Volume (vph)	48	0	1058	19	53	960
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	0	1859	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	0	1859	0	1770	1863
Link Speed (mph)	25		35			35
Link Distance (ft)	592		733			1020
Travel Time (s)	16.1		14.3			19.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	0	1150	21	58	1043
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	1171	0	58	1043
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	R NA
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	66.8%
ICU Level of Service	C
Analysis Period (min)	15

Lanes, Volumes, Timings
 17: Willow Beach St & Orchard Lake Rd

01/12/2021



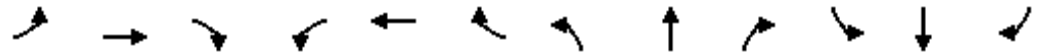
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1058	0	33	1015	0	31
Future Volume (vph)	1058	0	33	1015	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected			0.950			
Satd. Flow (prot)	1863	0	1770	1863	1611	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	0	1770	1863	1611	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	743			701	392	
Travel Time (s)	14.5			13.7	10.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1150	0	36	1103	0	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1150	0	36	1103	34	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	65.7%
ICU Level of Service	C
Analysis Period (min)	15

Lanes, Volumes, Timings
19: Maddy Ln & Orchard Lake Rd

01/12/2021



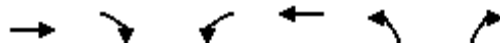
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1037	0	0	1429	24	0	0	24	0	0	0
Future Volume (vph)	0	1037	0	0	1429	24	0	0	24	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.998			0.865				
Flt Protected												
Satd. Flow (prot)	1863	1863	0	1863	1859	0	0	1611	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	1863	1863	0	1863	1859	0	0	1611	0	0	1863	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1268			794			484			384	
Travel Time (s)		24.7			15.5			13.2			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1127	0	0	1553	26	0	0	26	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1127	0	0	1579	0	0	26	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	86.7%
ICU Level of Service	E
Analysis Period (min)	15

Lanes, Volumes, Timings
22: Figa Ave & Orchard Lake Rd

01/12/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1041	14	6	1451	0	0
Future Volume (vph)	1041	14	6	1451	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.998					
Fl _t Protected			0.950			
Satd. Flow (prot)	1797	0	1711	1801	1863	0
Fl _t Permitted			0.950			
Satd. Flow (perm)	1797	0	1711	1801	1863	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	1452			1026	225	
Travel Time (s)	28.3			20.0	6.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1132	15	7	1577	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1147	0	7	1577	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	79.7%
ICU Level of Service	D
Analysis Period (min)	15

Lanes, Volumes, Timings
1: Commerce Rd & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	404	70	62	317	662	327
Future Volume (vph)	404	70	62	317	662	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Storage Length (ft)	500	500	150			450
Storage Lanes	1	0	1			0
Taper Length (ft)	50		50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.850				0.850
Fl _t Protected	0.950		0.950			
Satd. Flow (prot)	1678	1501	1678	1766	1766	1501
Fl _t Permitted	0.950		0.119			
Satd. Flow (perm)	1678	1501	210	1766	1766	1501
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		63				265
Link Speed (mph)	35			35	35	
Link Distance (ft)	916			721	733	
Travel Time (s)	17.8			14.0	14.3	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	444	77	68	348	727	359
Shared Lane Traffic (%)						
Lane Group Flow (vph)	444	77	68	348	727	359
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	R NA
Median Width(ft)	11			11	11	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	30			16	60	
Two way Left Turn Lane					Yes	
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Over	pm+pt	NA	NA	Perm

Lanes, Volumes, Timings
 1: Commerce Rd & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	7	5	5	2	6	
Permitted Phases			2			6
Detector Phase	7	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.5	15.8	15.8	23.8	23.8	23.8
Total Split (s)	52.0	16.0	16.0	68.0	52.0	52.0
Total Split (%)	43.3%	13.3%	13.3%	56.7%	43.3%	43.3%
Maximum Green (s)	47.5	10.2	10.2	62.2	46.2	46.2
Yellow Time (s)	3.5	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	5.8	5.8	5.8	5.8	5.8
Lead/Lag		Lead	Lead		Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	C-Min	C-Min	C-Min
Walk Time (s)				7.0	7.0	7.0
Flash Dont Walk (s)				11.0	11.0	11.0
Pedestrian Calls (#/hr)				0	0	0
Act Effct Green (s)	37.5	10.1	72.2	72.2	56.3	56.3
Actuated g/C Ratio	0.31	0.08	0.60	0.60	0.47	0.47
v/c Ratio	0.85	0.42	0.27	0.33	0.88	0.43
Control Delay	53.4	24.3	14.7	14.3	43.9	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.4	24.3	14.7	14.3	43.9	8.2
LOS	D	C	B	B	D	A
Approach Delay	49.1			14.3	32.1	
Approach LOS	D			B	C	

Intersection Summary























Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 32.8
 Intersection LOS: C
 Intersection Capacity Utilization 79.0%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 1: Commerce Rd & Orchard Lake Rd



Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/12/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	644	5	0	616	114	16	5	14	539	6	350
Future Volume (vph)	90	644	5	0	616	114	16	5	14	539	6	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	190		100	100		435	0		0	125		300
Storage Lanes	1		1	1		1	0		0	1		1
Taper Length (ft)	50			50			25			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.946				0.850
Flt Protected	0.950							0.978		0.950		
Satd. Flow (prot)	1694	1783	1516	1783	3388	1516	0	1707	0	1752	1845	1568
Flt Permitted	0.299							0.852		0.648		
Satd. Flow (perm)	533	1783	1516	1783	3388	1516	0	1487	0	1195	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			133			133		16				43
Link Speed (mph)		35			35			35				35
Link Distance (ft)		701			1268			549				607
Travel Time (s)		13.7			24.7			10.7				11.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	101	724	6	0	692	128	18	6	16	606	7	393
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	724	6	0	692	128	0	40	0	606	7	393
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			20				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		20			40			16				16
Two way Left Turn Lane		Yes			Yes							Yes
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	Perm	NA		pm+pt	NA	pm+ov

Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/12/2021

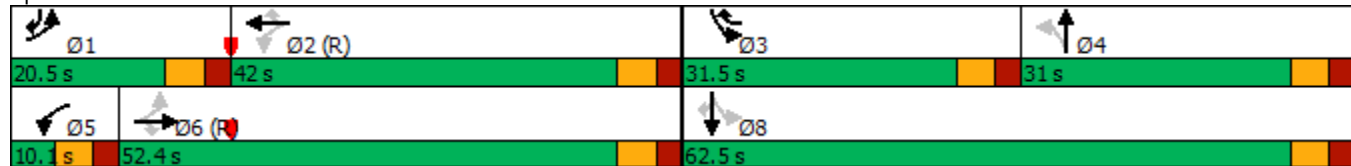


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6		5	2	3		4		3	8	1
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	5	2	3	4	4		3	8	1
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	7.0	7.0		10.0	7.0	4.0
Minimum Split (s)	10.1	28.0	28.0	10.1	28.0	16.1	28.0	28.0		16.1	29.0	10.1
Total Split (s)	20.5	52.4	52.4	10.1	42.0	31.5	31.0	31.0		31.5	62.5	20.5
Total Split (%)	16.4%	41.9%	41.9%	8.1%	33.6%	25.2%	24.8%	24.8%		25.2%	50.0%	16.4%
Maximum Green (s)	14.4	46.3	46.3	4.0	35.9	25.4	25.0	25.0		25.4	56.5	14.4
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5		3.6	3.5	3.6
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1		6.0		6.1	6.0	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag		Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Min	C-Min	C-Min	Min	C-Min	Min	Min	Min		Min	Min	Min
Walk Time (s)		7.0	7.0		7.0		7.0	7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0		0	0			0	
Act Effct Green (s)	70.4	61.6	61.6		58.3	89.8		8.2		39.6	39.7	54.5
Actuated g/C Ratio	0.56	0.49	0.49		0.47	0.72		0.07		0.32	0.32	0.44
v/c Ratio	0.26	0.82	0.01		0.44	0.11		0.36		1.23	0.01	0.56
Control Delay	13.6	36.9	0.0		24.0	1.2		46.6		158.1	28.5	26.1
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	13.6	36.9	0.0		24.0	1.2		46.6		158.1	28.5	26.1
LOS	B	D	A		C	A		D		F	C	C
Approach Delay		33.8			20.4			46.6			105.6	
Approach LOS		C			C			D			F	

Intersection Summary











Area Type: Other
 Cycle Length: 125
 Actuated Cycle Length: 125
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 125
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.23
 Intersection Signal Delay: 56.7
 Intersection LOS: E
 Intersection Capacity Utilization 88.9%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 2: Cass Lake Rd & Orchard Lake Rd



Lanes, Volumes, Timings
8: Orchard Lake Rd & Wards Point Dr

01/12/2021

						
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	2	703	955	3	7	5
Future Volume (vph)	2	703	955	3	7	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	14	12
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Fr _t					0.942	
Fl _t Protected	0.950				0.972	
Satd. Flow (prot)	1678	1766	3355	0	1784	0
Fl _t Permitted	0.268				0.972	
Satd. Flow (perm)	473	1766	3355	0	1784	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			1		6	
Link Speed (mph)		35	35		25	
Link Distance (ft)		1020	743		595	
Travel Time (s)		19.9	14.5		16.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	2	781	1061	3	8	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	781	1064	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		11	11		14	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		50	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.04	1.04	1.04	1.04	0.92	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	
Detector Template	Left	Thru	Thru		Left	
Leading Detector (ft)	20	100	100		20	
Trailing Detector (ft)	0	0	0		0	
Detector 1 Position(ft)	0	0	0		0	
Detector 1 Size(ft)	20	6	6		20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	

Lanes, Volumes, Timings
8: Orchard Lake Rd & Wards Point Dr

01/12/2021



Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Protected Phases		2	6		7	
Permitted Phases	2	2				
Detector Phase	2	2	6		7	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0		5.0	
Minimum Split (s)	23.3	23.3	23.3		10.8	
Total Split (s)	34.2	34.2	34.2		10.8	
Total Split (%)	76.0%	76.0%	76.0%		24.0%	
Maximum Green (s)	28.9	28.9	28.9		5.0	
Yellow Time (s)	3.6	3.6	3.6		3.5	
All-Red Time (s)	1.7	1.7	1.7		2.3	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.3	5.3	5.3		5.8	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	C-Min	C-Min	C-Max		None	
Walk Time (s)	7.0	7.0	7.0			
Flash Dont Walk (s)	11.0	11.0	11.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effct Green (s)	41.8	41.8	41.8		5.0	
Actuated g/C Ratio	0.93	0.93	0.93		0.11	
v/c Ratio	0.00	0.48	0.34		0.07	
Control Delay	2.0	3.1	1.7		15.6	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	2.0	3.1	1.7		15.6	
LOS	A	A	A		B	
Approach Delay		3.1	1.7		15.6	
Approach LOS		A	A		B	

Intersection Summary

Area Type: Other
 Cycle Length: 45
 Actuated Cycle Length: 45
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 2.4
 Intersection Capacity Utilization 50.4%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 8: Orchard Lake Rd & Wards Point Dr



Lanes, Volumes, Timings
9: Orchard Lake Rd & Warwick St

01/12/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	1239	746	0	18	2
Future Volume (vph)	3	1239	746	0	18	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Fr _t					0.988	
Fl _t Protected	0.950				0.957	
Satd. Flow (prot)	1678	1766	3355	0	1727	0
Fl _t Permitted	0.334				0.957	
Satd. Flow (perm)	590	1766	3355	0	1727	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					2	
Link Speed (mph)		35	35		25	
Link Distance (ft)		794	1452		338	
Travel Time (s)		15.5	28.3		9.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	3	1392	838	0	20	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	1392	838	0	22	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		35	30		30	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	
Detector Template	Left	Thru	Thru		Left	
Leading Detector (ft)	20	100	100		20	
Trailing Detector (ft)	0	0	0		0	
Detector 1 Position(ft)	0	0	0		0	
Detector 1 Size(ft)	20	6	6		20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	

Lanes, Volumes, Timings
 9: Orchard Lake Rd & Warwick St

01/12/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		6	2		4	
Permitted Phases	6					
Detector Phase	6	6	2		4	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	
Minimum Split (s)	22.5	22.5	22.5		22.5	
Total Split (s)	95.0	95.0	95.0		25.0	
Total Split (%)	79.2%	79.2%	79.2%		20.8%	
Maximum Green (s)	90.5	90.5	90.5		20.5	
Yellow Time (s)	3.5	3.5	3.5		3.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.5	4.5	4.5		4.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	C-Min	C-Min	C-Min		Min	
Walk Time (s)	7.0	7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0		0	
Act Effct Green (s)	104.0	104.0	104.0		7.0	
Actuated g/C Ratio	0.87	0.87	0.87		0.06	
v/c Ratio	0.01	0.91	0.29		0.22	
Control Delay	1.3	16.5	3.6		54.6	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	1.3	16.5	3.6		54.6	
LOS	A	B	A		D	
Approach Delay		16.5	3.6		54.6	
Approach LOS		B	A		D	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 38 (32%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 12.1
 Intersection LOS: B
 Intersection Capacity Utilization 76.9%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 9: Orchard Lake Rd & Warwick St



Lanes, Volumes, Timings

11: Middlebelt Rd/Inverness St & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1072	148	238	681	5	63	4	199	8	14	20
Future Volume (vph)	16	1072	148	238	681	5	63	4	199	8	14	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Storage Length (ft)	100		200	200		0	100		500	50		0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850		0.999				0.850		0.911	
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1678	3355	1501	1678	3352	0	1620	1705	1449	1620	1553	0
Fl _t Permitted	0.369			0.177			0.733			0.755		
Satd. Flow (perm)	652	3355	1501	313	3352	0	1250	1705	1449	1287	1553	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		1				216		22	
Link Speed (mph)		35			35			40			25	
Link Distance (ft)		1026			825			884			562	
Travel Time (s)		20.0			16.1			15.1			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	17	1165	161	259	740	5	68	4	216	9	15	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1165	161	259	745	0	68	4	216	9	37	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		55			16			25			25	
Two way Left Turn Lane		Yes			Yes			Yes				
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	NA	

Lanes, Volumes, Timings
 11: Middlebelt Rd/Inverness St & Orchard Lake Rd

01/12/2021

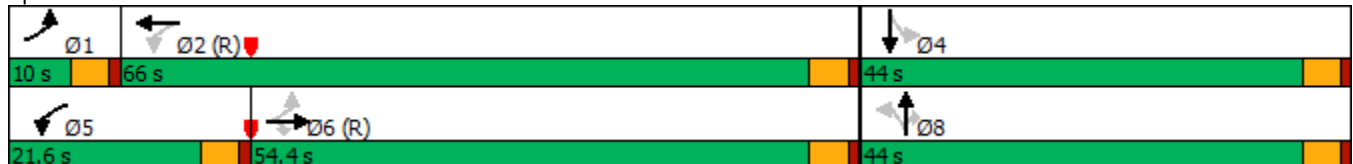


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6		5	2			8				4
Permitted Phases	6		6	2			8		8	4		
Detector Phase	1	6	6	5	2		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		22.5	22.5	22.5	22.5	22.5	
Total Split (s)	10.0	54.4	54.4	21.6	66.0		44.0	44.0	44.0	44.0	44.0	
Total Split (%)	8.3%	45.3%	45.3%	18.0%	55.0%		36.7%	36.7%	36.7%	36.7%	36.7%	
Maximum Green (s)	5.5	49.9	49.9	17.1	61.5		39.5	39.5	39.5	39.5	39.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Min	C-Min	C-Min	Min	C-Min		Min	Min	Min	Min	Min	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)		11.0	11.0		11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0		0	0	0	0	0	
Act Effct Green (s)	82.9	77.2	77.2	98.9	88.8		11.9	11.9	11.9	11.9	11.9	
Actuated g/C Ratio	0.69	0.64	0.64	0.82	0.74		0.10	0.10	0.10	0.10	0.10	
v/c Ratio	0.03	0.54	0.16	0.57	0.30		0.55	0.02	0.64	0.07	0.21	
Control Delay	4.2	10.7	1.9	9.4	6.0		66.8	46.0	15.4	47.4	28.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	4.2	10.7	1.9	9.4	6.0		66.8	46.0	15.4	47.4	28.4	
LOS	A	B	A	A	A		E	D	B	D	C	
Approach Delay		9.6			6.9			28.0			32.1	
Approach LOS		A			A			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 114 (95%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.64
 Intersection Signal Delay: 10.9
 Intersection LOS: B
 Intersection Capacity Utilization 64.2%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 11: Middlebelt Rd/Inverness St & Orchard Lake Rd



Lanes, Volumes, Timings
15: Orchard Lake Rd & Summers Rd

01/12/2021



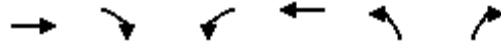
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	29	0	705	16	0	960
Future Volume (vph)	29	0	705	16	0	960
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt			0.997			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1857	0	1863	3539
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1857	0	1863	3539
Link Speed (mph)	25		35			35
Link Distance (ft)	592		733			1020
Travel Time (s)	16.1		14.3			19.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	0	766	17	0	1043
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	783	0	0	1043
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	R NA
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.1%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
 17: Willow Beach St & Orchard Lake Rd

01/12/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↙	↑↑	↘	
Traffic Volume (vph)	710	0	24	958	0	29
Future Volume (vph)	710	0	24	958	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt					0.865	
Flt Protected			0.950			
Satd. Flow (prot)	1863	0	1770	3539	1611	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	0	1770	3539	1611	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	743			701	392	
Travel Time (s)	14.5			13.7	10.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	772	0	26	1041	0	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	772	0	26	1041	32	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.4%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
 19: Maddy Ln & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1197	0	0	730	18	0	0	45	0	0	0
Future Volume (vph)	0	1197	0	0	730	18	0	0	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.996			0.865				
Flt Protected												
Satd. Flow (prot)	1863	1863	0	1863	3525	0	0	1611	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	1863	1863	0	1863	3525	0	0	1611	0	0	1863	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1268			794			484			384	
Travel Time (s)		24.7			15.5			13.2			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1301	0	0	793	20	0	0	49	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1301	0	0	813	0	0	49	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 73.0% ICU Level of Service C

Analysis Period (min) 15

Lanes, Volumes, Timings
 22: Figa Ave & Orchard Lake Rd

01/12/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1236	21	18	746	0	0
Future Volume (vph)	1236	21	18	746	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Fr _t	0.998					
Fl _t Protected			0.950			
Satd. Flow (prot)	1797	0	1711	3421	1863	0
Fl _t Permitted			0.950			
Satd. Flow (perm)	1797	0	1711	3421	1863	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	1452			1026	225	
Travel Time (s)	28.3			20.0	6.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1343	23	20	811	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1366	0	20	811	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	69.7%
ICU Level of Service	C
Analysis Period (min)	15

Lanes, Volumes, Timings
1: Commerce Rd & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	364	34	49	713	517	491
Future Volume (vph)	364	34	49	713	517	491
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11
Storage Length (ft)	500	500	150			450
Storage Lanes	1	0	1			0
Taper Length (ft)	50		50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.850				0.850
Fl _t Protected	0.950		0.950			
Satd. Flow (prot)	1678	1501	1678	1766	1766	1501
Fl _t Permitted	0.950		0.154			
Satd. Flow (perm)	1678	1501	272	1766	1766	1501
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		37				540
Link Speed (mph)	35			35	35	
Link Distance (ft)	916			721	733	
Travel Time (s)	17.8			14.0	14.3	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	400	37	54	784	568	540
Shared Lane Traffic (%)						
Lane Group Flow (vph)	400	37	54	784	568	540
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	R NA
Median Width(ft)	11			11	11	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	30			16	60	
Two way Left Turn Lane					Yes	
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Over	pm+pt	NA	NA	Perm

Lanes, Volumes, Timings
1: Commerce Rd & Orchard Lake Rd

01/12/2021

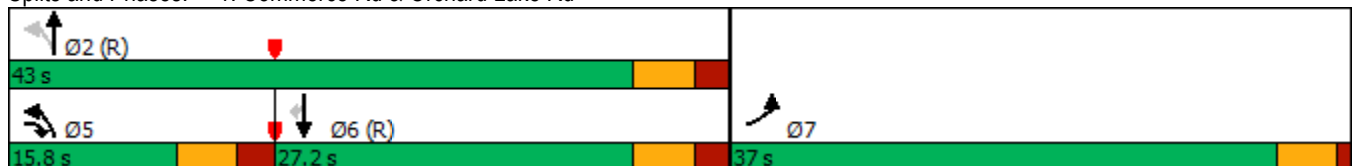


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	7	5	5	2	6	
Permitted Phases			2			6
Detector Phase	7	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	9.5	15.8	15.8	23.8	23.8	23.8
Total Split (s)	37.0	15.8	15.8	43.0	27.2	27.2
Total Split (%)	46.3%	19.8%	19.8%	53.8%	34.0%	34.0%
Maximum Green (s)	32.5	10.0	10.0	37.2	21.4	21.4
Yellow Time (s)	3.5	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	2.2	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	5.8	5.8	5.8	5.8	5.8
Lead/Lag		Lead	Lead		Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	C-Min	C-Min	C-Min
Walk Time (s)				7.0	7.0	7.0
Flash Dont Walk (s)				11.0	11.0	11.0
Pedestrian Calls (#/hr)				0	0	0
Act Effct Green (s)	24.4	10.0	45.3	45.3	29.5	29.5
Actuated g/C Ratio	0.30	0.12	0.57	0.57	0.37	0.37
v/c Ratio	0.78	0.17	0.16	0.78	0.87	0.60
Control Delay	35.9	13.1	11.0	23.1	43.1	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.9	13.1	11.0	23.1	43.1	5.6
LOS	D	B	B	C	D	A
Approach Delay	33.9			22.3	24.8	
Approach LOS	C			C	C	

Intersection Summary























Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 25.6
 Intersection LOS: C
 Intersection Capacity Utilization 69.1%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Commerce Rd & Orchard Lake Rd



Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/12/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	351	730	8	2	839	588	5	20	6	301	13	204
Future Volume (vph)	351	730	8	2	839	588	5	20	6	301	13	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	190		100	100		435	0		0	125		300
Storage Lanes	1		1	1		1	0		0	1		1
Taper Length (ft)	50			50			25			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850			0.850		0.973				0.850
Fl _t Protected	0.950			0.950				0.992		0.950		
Satd. Flow (prot)	1694	1783	1516	1694	3388	1516	0	1780	0	1752	1845	1568
Fl _t Permitted	0.104			0.248				0.936		0.584		
Satd. Flow (perm)	185	1783	1516	442	3388	1516	0	1680	0	1077	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			158			640		7				32
Link Speed (mph)		35			35			35				35
Link Distance (ft)		701			1268			549				607
Travel Time (s)		13.7			24.7			10.7				11.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	394	820	9	2	943	661	6	22	7	338	15	229
Shared Lane Traffic (%)												
Lane Group Flow (vph)	394	820	9	2	943	661	0	35	0	338	15	229
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			20				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		20			40			16				16
Two way Left Turn Lane		Yes			Yes							Yes
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	Perm	NA		pm+pt	NA	pm+ov

Lanes, Volumes, Timings
2: Cass Lake Rd & Orchard Lake Rd

01/12/2021

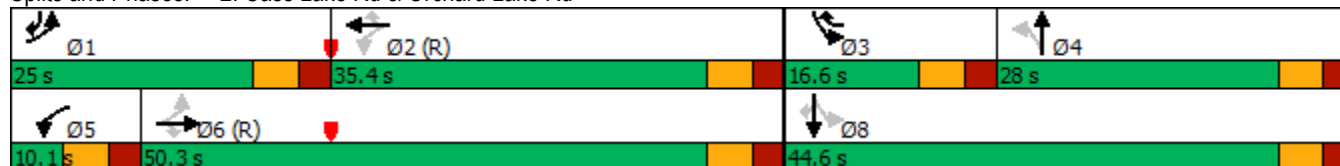


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6		5	2	3		4		3	8	1
Permitted Phases	6		6	2		2	4			8		8
Detector Phase	1	6	6	5	2	3	4	4		3	8	1
Switch Phase												
Minimum Initial (s)	4.0	10.0	10.0	4.0	10.0	10.0	7.0	7.0		10.0	7.0	4.0
Minimum Split (s)	10.1	28.0	28.0	10.1	28.0	16.1	28.0	28.0		16.1	29.0	10.1
Total Split (s)	25.0	50.3	50.3	10.1	35.4	16.6	28.0	28.0		16.6	44.6	25.0
Total Split (%)	23.8%	47.9%	47.9%	9.6%	33.7%	15.8%	26.7%	26.7%		15.8%	42.5%	23.8%
Maximum Green (s)	18.9	44.2	44.2	4.0	29.3	10.5	22.0	22.0		10.5	38.6	18.9
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5		3.6	3.5	3.6
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1		6.0		6.1	6.0	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag		Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	Min	C-Min	C-Min	Min	C-Min	Min	Min	Min		Min	Min	Min
Walk Time (s)		7.0	7.0		7.0		7.0	7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0		0	0			0	
Act Effct Green (s)	68.5	56.8	56.8	37.9	32.4	49.0		7.8		24.3	24.4	60.4
Actuated g/C Ratio	0.65	0.54	0.54	0.36	0.31	0.47		0.07		0.23	0.23	0.58
v/c Ratio	0.71	0.85	0.01	0.01	0.90	0.63		0.27		1.07	0.04	0.25
Control Delay	30.2	31.2	0.0	11.5	48.4	4.9		43.6		108.7	30.9	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	30.2	31.2	0.0	11.5	48.4	4.9		43.6		108.7	30.9	9.9
LOS	C	C	A	B	D	A		D		F	C	A
Approach Delay		30.6			30.5			43.6			67.8	
Approach LOS		C			C			D			E	

Intersection Summary











Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 37.0
 Intersection LOS: D
 Intersection Capacity Utilization 81.1%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: Cass Lake Rd & Orchard Lake Rd



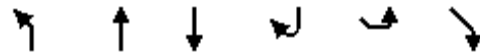
Lanes, Volumes, Timings
8: Orchard Lake Rd & Wards Point Dr

01/12/2021

						
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	11	1047	1003	12	11	10
Future Volume (vph)	11	1047	1003	12	11	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	14	12
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt			0.998		0.935	
Flt Protected	0.950				0.975	
Satd. Flow (prot)	1678	1766	3349	0	1777	0
Flt Permitted	0.247				0.975	
Satd. Flow (perm)	436	1766	3349	0	1777	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			5		11	
Link Speed (mph)		35	35		25	
Link Distance (ft)		1020	743		595	
Travel Time (s)		19.9	14.5		16.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	12	1163	1114	13	12	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	1163	1127	0	23	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		11	11		14	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		50	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.04	1.04	1.04	1.04	0.92	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	
Detector Template	Left	Thru	Thru		Left	
Leading Detector (ft)	20	100	100		20	
Trailing Detector (ft)	0	0	0		0	
Detector 1 Position(ft)	0	0	0		0	
Detector 1 Size(ft)	20	6	6		20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	

Lanes, Volumes, Timings
8: Orchard Lake Rd & Wards Point Dr

01/12/2021



Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Protected Phases		2	6		7	
Permitted Phases	2	2				
Detector Phase	2	2	6		7	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0		5.0	
Minimum Split (s)	23.3	23.3	23.3		10.8	
Total Split (s)	54.2	54.2	54.2		10.8	
Total Split (%)	83.4%	83.4%	83.4%		16.6%	
Maximum Green (s)	48.9	48.9	48.9		5.0	
Yellow Time (s)	3.6	3.6	3.6		3.5	
All-Red Time (s)	1.7	1.7	1.7		2.3	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.3	5.3	5.3		5.8	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	C-Min	C-Min	C-Max		None	
Walk Time (s)	7.0	7.0	7.0			
Flash Dont Walk (s)	11.0	11.0	11.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effct Green (s)	58.6	58.6	58.6		5.0	
Actuated g/C Ratio	0.90	0.90	0.90		0.08	
v/c Ratio	0.03	0.73	0.37		0.16	
Control Delay	2.0	8.2	2.0		23.1	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	2.0	8.2	2.0		23.1	
LOS	A	A	A		C	
Approach Delay		8.1	2.0		23.1	
Approach LOS		A	A		C	

Intersection Summary

Area Type: Other
 Cycle Length: 65
 Actuated Cycle Length: 65
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 5.3
 Intersection LOS: A
 Intersection Capacity Utilization 68.5%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 8: Orchard Lake Rd & Wards Point Dr



Lanes, Volumes, Timings
9: Orchard Lake Rd & Warwick St

01/12/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	1050	1445	6	5	8
Future Volume (vph)	11	1050	1445	6	5	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Fr _t			0.999		0.919	
Fl _t Protected	0.950				0.980	
Satd. Flow (prot)	1678	1766	3352	0	1645	0
Fl _t Permitted	0.133				0.980	
Satd. Flow (perm)	235	1766	3352	0	1645	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			1		9	
Link Speed (mph)		35	35		25	
Link Distance (ft)		794	1452		338	
Travel Time (s)		15.5	28.3		9.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	12	1180	1624	7	6	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	1180	1631	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		35	30		30	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	
Detector Template	Left	Thru	Thru		Left	
Leading Detector (ft)	20	100	100		20	
Trailing Detector (ft)	0	0	0		0	
Detector 1 Position(ft)	0	0	0		0	
Detector 1 Size(ft)	20	6	6		20	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	

Lanes, Volumes, Timings
 9: Orchard Lake Rd & Warwick St

01/12/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Protected Phases		6	2		4	
Permitted Phases	6					
Detector Phase	6	6	2		4	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	
Minimum Split (s)	22.5	22.5	22.5		22.5	
Total Split (s)	67.5	67.5	67.5		22.5	
Total Split (%)	75.0%	75.0%	75.0%		25.0%	
Maximum Green (s)	63.0	63.0	63.0		18.0	
Yellow Time (s)	3.5	3.5	3.5		3.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.5	4.5	4.5		4.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	C-Min	C-Min	C-Min		Min	
Walk Time (s)	7.0	7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0		0	
Act Effct Green (s)	74.9	74.9	74.9		6.1	
Actuated g/C Ratio	0.83	0.83	0.83		0.07	
v/c Ratio	0.06	0.80	0.59		0.12	
Control Delay	2.2	9.6	3.5		28.7	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	2.2	9.6	3.5		28.7	
LOS	A	A	A		C	
Approach Delay		9.6	3.5		28.7	
Approach LOS		A	A		C	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 6.2
 Intersection LOS: A
 Intersection Capacity Utilization 66.9%
 ICU Level of Service C
 Analysis Period (min) 15

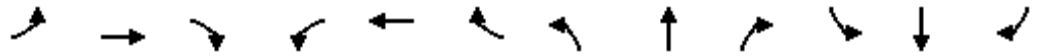
Splits and Phases: 9: Orchard Lake Rd & Warwick St



Lanes, Volumes, Timings

11: Middlebelt Rd/Inverness St & Orchard Lake Rd

01/12/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	925	85	180	1188	24	236	26	267	30	16	33
Future Volume (vph)	31	925	85	180	1188	24	236	26	267	30	16	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Storage Length (ft)	100		200	200		0	100		500	50		0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.997				0.850		0.898	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1678	3355	1501	1678	3345	0	1620	1705	1449	1620	1531	0
Flt Permitted	0.140			0.190			0.722			0.739		
Satd. Flow (perm)	247	3355	1501	336	3345	0	1231	1705	1449	1260	1531	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95		2				254		36	
Link Speed (mph)		35			35			40			25	
Link Distance (ft)		1026			825			884			562	
Travel Time (s)		20.0			16.1			15.1			15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	34	1005	92	196	1291	26	257	28	290	33	17	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	1005	92	196	1317	0	257	28	290	33	53	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		55			16			25			25	
Two way Left Turn Lane		Yes			Yes			Yes				
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	NA	

Lanes, Volumes, Timings
 11: Middlebelt Rd/Inverness St & Orchard Lake Rd

01/12/2021

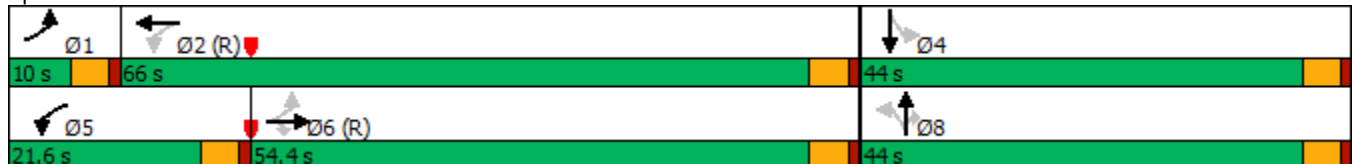


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2			8		8	4		
Detector Phase	1	6	6	5	2		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5		22.5	22.5	22.5	22.5	22.5	
Total Split (s)	10.0	54.4	54.4	21.6	66.0		44.0	44.0	44.0	44.0	44.0	
Total Split (%)	8.3%	45.3%	45.3%	18.0%	55.0%		36.7%	36.7%	36.7%	36.7%	36.7%	
Maximum Green (s)	5.5	49.9	49.9	17.1	61.5		39.5	39.5	39.5	39.5	39.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Min	C-Min	C-Min	Min	C-Min		Min	Min	Min	Min	Min	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)		11.0	11.0		11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0		0	0	0	0	0	
Act Effct Green (s)	70.7	64.7	64.7	79.8	70.1		30.4	30.4	30.4	30.4	30.4	
Actuated g/C Ratio	0.59	0.54	0.54	0.66	0.58		0.25	0.25	0.25	0.25	0.25	
v/c Ratio	0.16	0.56	0.11	0.56	0.67		0.83	0.06	0.52	0.10	0.13	
Control Delay	11.1	21.8	4.1	15.0	20.6		62.8	30.8	9.5	31.7	14.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	11.1	21.8	4.1	15.0	20.6		62.8	30.8	9.5	31.7	14.4	
LOS	B	C	A	B	C		E	C	A	C	B	
Approach Delay		20.0			19.9			34.4			21.0	
Approach LOS		C			B			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 114 (95%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 22.5
 Intersection LOS: C
 Intersection Capacity Utilization 68.8%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 11: Middlebelt Rd/Inverness St & Orchard Lake Rd



Lanes, Volumes, Timings
15: Orchard Lake Rd & Summers Rd

01/12/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	48	0	1058	19	53	960
Future Volume (vph)	48	0	1058	19	53	960
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt			0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	0	1859	0	1770	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	0	1859	0	1770	3539
Link Speed (mph)	25		35			35
Link Distance (ft)	592		733			1020
Travel Time (s)	16.1		14.3			19.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	0	1150	21	58	1043
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	1171	0	58	1043
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	R NA
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	66.8%
ICU Level of Service	C
Analysis Period (min)	15

Lanes, Volumes, Timings
 17: Willow Beach St & Orchard Lake Rd

01/12/2021



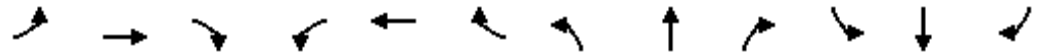
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1058	0	33	1015	0	31
Future Volume (vph)	1058	0	33	1015	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt					0.865	
Flt Protected			0.950			
Satd. Flow (prot)	1863	0	1770	3539	1611	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	0	1770	3539	1611	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	743			701	392	
Travel Time (s)	14.5			13.7	10.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1150	0	36	1103	0	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1150	0	36	1103	34	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	65.7%
ICU Level of Service	C
Analysis Period (min)	15

Lanes, Volumes, Timings
 19: Maddy Ln & Orchard Lake Rd

01/12/2021



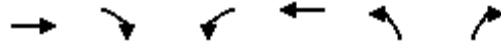
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1037	0	0	1429	24	0	0	24	0	0	0
Future Volume (vph)	0	1037	0	0	1429	24	0	0	24	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.998			0.865				
Flt Protected												
Satd. Flow (prot)	1863	1863	0	1863	3532	0	0	1611	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	1863	1863	0	1863	3532	0	0	1611	0	0	1863	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1268			794			484			384	
Travel Time (s)		24.7			15.5			13.2			10.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1127	0	0	1553	26	0	0	26	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1127	0	0	1579	0	0	26	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	64.6%
ICU Level of Service	C
Analysis Period (min)	15

Lanes, Volumes, Timings
22: Figa Ave & Orchard Lake Rd

01/12/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1041	14	6	1451	0	0
Future Volume (vph)	1041	14	6	1451	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			50		25	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Fr _t	0.998					
Fl _t Protected			0.950			
Satd. Flow (prot)	1797	0	1711	3421	1863	0
Fl _t Permitted			0.950			
Satd. Flow (perm)	1797	0	1711	3421	1863	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	1452			1026	225	
Travel Time (s)	28.3			20.0	6.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1132	15	7	1577	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1147	0	7	1577	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	59.0%
ICU Level of Service	B
Analysis Period (min)	15