

Rochester Rd (M-150) and Hickory Lawn Rd - TMC

Thu Jun 10, 2021

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 845026, Location: 42.632825, -83.131615



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Hickory Lawn Rd Eastbound				Rochester Rd (M-150) Northbound				Rochester Rd (M-150) Southbound				
Time	L	R	U	App	L	T	U	App	T	R	U	App	Int
2021-06-10 4:45PM	0	4	0	4	4	425	0	429	389	2	0	391	824
5:00PM	0	1	0	1	1	411	0	412	448	0	0	448	861
5:15PM	0	2	0	2	3	410	1	414	414	0	0	414	830
5:30PM	0	2	0	2	0	412	0	412	439	0	0	439	853
Total	0	9	0	9	8	1658	1	1667	1690	2	0	1692	3368
% Approach	0%	100%	0%	-	0.5%	99.5%	0.1%	-	99.9%	0.1%	0%	-	-
% Total	0%	0.3%	0%	0.3%	0.2%	49.2%	0%	49.5%	50.2%	0.1%	0%	50.2%	-
PHF	-	0.563	-	0.563	0.500	0.975	0.250	0.971	0.943	0.250	-	0.944	0.978
Lights	0	9	0	9	8	1646	1	1655	1670	2	0	1672	3336
% Lights	0%	100%	0%	100%	100%	99.3%	100%	99.3%	98.8%	100%	0%	98.8%	99.0%
Articulated Trucks	0	0	0	0	0	6	0	6	7	0	0	7	13
% Articulated Trucks	0%	0%	0%	0%	0%	0.4%	0%	0.4%	0.4%	0%	0%	0.4%	0.4%
Buses and Single-Unit Trucks	0	0	0	0	0	6	0	6	13	0	0	13	19
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	0.4%	0%	0.4%	0.8%	0%	0%	0.8%	0.6%

* L: Left, R: Right, T: Thru, U: U-Turn

Rochester Rd (M-150) and Hickory Lawn Rd - TMC

Thu Jun 10, 2021

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 845026, Location: 42.632825, -83.131615



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[N] Rochester Rd (M-150)

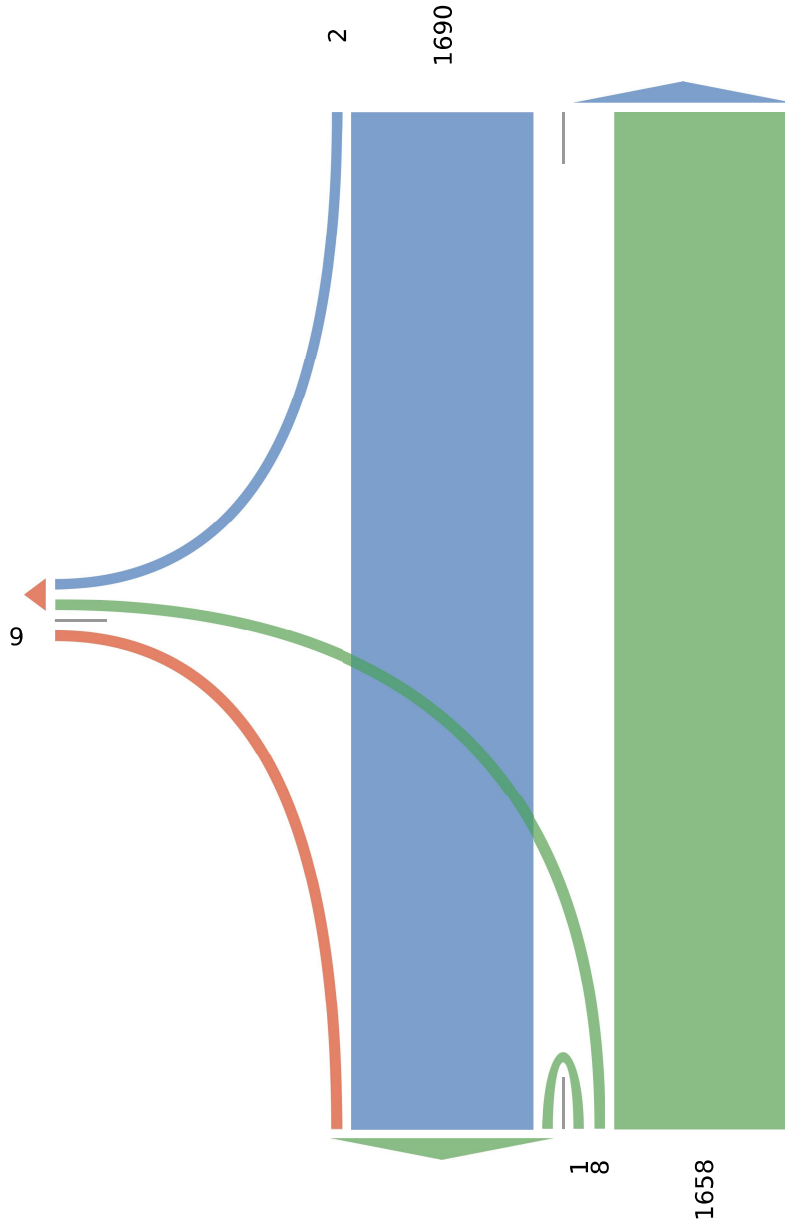
Total: 3350

In: 1692

Out: 1658

[W] Hickory Lawn Rd

Total: 19
In: 9 Out: 10



Out: 1700 In: 1667
Total: 3367
[S] Rochester Rd (M-150)

Rochester Rd (M-150) and Hickory Lawn Rd - TMC

Sat Jun 19, 2021

Full Length (12 PM-2 PM, 5 PM-7 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 845030, Location: 42.632825, -83.131615

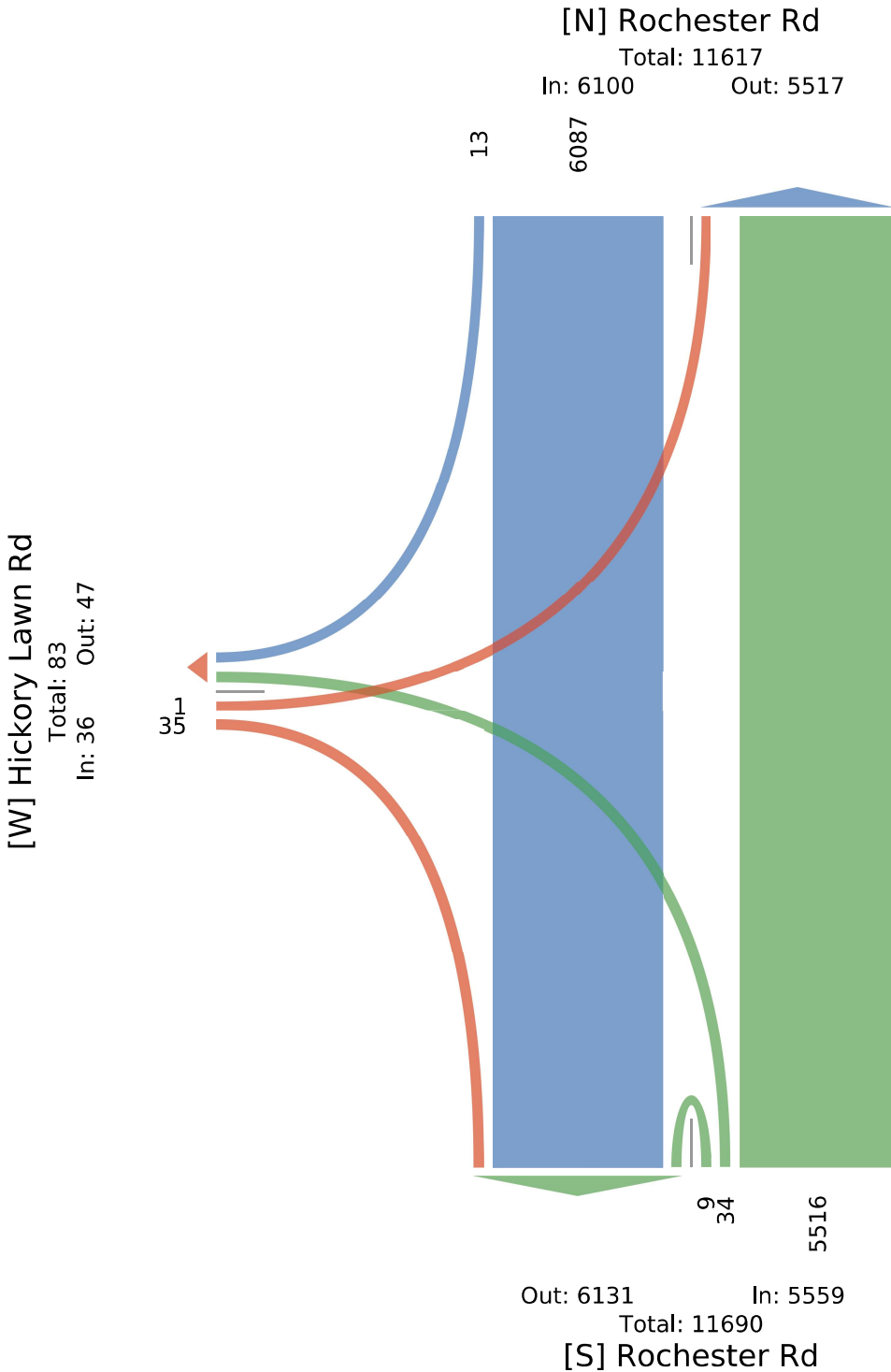


Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Hickory Lawn Rd Eastbound				Rochester Rd Northbound				Rochester Rd Southbound				
Time	L	R	U	App	L	T	U	App	T	R	U	App	Int
2021-06-19 12:00PM	1	1	0	2	1	340	0	341	436	0	0	436	779
12:15PM	0	2	0	2	7	350	1	358	409	0	0	409	769
12:30PM	0	0	0	0	0	358	0	358	430	1	0	431	789
12:45PM	0	3	0	3	4	362	1	367	413	2	0	415	785
Hourly Total	1	6	0	7	12	1410	2	1424	1688	3	0	1691	3122
1:00PM	0	5	0	5	3	345	0	348	386	0	0	386	739
1:15PM	0	3	0	3	3	375	2	380	398	2	0	400	783
1:30PM	0	0	0	0	2	375	0	377	430	2	0	432	809
1:45PM	0	5	0	5	3	335	1	339	460	0	0	460	804
Hourly Total	0	13	0	13	11	1430	3	1444	1674	4	0	1678	3135
5:00PM	0	2	0	2	2	365	0	367	389	0	0	389	758
5:15PM	0	0	0	0	0	315	1	316	359	0	0	359	675
5:30PM	0	3	0	3	2	338	1	341	351	1	0	352	696
5:45PM	0	1	0	1	0	367	0	367	335	0	0	335	703
Hourly Total	0	6	0	6	4	1385	2	1391	1434	1	0	1435	2832
6:00PM	0	3	0	3	0	306	0	306	329	1	0	330	639
6:15PM	0	5	0	5	3	337	0	340	336	1	0	337	682
6:30PM	0	1	0	1	0	339	1	340	344	1	0	345	686
6:45PM	0	1	0	1	4	309	1	314	282	2	0	284	599
Hourly Total	0	10	0	10	7	1291	2	1300	1291	5	0	1296	2606
Total	1	35	0	36	34	5516	9	5559	6087	13	0	6100	11695
% Approach	2.8%	97.2%	0%	-	0.6%	99.2%	0.2%	-	99.8%	0.2%	0%	-	-
% Total	0%	0.3%	0%	0.3%	0.3%	47.2%	0.1%	47.5%	52.0%	0.1%	0%	52.2%	-
Lights	1	35	0	36	34	5491	9	5534	6034	13	0	6047	11617
% Lights	100%	100%	0%	100%	100%	99.5%	100%	99.6%	99.1%	100%	0%	99.1%	99.3%
Articulated Trucks	0	0	0	0	0	7	0	7	16	0	0	16	23
% Articulated Trucks	0%	0%	0%	0%	0%	0.1%	0%	0.1%	0.3%	0%	0%	0.3%	0.2%
Buses and Single-Unit Trucks	0	0	0	0	0	18	0	18	37	0	0	37	55
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	0.3%	0%	0.3%	0.6%	0%	0%	0.6%	0.5%

*L: Left, R: Right, T: Thru, U: U-Turn

Rochester Rd (M-150) and Hickory Lawn Rd - TMC
 Sat Jun 19, 2021
 Full Length (12 PM-2 PM, 5 PM-7 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845030, Location: 42.632825, -83.131615



Rochester Rd (M-150) and Hickory Lawn Rd - TMC

Sat Jun 19, 2021

PM Peak (WKND) (1 PM - 2 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 845030, Location: 42.632825, -83.131615



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Hickory Lawn Rd Eastbound				Rochester Rd Northbound				Rochester Rd Southbound				Int
	L	R	U	App	L	T	U	App	T	R	U	App	
2021-06-19 1:00PM	0	5	0	5	3	345	0	348	386	0	0	386	739
1:15PM	0	3	0	3	3	375	2	380	398	2	0	400	783
1:30PM	0	0	0	0	2	375	0	377	430	2	0	432	809
1:45PM	0	5	0	5	3	335	1	339	460	0	0	460	804
Total	0	13	0	13	11	1430	3	1444	1674	4	0	1678	3135
% Approach	0%	100%	0%	-	0.8%	99.0%	0.2%	-	99.8%	0.2%	0%	-	-
% Total	0%	0.4%	0%	0.4%	0.4%	45.6%	0.1%	46.1%	53.4%	0.1%	0%	53.5%	-
PHF	-	0.650	-	0.650	0.917	0.953	0.375	0.950	0.910	0.500	-	0.912	0.969
Lights	0	13	0	13	11	1424	3	1438	1658	4	0	1662	3113
% Lights	0%	100%	0%	100%	100%	99.6%	100%	99.6%	99.0%	100%	0%	99.0%	99.3%
Articulated Trucks	0	0	0	0	0	0	0	0	4	0	0	4	4
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	0.1%
Buses and Single-Unit Trucks	0	0	0	0	0	6	0	6	12	0	0	12	18
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	0.4%	0%	0.4%	0.7%	0%	0%	0.7%	0.6%

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Rochester Rd (M-150) and Hickory Lawn Rd - TMC

Sat Jun 19, 2021

PM Peak (WKND) (1 PM - 2 PM) - Overall Peak Hour

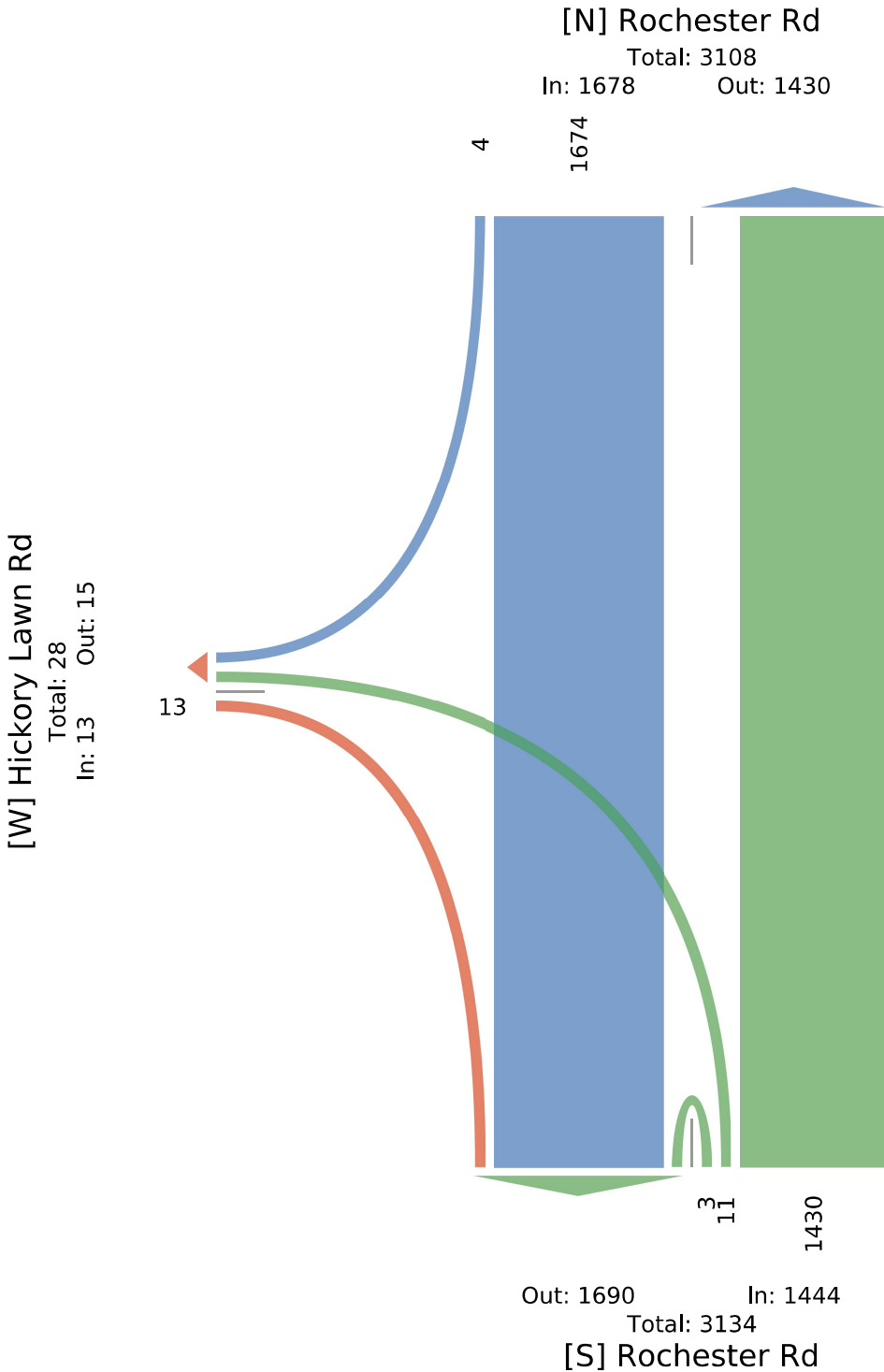
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 845030, Location: 42.632825, -83.131615



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



Rochester Rd (M-150) and Hickory Lawn Rd - TMC

Sat Jun 19, 2021

Forced Peak (5 PM - 6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 845030, Location: 42.632825, -83.131615



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Hickory Lawn Rd Eastbound				Rochester Rd Northbound				Rochester Rd Southbound				
Time	L	R	U	App	L	T	U	App	T	R	U	App	Int
2021-06-19 5:00PM	0	2	0	2	2	365	0	367	389	0	0	389	758
5:15PM	0	0	0	0	0	315	1	316	359	0	0	359	675
5:30PM	0	3	0	3	2	338	1	341	351	1	0	352	696
5:45PM	0	1	0	1	0	367	0	367	335	0	0	335	703
Total	0	6	0	6	4	1385	2	1391	1434	1	0	1435	2832
% Approach	0%	100%	0%	-	0.3%	99.6%	0.1%	-	99.9%	0.1%	0%	-	-
% Total	0%	0.2%	0%	0.2%	0.1%	48.9%	0.1%	49.1%	50.6%	0%	0%	50.7%	-
PHF	-	0.500	-	0.500	0.500	0.943	0.500	0.948	0.922	0.250	-	0.922	0.934
Lights	0	6	0	6	4	1381	2	1387	1419	1	0	1420	2813
% Lights	0%	100%	0%	100%	100%	99.7%	100%	99.7%	99.0%	100%	0%	99.0%	99.3%
Articulated Trucks	0	0	0	0	0	1	0	1	1	0	0	1	2
% Articulated Trucks	0%	0%	0%	0%	0%	0.1%	0%	0.1%	0.1%	0%	0%	0.1%	0.1%
Buses and Single-Unit Trucks	0	0	0	0	0	3	0	3	14	0	0	14	17
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	0.2%	0%	0.2%	1.0%	0%	0%	1.0%	0.6%

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Rochester Rd (M-150) and Hickory Lawn Rd - TMC

Sat Jun 19, 2021

Forced Peak (5 PM - 6 PM)

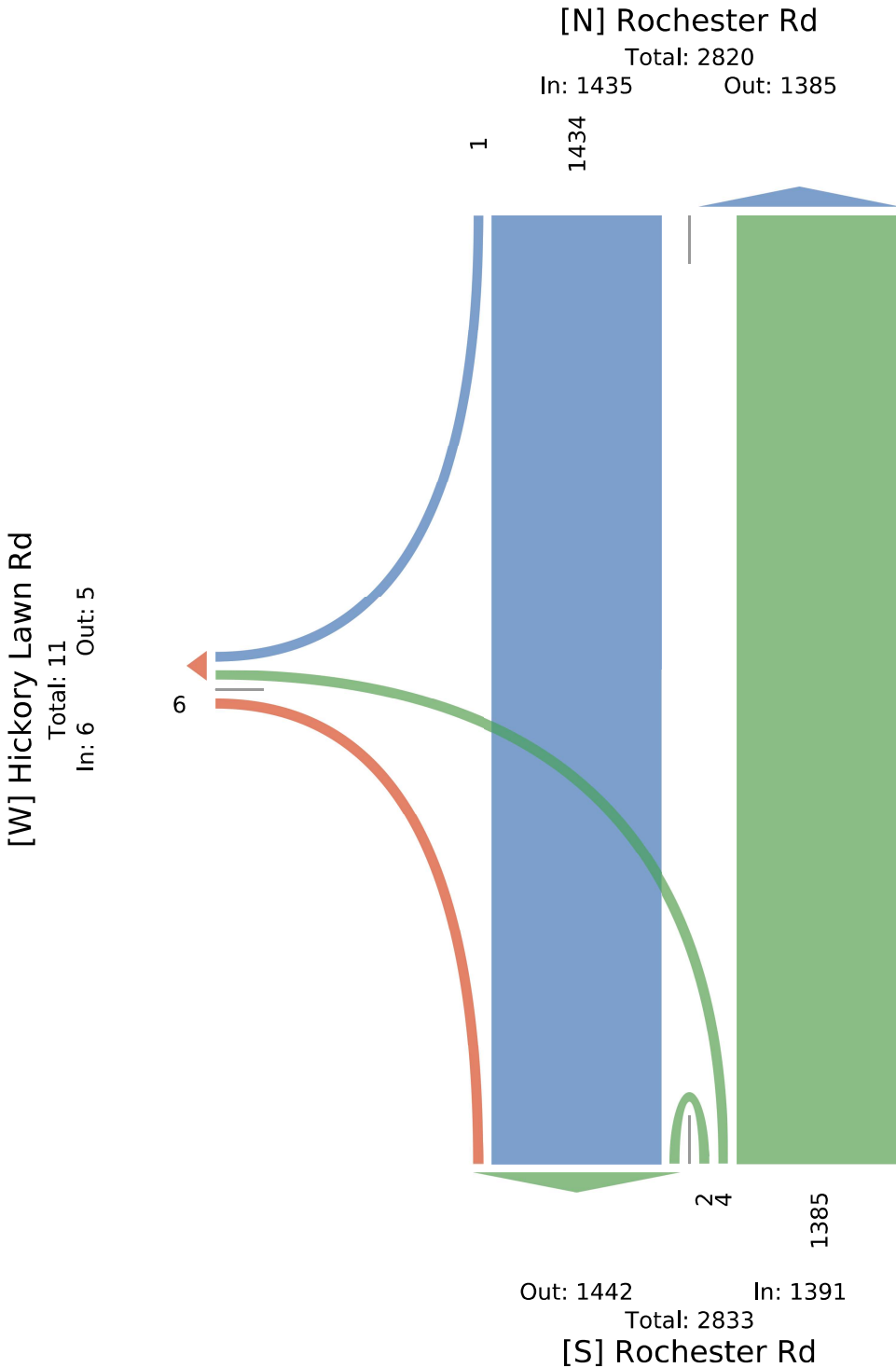
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 845030, Location: 42.632825, -83.131615



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 Full Length (7 AM-9 AM, 4 PM-6 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845021, Location: 42.630203, -83.131548



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Westbound M-59 Ramps Eastbound					Westbound M-59 Ramps Westbound					
	L	T	R	U	App	L	T	R	U	RR	App
2021-06-10 7:00AM	0	0	0	0	0	107	0	60	0	1	168
7:15AM	0	0	0	0	0	161	0	70	0	1	232
7:30AM	0	0	0	0	0	160	0	100	0	1	261
7:45AM	0	0	0	0	0	164	0	116	0	2	282
Hourly Total	0	0	0	0	0	592	0	346	0	5	943
8:00AM	0	0	0	0	0	168	0	96	0	2	266
8:15AM	0	0	0	0	0	131	0	104	0	0	235
8:30AM	0	0	0	0	0	151	0	96	0	1	248
8:45AM	0	0	0	0	0	142	0	130	0	3	275
Hourly Total	0	0	0	0	0	592	0	426	0	6	1024
4:00PM	0	0	0	0	0	96	0	108	0	3	207
4:15PM	0	0	0	0	0	92	0	100	0	2	194
4:30PM	0	0	0	0	0	99	0	120	0	1	220
4:45PM	0	0	0	0	0	104	0	123	0	2	229
Hourly Total	0	0	0	0	0	391	0	451	0	8	850
5:00PM	0	0	0	0	0	79	0	108	0	1	188
5:15PM	0	0	0	0	0	111	0	132	0	0	243
5:30PM	0	0	0	0	0	95	0	92	0	1	188
5:45PM	0	0	0	0	0	92	0	115	0	1	208
Hourly Total	0	0	0	0	0	377	0	447	0	3	827
Total	0	0	0	0	0	1952	0	1670	0	22	3644
% Approach	0%	0%	0%	0%	-	53.6%	0%	45.8%	0%	0.6%	-
% Total	0%	0%	0%	0%	0%	13.4%	0%	11.5%	0%	0.2%	25.1%
Lights	0	0	0	0	0	1922	0	1642	0	22	3586
% Lights	0%	0%	0%	0%	-	98.5%	0%	98.3%	0%	100%	98.4%
Articulated Trucks	0	0	0	0	0	16	0	13	0	0	29
% Articulated Trucks	0%	0%	0%	0%	-	0.8%	0%	0.8%	0%	0%	0.8%
Buses and Single-Unit Trucks	0	0	0	0	0	14	0	15	0	0	29
% Buses and Single-Unit Trucks	0%	0%	0%	0%	-	0.7%	0%	0.9%	0%	0%	0.8%

*L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 Full Length (7 AM-9 AM, 4 PM-6 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845021, Location: 42.630203, -83.131548

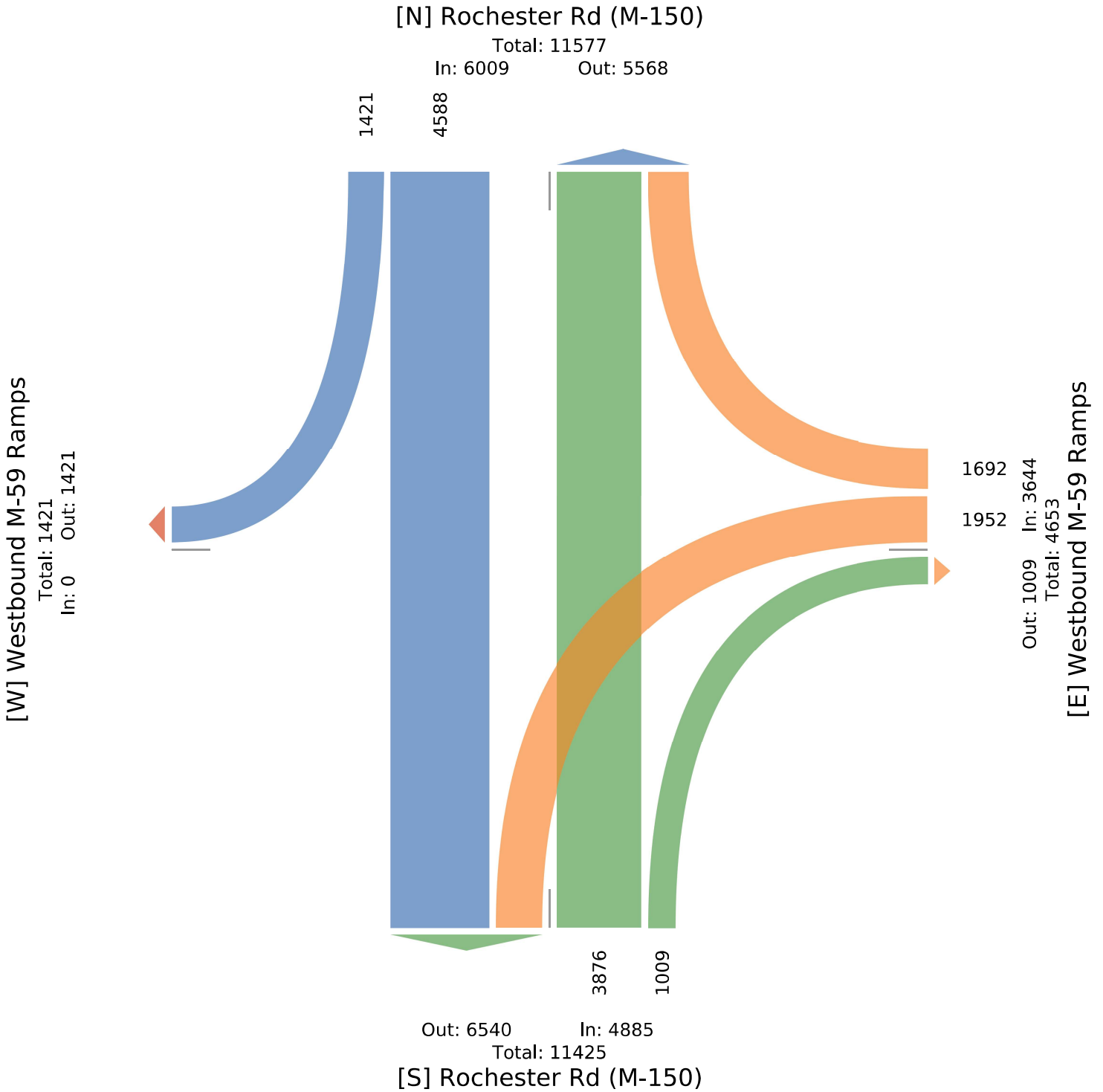


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 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Rochester Rd (M-150) Northbound					Rochester Rd (M-150) Southbound					Int
	L	T	R	U	App	L	T	R	U	App	
2021-06-10 7:00AM	0	125	42	0	167	0	201	58	0	259	594
7:15AM	0	162	51	0	213	0	259	77	0	336	781
7:30AM	0	188	63	0	251	0	315	79	0	394	906
7:45AM	0	193	65	0	258	0	264	76	0	340	880
Hourly Total	0	668	221	0	889	0	1039	290	0	1329	3161
8:00AM	0	119	54	0	173	0	266	82	0	348	787
8:15AM	0	156	38	0	194	0	266	87	0	353	782
8:30AM	0	154	45	0	199	0	248	83	0	331	778
8:45AM	0	158	37	0	195	0	242	86	0	328	798
Hourly Total	0	587	174	0	761	0	1022	338	0	1360	3145
4:00PM	0	302	95	0	397	0	313	101	0	414	1018
4:15PM	0	325	68	0	393	0	328	100	0	428	1015
4:30PM	0	338	71	0	409	0	309	100	0	409	1038
4:45PM	0	315	79	0	394	0	294	109	0	403	1026
Hourly Total	0	1280	313	0	1593	0	1244	410	0	1654	4097
5:00PM	0	322	106	0	428	0	346	105	0	451	1067
5:15PM	0	308	67	0	375	0	329	92	0	421	1039
5:30PM	0	349	65	0	414	0	343	97	0	440	1042
5:45PM	0	362	63	0	425	0	265	89	0	354	987
Hourly Total	0	1341	301	0	1642	0	1283	383	0	1666	4135
Total	0	3876	1009	0	4885	0	4588	1421	0	6009	14538
% Approach	0%	79.3%	20.7%	0%	-	0%	76.4%	23.6%	0%	-	-
% Total	0%	26.7%	6.9%	0%	33.6%	0%	31.6%	9.8%	0%	41.3%	-
Lights	0	3801	990	0	4791	0	4532	1373	0	5905	14282
% Lights	0%	98.1%	98.1%	0%	98.1%	0%	98.8%	96.6%	0%	98.3%	98.2%
Articulated Trucks	0	33	2	0	35	0	14	16	0	30	94
% Articulated Trucks	0%	0.9%	0.2%	0%	0.7%	0%	0.3%	1.1%	0%	0.5%	0.6%
Buses and Single-Unit Trucks	0	42	17	0	59	0	42	32	0	74	162
% Buses and Single-Unit Trucks	0%	1.1%	1.7%	0%	1.2%	0%	0.9%	2.3%	0%	1.2%	1.1%

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Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 Full Length (7 AM-9 AM, 4 PM-6 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845021, Location: 42.630203, -83.131548



Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 AM Peak (7:30 AM - 8:30 AM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845021, Location: 42.630203, -83.131548



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Westbound M-59 Ramps Eastbound					Westbound M-59 Ramps Westbound						
	L	T	R	U	App	L	T	R	U	RR	App	
Time												
	2021-06-10 7:30AM	0	0	0	0	0	160	0	100	0	1	261
	7:45AM	0	0	0	0	0	164	0	116	0	2	282
	8:00AM	0	0	0	0	0	168	0	96	0	2	266
	8:15AM	0	0	0	0	0	131	0	104	0	0	235
	Total	0	0	0	0	0	623	0	416	0	5	1044
	% Approach	0%	0%	0%	0%	-	59.7%	0%	39.8%	0%	0.5%	-
	% Total	0%	0%	0%	0%	0%	18.6%	0%	12.4%	0%	0.1%	31.1%
	PHF	-	-	-	-	-	0.927	-	0.897	-	0.625	0.926
	Lights	0	0	0	0	0	615	0	404	0	5	1024
	% Lights	0%	0%	0%	0%	-	98.7%	0%	97.1%	0%	100%	98.1%
	Articulated Trucks	0	0	0	0	0	6	0	4	0	0	10
	% Articulated Trucks	0%	0%	0%	0%	-	1.0%	0%	1.0%	0%	0%	1.0%
	Buses and Single-Unit Trucks	0	0	0	0	0	2	0	8	0	0	10
	% Buses and Single-Unit Trucks	0%	0%	0%	0%	-	0.3%	0%	1.9%	0%	0%	1.0%

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 AM Peak (7:30 AM - 8:30 AM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845021, Location: 42.630203, -83.131548



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Rochester Rd (M-150) Northbound					Rochester Rd (M-150) Southbound					Int
	L	T	R	U	App	L	T	R	U	App	
2021-06-10 7:30AM	0	188	63	0	251	0	315	79	0	394	906
7:45AM	0	193	65	0	258	0	264	76	0	340	880
8:00AM	0	119	54	0	173	0	266	82	0	348	787
8:15AM	0	156	38	0	194	0	266	87	0	353	782
Total	0	656	220	0	876	0	1111	324	0	1435	3355
% Approach	0%	74.9%	25.1%	0%	-	0%	77.4%	22.6%	0%	-	-
% Total	0%	19.6%	6.6%	0%	26.1%	0%	33.1%	9.7%	0%	42.8%	-
PHF	-	0.850	0.846	-	0.849	-	0.882	0.931	-	0.911	0.926
Lights	0	627	213	0	840	0	1095	313	0	1408	3272
% Lights	0%	95.6%	96.8%	0%	95.9%	0%	98.6%	96.6%	0%	98.1%	97.5%
Articulated Trucks	0	9	0	0	9	0	5	3	0	8	27
% Articulated Trucks	0%	1.4%	0%	0%	1.0%	0%	0.5%	0.9%	0%	0.6%	0.8%
Buses and Single-Unit Trucks	0	20	7	0	27	0	11	8	0	19	56
% Buses and Single-Unit Trucks	0%	3.0%	3.2%	0%	3.1%	0%	1.0%	2.5%	0%	1.3%	1.7%

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 AM Peak (7:30 AM - 8:30 AM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845021, Location: 42.630203, -83.131548

[N] Rochester Rd (M-150)

Total: 2512

In: 1435 Out: 1077

[W] Westbound M-59 Ramps

Total: 324
 In: 0 Out: 324



Out: 220 In: 1044
 Total: 1264

[E] Westbound M-59 Ramps

Out: 1734 In: 876
 Total: 2610
 [S] Rochester Rd (M-150)

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845021, Location: 42.630203, -83.131548



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Westbound M-59 Ramps Eastbound					Westbound M-59 Ramps Westbound						
	L	T	R	U	App	L	T	R	U	RR	App	
Time												
	2021-06-10 4:45PM	0	0	0	0	0	104	0	123	0	2	229
	5:00PM	0	0	0	0	0	79	0	108	0	1	188
	5:15PM	0	0	0	0	0	111	0	132	0	0	243
	5:30PM	0	0	0	0	0	95	0	92	0	1	188
	Total	0	0	0	0	0	389	0	455	0	4	848
	% Approach	0%	0%	0%	0%	-	45.9%	0%	53.7%	0%	0.5%	-
	% Total	0%	0%	0%	0%	0%	9.3%	0%	10.9%	0%	0.1%	20.3%
	PHF	-	-	-	-	-	0.876	-	0.862	-	0.500	0.872
	Lights	0	0	0	0	0	381	0	453	0	4	838
	% Lights	0%	0%	0%	0%	-	97.9%	0%	99.6%	0%	100%	98.8%
	Articulated Trucks	0	0	0	0	0	3	0	0	0	0	3
	% Articulated Trucks	0%	0%	0%	0%	-	0.8%	0%	0%	0%	0%	0.4%
	Buses and Single-Unit Trucks	0	0	0	0	0	5	0	2	0	0	7
	% Buses and Single-Unit Trucks	0%	0%	0%	0%	-	1.3%	0%	0.4%	0%	0%	0.8%

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845021, Location: 42.630203, -83.131548

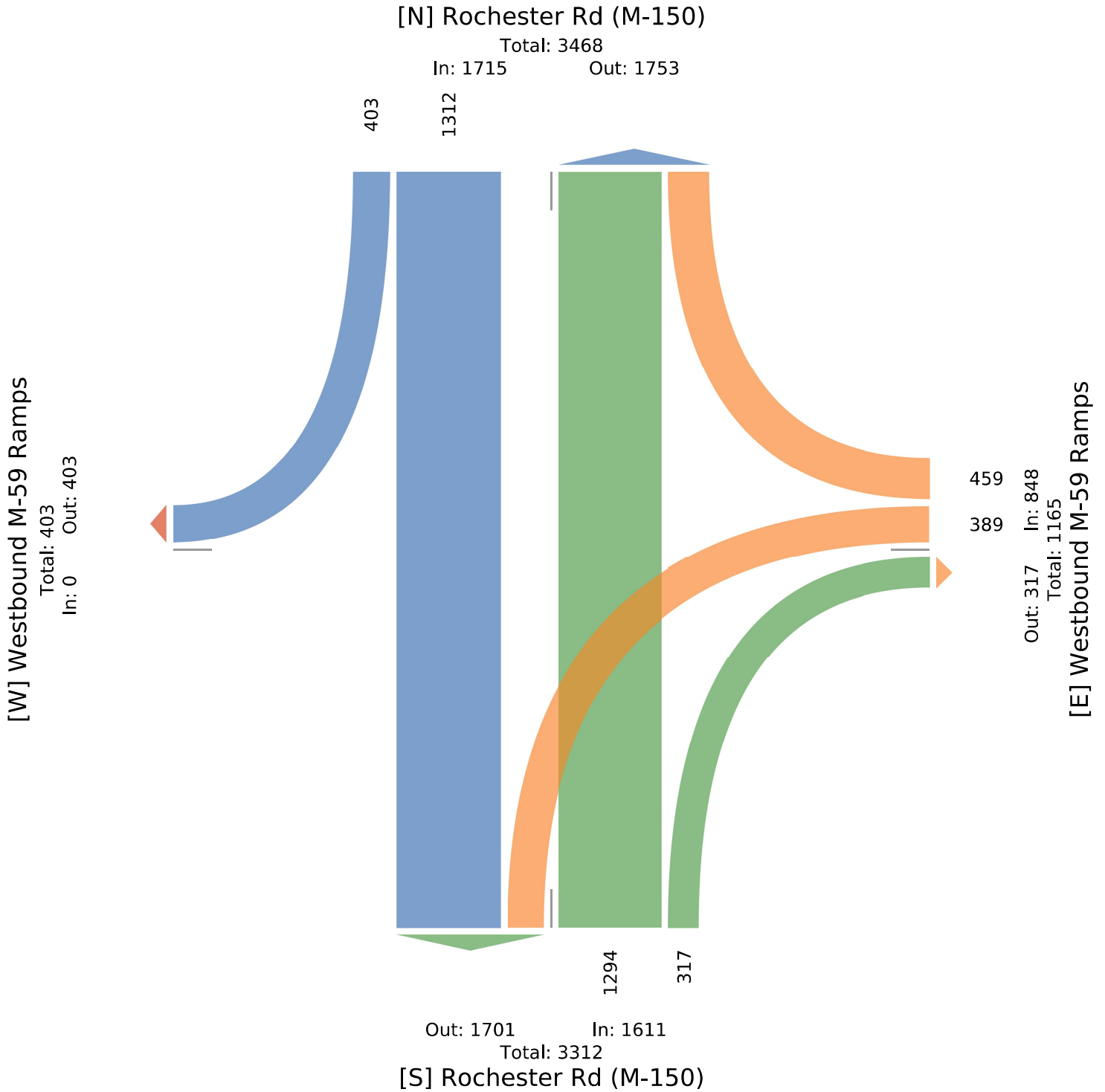


Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Rochester Rd (M-150) Northbound					Rochester Rd (M-150) Southbound					Int
	L	T	R	U	App	L	T	R	U	App	
2021-06-10 4:45PM	0	315	79	0	394	0	294	109	0	403	1026
5:00PM	0	322	106	0	428	0	346	105	0	451	1067
5:15PM	0	308	67	0	375	0	329	92	0	421	1039
5:30PM	0	349	65	0	414	0	343	97	0	440	1042
Total	0	1294	317	0	1611	0	1312	403	0	1715	4174
% Approach	0%	80.3%	19.7%	0%	-	0%	76.5%	23.5%	0%	-	-
% Total	0%	31.0%	7.6%	0%	38.6%	0%	31.4%	9.7%	0%	41.1%	-
PHF	-	0.927	0.748	-	0.941	-	0.948	0.924	-	0.951	0.978
Lights	0	1283	313	0	1596	0	1302	396	0	1698	4132
% Lights	0%	99.1%	98.7%	0%	99.1%	0%	99.2%	98.3%	0%	99.0%	99.0%
Articulated Trucks	0	5	0	0	5	0	2	5	0	7	15
% Articulated Trucks	0%	0.4%	0%	0%	0.3%	0%	0.2%	1.2%	0%	0.4%	0.4%
Buses and Single-Unit Trucks	0	6	4	0	10	0	8	2	0	10	27
% Buses and Single-Unit Trucks	0%	0.5%	1.3%	0%	0.6%	0%	0.6%	0.5%	0%	0.6%	0.6%

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845021, Location: 42.630203, -83.131548



Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 Full Length (12 PM-2 PM, 5 PM-7 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845029, Location: 42.630203, -83.131548



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Westbound M-59 Ramps Eastbound					Westbound M-59 Ramps Westbound					
	L	T	R	U	App	L	T	R	U	RR	App
2021-06-12 12:00PM	0	0	0	0	0	77	0	109	0	4	190
12:15PM	0	0	0	0	0	90	0	108	0	2	200
12:30PM	0	0	0	0	0	73	0	93	0	0	166
12:45PM	0	0	0	0	0	79	0	101	0	0	180
Hourly Total	0	0	0	0	0	319	0	411	0	6	736
1:00PM	0	0	0	0	0	69	0	91	0	2	162
1:15PM	0	0	0	0	0	99	0	100	0	1	200
1:30PM	0	0	0	0	0	73	0	107	0	2	182
1:45PM	0	0	0	0	0	97	0	113	0	1	211
Hourly Total	0	0	0	0	0	338	0	411	0	6	755
5:00PM	0	0	0	0	0	103	0	77	0	2	182
5:15PM	0	0	0	0	0	87	0	76	0	1	164
5:30PM	0	0	0	0	0	73	0	106	0	0	179
5:45PM	0	0	0	0	0	82	0	117	0	1	200
Hourly Total	0	0	0	0	0	345	0	376	0	4	725
6:00PM	0	0	0	0	0	97	1	87	0	1	186
6:15PM	0	0	0	0	0	90	0	92	0	0	182
6:30PM	0	0	0	0	0	78	0	98	0	1	177
6:45PM	0	0	0	0	0	59	0	99	0	4	162
Hourly Total	0	0	0	0	0	324	1	376	0	6	707
Total	0	0	0	0	0	1326	1	1574	0	22	2923
% Approach	0%	0%	0%	0%	-	45.4%	0%	53.8%	0%	0.8%	-
% Total	0%	0%	0%	0%	0%	9.0%	0%	10.7%	0%	0.1%	19.8%
Lights	0	0	0	0	0	1316	1	1563	0	22	2902
% Lights	0%	0%	0%	0%	-	99.2%	100%	99.3%	0%	100%	99.3%
Articulated Trucks	0	0	0	0	0	3	0	2	0	0	5
% Articulated Trucks	0%	0%	0%	0%	-	0.2%	0%	0.1%	0%	0%	0.2%
Buses and Single-Unit Trucks	0	0	0	0	0	7	0	9	0	0	16
% Buses and Single-Unit Trucks	0%	0%	0%	0%	-	0.5%	0%	0.6%	0%	0%	0.5%

*L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 Full Length (12 PM-2 PM, 5 PM-7 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845029, Location: 42.630203, -83.131548

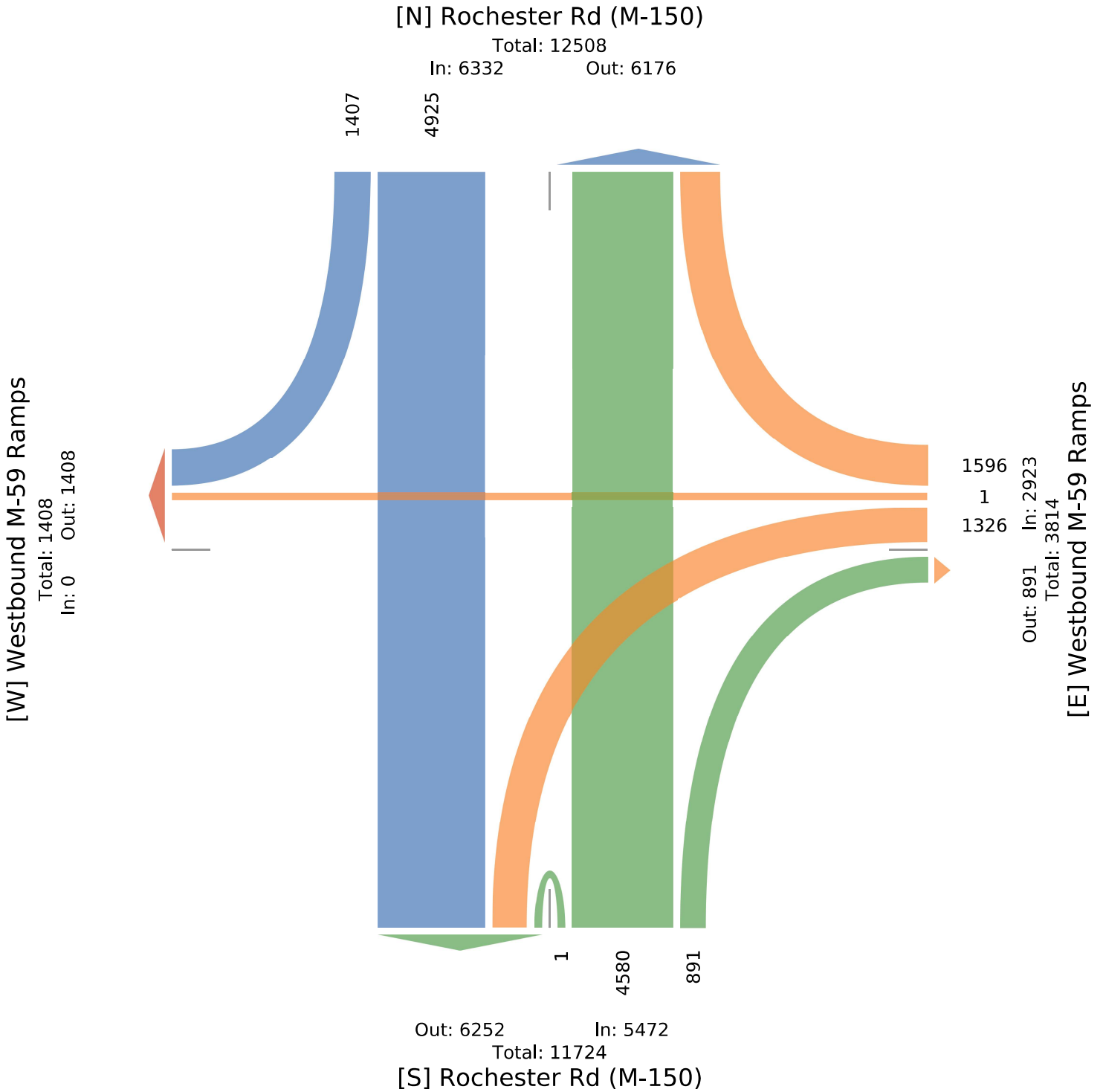


Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Rochester Rd (M-150) Northbound					Rochester Rd (M-150) Southbound					Int
	L	T	R	U	App	L	T	R	U	App	
2021-06-12 12:00PM	0	317	73	0	390	0	389	73	0	462	1042
12:15PM	0	273	56	0	329	0	339	90	0	429	958
12:30PM	0	338	62	0	400	0	370	105	0	475	1041
12:45PM	0	304	65	0	369	0	382	109	0	491	1040
Hourly Total	0	1232	256	0	1488	0	1480	377	0	1857	4081
1:00PM	0	306	55	0	361	0	333	98	0	431	954
1:15PM	0	315	53	0	368	0	349	88	0	437	1005
1:30PM	0	282	61	0	343	0	333	93	0	426	951
1:45PM	0	309	74	0	383	0	357	90	0	447	1041
Hourly Total	0	1212	243	0	1455	0	1372	369	0	1741	3951
5:00PM	0	272	69	1	342	0	274	88	0	362	886
5:15PM	0	279	38	0	317	0	271	100	0	371	852
5:30PM	0	290	50	0	340	0	252	83	0	335	854
5:45PM	0	266	47	0	313	0	252	84	0	336	849
Hourly Total	0	1107	204	1	1312	0	1049	355	0	1404	3441
6:00PM	0	260	61	0	321	0	302	82	0	384	891
6:15PM	0	258	52	0	310	0	253	73	0	326	818
6:30PM	0	248	33	0	281	0	211	82	0	293	751
6:45PM	0	263	42	0	305	0	258	69	0	327	794
Hourly Total	0	1029	188	0	1217	0	1024	306	0	1330	3254
Total	0	4580	891	1	5472	0	4925	1407	0	6332	14727
% Approach	0%	83.7%	16.3%	0%	-	0%	77.8%	22.2%	0%	-	-
% Total	0%	31.1%	6.1%	0%	37.2%	0%	33.4%	9.6%	0%	43.0%	-
Lights	0	4559	880	1	5440	0	4899	1397	0	6296	14638
% Lights	0%	99.5%	98.8%	100%	99.4%	0%	99.5%	99.3%	0%	99.4%	99.4%
Articulated Trucks	0	3	6	0	9	0	1	6	0	7	21
% Articulated Trucks	0%	0.1%	0.7%	0%	0.2%	0%	0%	0.4%	0%	0.1%	0.1%
Buses and Single-Unit Trucks	0	18	5	0	23	0	25	4	0	29	68
% Buses and Single-Unit Trucks	0%	0.4%	0.6%	0%	0.4%	0%	0.5%	0.3%	0%	0.5%	0.5%

*L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 Full Length (12 PM-2 PM, 5 PM-7 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845029, Location: 42.630203, -83.131548



Rochester Rd (M-150) and Westbound M-59 ramp... - TMC

Sat Jun 12, 2021

Midday Peak (WKND), Forced Peak (12 PM - 1 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 845029, Location: 42.630203, -83.131548



Provided by: Gewalt Hamilton Associates Inc.

625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Westbound M-59 Ramps Eastbound					Westbound M-59 Ramps Westbound					
	L	T	R	U	App	L	T	R	U	RR	App
2021-06-12 12:00PM	0	0	0	0	0	77	0	109	0	4	190
12:15PM	0	0	0	0	0	90	0	108	0	2	200
12:30PM	0	0	0	0	0	73	0	93	0	0	166
12:45PM	0	0	0	0	0	79	0	101	0	0	180
Total	0	0	0	0	0	319	0	411	0	6	736
% Approach	0%	0%	0%	0%	-	43.3%	0%	55.8%	0%	0.8%	-
% Total	0%	0%	0%	0%	0%	7.8%	0%	10.1%	0%	0.1%	18.0%
PHF	-	-	-	-	-	0.886	-	0.943	-	0.375	0.920
Lights	0	0	0	0	0	316	0	406	0	6	728
% Lights	0%	0%	0%	0%	-	99.1%	0%	98.8%	0%	100%	98.9%
Articulated Trucks	0	0	0	0	0	0	0	1	0	0	1
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0.2%	0%	0%	0.1%
Buses and Single-Unit Trucks	0	0	0	0	0	3	0	4	0	0	7
% Buses and Single-Unit Trucks	0%	0%	0%	0%	-	0.9%	0%	1.0%	0%	0%	1.0%

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC

Sat Jun 12, 2021

Midday Peak (WKND), Forced Peak (12 PM - 1 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 845029, Location: 42.630203, -83.131548



Provided by: Gewalt Hamilton Associates Inc.

625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Rochester Rd (M-150) Northbound					Rochester Rd (M-150) Southbound					Int
	L	T	R	U	App	L	T	R	U	App	
2021-06-12 12:00PM	0	317	73	0	390	0	389	73	0	462	1042
12:15PM	0	273	56	0	329	0	339	90	0	429	958
12:30PM	0	338	62	0	400	0	370	105	0	475	1041
12:45PM	0	304	65	0	369	0	382	109	0	491	1040
Total	0	1232	256	0	1488	0	1480	377	0	1857	4081
% Approach	0%	82.8%	17.2%	0%	-	0%	79.7%	20.3%	0%	-	-
% Total	0%	30.2%	6.3%	0%	36.5%	0%	36.3%	9.2%	0%	45.5%	-
PHF	-	0.911	0.877	-	0.930	-	0.951	0.865	-	0.946	0.979
Lights	0	1224	252	0	1476	0	1471	370	0	1841	4045
% Lights	0%	99.4%	98.4%	0%	99.2%	0%	99.4%	98.1%	0%	99.1%	99.1%
Articulated Trucks	0	2	0	0	2	0	1	5	0	6	9
% Articulated Trucks	0%	0.2%	0%	0%	0.1%	0%	0.1%	1.3%	0%	0.3%	0.2%
Buses and Single-Unit Trucks	0	6	4	0	10	0	8	2	0	10	27
% Buses and Single-Unit Trucks	0%	0.5%	1.6%	0%	0.7%	0%	0.5%	0.5%	0%	0.5%	0.7%

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC

Sat Jun 12, 2021

Midday Peak (WKND), Forced Peak (12 PM - 1 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 845029, Location: 42.630203, -83.131548



Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

[N] Rochester Rd (M-150)

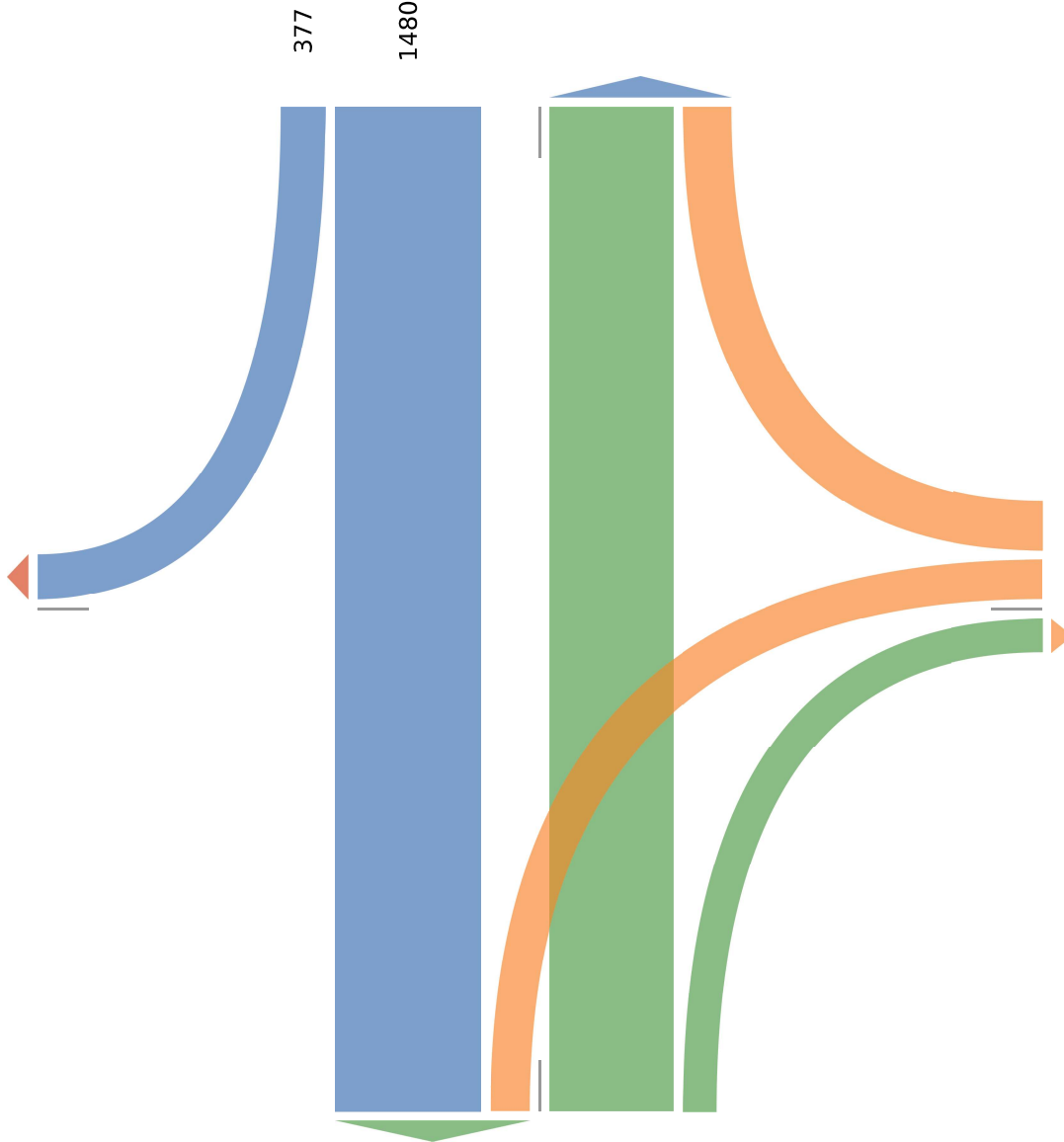
Total: 3506

In: 1857

Out: 1649

[W] Westbound M-59 Ramps

Total: 377
In: 0
Out: 377



[S] Rochester Rd (M-150)
Out: 1799
In: 1488
Total: 3287

[E] Westbound M-59 Ramps
Out: 256
In: 736
Total: 992

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 Forced Peak (5:15 PM - 6:15 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845029, Location: 42.630203, -83.131548



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Westbound M-59 Ramps Eastbound					Westbound M-59 Ramps Westbound					
	L	T	R	U	App	L	T	R	U	RR	App
2021-06-12 5:15PM	0	0	0	0	0	87	0	76	0	1	164
5:30PM	0	0	0	0	0	73	0	106	0	0	179
5:45PM	0	0	0	0	0	82	0	117	0	1	200
6:00PM	0	0	0	0	0	97	1	87	0	1	186
Total	0	0	0	0	0	339	1	386	0	3	729
% Approach	0%	0%	0%	0%	-	46.5%	0.1%	52.9%	0%	0.4%	-
% Total	0%	0%	0%	0%	0%	9.8%	0%	11.2%	0%	0.1%	21.2%
PHF	-	-	-	-	-	0.874	0.250	0.825	-	0.750	0.911
Lights	0	0	0	0	0	338	1	384	0	3	726
% Lights	0%	0%	0%	0%	-	99.7%	100%	99.5%	0%	100%	99.6%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	0%
Buses and Single-Unit Trucks	0	0	0	0	0	1	0	2	0	0	3
% Buses and Single-Unit Trucks	0%	0%	0%	0%	-	0.3%	0%	0.5%	0%	0%	0.4%

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 Forced Peak (5:15 PM - 6:15 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845029, Location: 42.630203, -83.131548

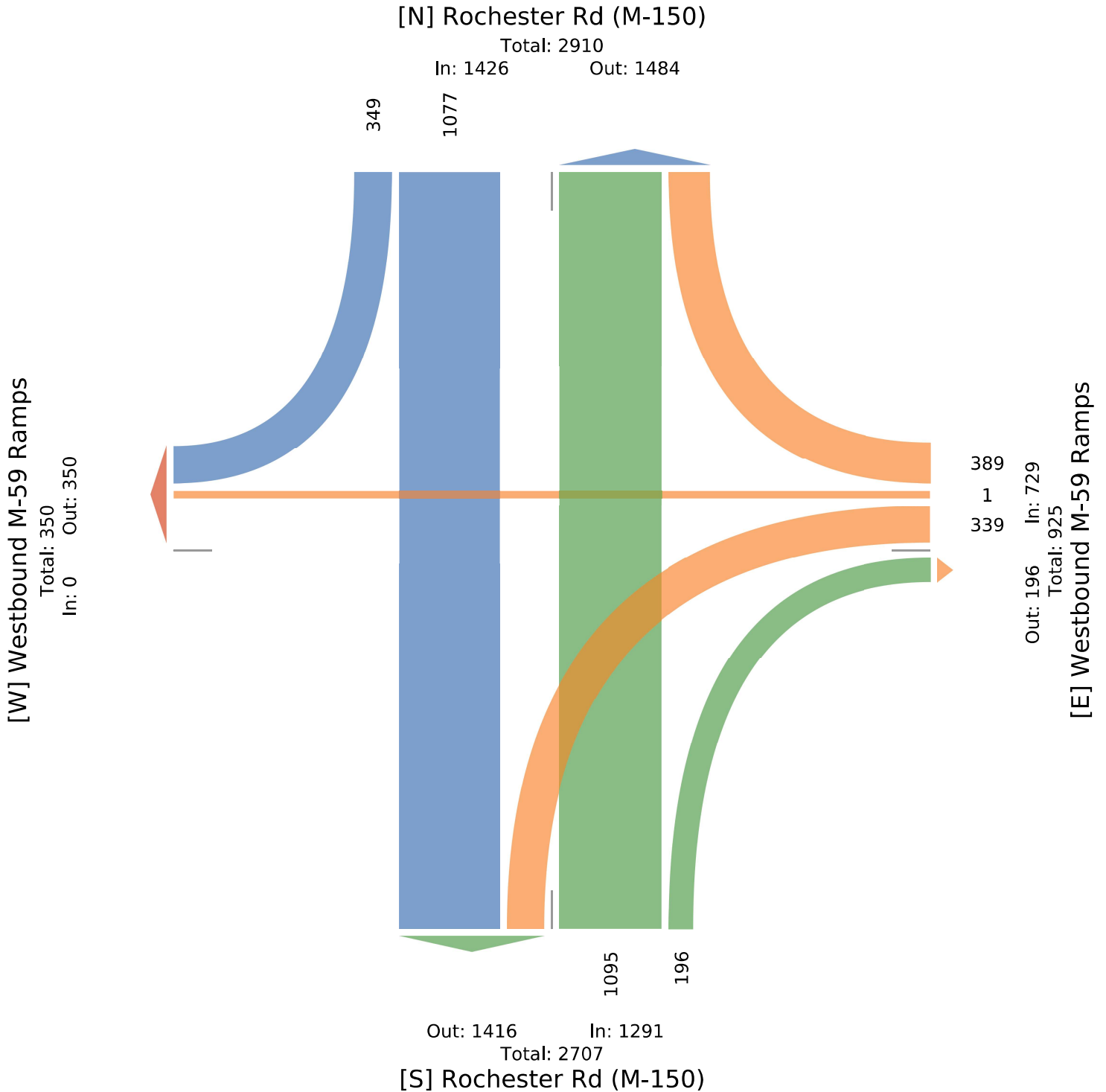


Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Rochester Rd (M-150) Northbound					Rochester Rd (M-150) Southbound					Int
	L	T	R	U	App	L	T	R	U	App	
2021-06-12 5:15PM	0	279	38	0	317	0	271	100	0	371	852
5:30PM	0	290	50	0	340	0	252	83	0	335	854
5:45PM	0	266	47	0	313	0	252	84	0	336	849
6:00PM	0	260	61	0	321	0	302	82	0	384	891
Total	0	1095	196	0	1291	0	1077	349	0	1426	3446
% Approach	0%	84.8%	15.2%	0%	-	0%	75.5%	24.5%	0%	-	-
% Total	0%	31.8%	5.7%	0%	37.5%	0%	31.3%	10.1%	0%	41.4%	-
PHF	-	0.944	0.803	-	0.949	-	0.892	0.873	-	0.928	0.967
Lights	0	1092	194	0	1286	0	1073	348	0	1421	3433
% Lights	0%	99.7%	99.0%	0%	99.6%	0%	99.6%	99.7%	0%	99.6%	99.6%
Articulated Trucks	0	1	1	0	2	0	0	1	0	1	3
% Articulated Trucks	0%	0.1%	0.5%	0%	0.2%	0%	0%	0.3%	0%	0.1%	0.1%
Buses and Single-Unit Trucks	0	2	1	0	3	0	4	0	0	4	10
% Buses and Single-Unit Trucks	0%	0.2%	0.5%	0%	0.2%	0%	0.4%	0%	0%	0.3%	0.3%

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Westbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 Forced Peak (5:15 PM - 6:15 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845029, Location: 42.630203, -83.131548



Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 Full Length (7 AM-9 AM, 4 PM-6 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845020, Location: 42.626661, -83.131167



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Eastbound M-59 Ramp Eastbound						Eastbound M-59 Ramp Westbound					
	L	T	R	U	RR	App	L	T	R	U	App	
Time												
2021-06-10 7:00AM	39	0	14	0	27	80	0	0	0	0	0	
7:15AM	54	0	22	0	34	110	0	0	0	0	0	
7:30AM	51	0	26	0	34	111	0	0	0	0	0	
7:45AM	71	0	25	0	27	123	0	0	0	0	0	
Hourly Total	215	0	87	0	122	424	0	0	0	0	0	
8:00AM	58	0	23	0	28	109	0	0	0	0	0	
8:15AM	69	0	26	0	32	127	0	0	0	0	0	
8:30AM	72	0	18	0	35	125	0	0	0	0	0	
8:45AM	88	0	41	0	40	169	0	0	0	0	0	
Hourly Total	287	0	108	0	135	530	0	0	0	0	0	
4:00PM	71	0	28	0	36	135	0	0	0	0	0	
4:15PM	93	0	40	0	26	159	0	0	0	0	0	
4:30PM	82	0	27	0	31	140	0	0	0	0	0	
4:45PM	98	0	23	0	36	157	0	0	0	0	0	
Hourly Total	344	0	118	0	129	591	0	0	0	0	0	
5:00PM	70	0	27	0	45	142	0	0	0	0	0	
5:15PM	72	0	28	0	33	133	0	0	0	0	0	
5:30PM	76	0	18	0	23	117	0	0	0	0	0	
5:45PM	97	0	38	0	32	167	0	0	0	0	0	
Hourly Total	315	0	111	0	133	559	0	0	0	0	0	
Total	1161	0	424	0	519	2104	0	0	0	0	0	
% Approach	55.2%	0%	20.2%	0%	24.7%	-	0%	0%	0%	0%	-	
% Total	8.2%	0%	3.0%	0%	3.7%	14.8%	0%	0%	0%	0%	0%	
Lights	1119	0	406	0	500	2025	0	0	0	0	0	
% Lights	96.4%	0%	95.8%	0%	96.3%	96.2%	0%	0%	0%	0%	-	
Articulated Trucks	25	0	7	0	6	38	0	0	0	0	0	
% Articulated Trucks	2.2%	0%	1.7%	0%	1.2%	1.8%	0%	0%	0%	0%	-	
Buses and Single-Unit Trucks	17	0	11	0	13	41	0	0	0	0	0	
% Buses and Single-Unit Trucks	1.5%	0%	2.6%	0%	2.5%	1.9%	0%	0%	0%	0%	-	

*L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 Full Length (7 AM-9 AM, 4 PM-6 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845020, Location: 42.626661, -83.131167



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Rochester Rd (M-150) Northbound					Rochester Rd (M-150) Southbound					Int
	L	T	R	U	App	L	T	R	U	App	
2021-06-10 7:00AM	0	139	74	0	213	0	269	51	0	320	613
7:15AM	0	147	70	0	217	0	294	95	0	389	716
7:30AM	0	175	85	0	260	0	396	106	0	502	873
7:45AM	0	175	93	0	268	0	331	96	0	427	818
Hourly Total	0	636	322	0	958	0	1290	348	0	1638	3020
8:00AM	0	124	60	0	184	0	365	85	0	450	743
8:15AM	0	126	55	0	181	0	341	85	0	426	734
8:30AM	0	142	56	0	198	0	313	82	0	395	718
8:45AM	0	136	51	0	187	0	308	74	0	382	738
Hourly Total	0	528	222	0	750	0	1327	326	0	1653	2933
4:00PM	0	317	128	0	445	0	297	117	0	414	994
4:15PM	0	303	129	0	432	0	321	108	0	429	1020
4:30PM	0	316	159	0	475	0	299	117	0	416	1031
4:45PM	0	304	140	0	444	0	316	93	0	409	1010
Hourly Total	0	1240	556	0	1796	0	1233	435	0	1668	4055
5:00PM	0	351	174	0	525	0	294	127	0	421	1088
5:15PM	0	317	142	0	459	0	317	131	0	448	1040
5:30PM	0	329	139	0	468	0	353	98	0	451	1036
5:45PM	0	332	143	0	475	0	268	106	0	374	1016
Hourly Total	0	1329	598	0	1927	0	1232	462	0	1694	4180
Total	0	3733	1698	0	5431	0	5082	1571	0	6653	14188
% Approach	0%	68.7%	31.3%	0%	-	0%	76.4%	23.6%	0%	-	-
% Total	0%	26.3%	12.0%	0%	38.3%	0%	35.8%	11.1%	0%	46.9%	-
Lights	0	3680	1675	0	5355	0	5018	1542	0	6560	13940
% Lights	0%	98.6%	98.6%	0%	98.6%	0%	98.7%	98.2%	0%	98.6%	98.3%
Articulated Trucks	0	12	13	0	25	0	20	7	0	27	90
% Articulated Trucks	0%	0.3%	0.8%	0%	0.5%	0%	0.4%	0.4%	0%	0.4%	0.6%
Buses and Single-Unit Trucks	0	41	10	0	51	0	44	22	0	66	158
% Buses and Single-Unit Trucks	0%	1.1%	0.6%	0%	0.9%	0%	0.9%	1.4%	0%	1.0%	1.1%

*L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 Full Length (7 AM-9 AM, 4 PM-6 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845020, Location: 42.626661, -83.131167

[N] Rochester Rd (M-150)

Total: 11547

In: 6653 Out: 4894



[W] Eastbound M-59 Ramp

Total: 3675
 In: 2104 Out: 1571

1161
 943

Out: 1698 In: 0
 Total: 1698

[E] Eastbound M-59 Ramp

Out: 6025 In: 5431
 Total: 11456
 [S] Rochester Rd (M-150)

3733
 1698

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 AM Peak (7:30 AM - 8:30 AM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845020, Location: 42.626661, -83.131167



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Eastbound M-59 Ramp Eastbound						Eastbound M-59 Ramp Westbound					
	L	T	R	U	RR	App	L	T	R	U	App	
Time												
2021-06-10 7:30AM	51	0	26	0	34	111	0	0	0	0	0	0
7:45AM	71	0	25	0	27	123	0	0	0	0	0	0
8:00AM	58	0	23	0	28	109	0	0	0	0	0	0
8:15AM	69	0	26	0	32	127	0	0	0	0	0	0
Total	249	0	100	0	121	470	0	0	0	0	0	0
% Approach	53.0%	0%	21.3%	0%	25.7%	-	0%	0%	0%	0%	-	-
% Total	7.9%	0%	3.2%	0%	3.8%	14.8%	0%	0%	0%	0%	0%	0%
PHF	0.877	-	0.962	-	0.890	0.925	-	-	-	-	-	-
Lights	234	0	95	0	114	443	0	0	0	0	0	0
% Lights	94.0%	0%	95.0%	0%	94.2%	94.3%	0%	0%	0%	0%	-	-
Articulated Trucks	7	0	2	0	1	10	0	0	0	0	0	0
% Articulated Trucks	2.8%	0%	2.0%	0%	0.8%	2.1%	0%	0%	0%	0%	-	-
Buses and Single-Unit Trucks	8	0	3	0	6	17	0	0	0	0	0	0
% Buses and Single-Unit Trucks	3.2%	0%	3.0%	0%	5.0%	3.6%	0%	0%	0%	0%	-	-

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 AM Peak (7:30 AM - 8:30 AM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845020, Location: 42.626661, -83.131167



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Rochester Rd (M-150) Northbound					Rochester Rd (M-150) Southbound					Int
	L	T	R	U	App	L	T	R	U	App	
2021-06-10 7:30AM	0	175	85	0	260	0	396	106	0	502	873
7:45AM	0	175	93	0	268	0	331	96	0	427	818
8:00AM	0	124	60	0	184	0	365	85	0	450	743
8:15AM	0	126	55	0	181	0	341	85	0	426	734
Total	0	600	293	0	893	0	1433	372	0	1805	3168
% Approach	0%	67.2%	32.8%	0%	-	0%	79.4%	20.6%	0%	-	-
% Total	0%	18.9%	9.2%	0%	28.2%	0%	45.2%	11.7%	0%	57.0%	-
PHF	-	0.857	0.788	-	0.833	-	0.905	0.877	-	0.899	0.907
Lights	0	576	287	0	863	0	1418	360	0	1778	3084
% Lights	0%	96.0%	98.0%	0%	96.6%	0%	99.0%	96.8%	0%	98.5%	97.3%
Articulated Trucks	0	2	3	0	5	0	7	3	0	10	25
% Articulated Trucks	0%	0.3%	1.0%	0%	0.6%	0%	0.5%	0.8%	0%	0.6%	0.8%
Buses and Single-Unit Trucks	0	22	3	0	25	0	8	9	0	17	59
% Buses and Single-Unit Trucks	0%	3.7%	1.0%	0%	2.8%	0%	0.6%	2.4%	0%	0.9%	1.9%

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 AM Peak (7:30 AM - 8:30 AM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845020, Location: 42.626661, -83.131167

[N] Rochester Rd (M-150)

Total: 2654

In: 1805 Out: 849

372 1433

[W] Eastbound M-59 Ramp

Total: 842
 In: 470 Out: 372

249
 221

Out: 293 In: 0
 Total: 293

[E] Eastbound M-59 Ramp

600 293

Out: 1654 In: 893
 Total: 2547

[S] Rochester Rd (M-150)

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 PM Peak (5 PM - 6 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845020, Location: 42.626661, -83.131167



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Eastbound M-59 Ramp Eastbound						Eastbound M-59 Ramp Westbound					
	L	T	R	U	RR	App	L	T	R	U	App	
Time												
	2021-06-10 5:00PM	70	0	27	0	45	142	0	0	0	0	0
	5:15PM	72	0	28	0	33	133	0	0	0	0	0
	5:30PM	76	0	18	0	23	117	0	0	0	0	0
	5:45PM	97	0	38	0	32	167	0	0	0	0	0
	Total	315	0	111	0	133	559	0	0	0	0	0
	% Approach	56.4%	0%	19.9%	0%	23.8%	-	0%	0%	0%	0%	-
	% Total	7.5%	0%	2.7%	0%	3.2%	13.4%	0%	0%	0%	0%	0%
	PHF	0.812	-	0.730	-	0.739	0.837	-	-	-	-	-
	Lights	309	0	107	0	129	545	0	0	0	0	0
	% Lights	98.1%	0%	96.4%	0%	97.0%	97.5%	0%	0%	0%	0%	-
	Articulated Trucks	5	0	1	0	1	7	0	0	0	0	0
	% Articulated Trucks	1.6%	0%	0.9%	0%	0.8%	1.3%	0%	0%	0%	0%	-
	Buses and Single-Unit Trucks	1	0	3	0	3	7	0	0	0	0	0
	% Buses and Single-Unit Trucks	0.3%	0%	2.7%	0%	2.3%	1.3%	0%	0%	0%	0%	-

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 PM Peak (5 PM - 6 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845020, Location: 42.626661, -83.131167



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Rochester Rd (M-150) Northbound					Rochester Rd (M-150) Southbound					Int
	L	T	R	U	App	L	T	R	U	App	
2021-06-10 5:00PM	0	351	174	0	525	0	294	127	0	421	1088
5:15PM	0	317	142	0	459	0	317	131	0	448	1040
5:30PM	0	329	139	0	468	0	353	98	0	451	1036
5:45PM	0	332	143	0	475	0	268	106	0	374	1016
Total	0	1329	598	0	1927	0	1232	462	0	1694	4180
% Approach	0%	69.0%	31.0%	0%	-	0%	72.7%	27.3%	0%	-	-
% Total	0%	31.8%	14.3%	0%	46.1%	0%	29.5%	11.1%	0%	40.5%	-
PHF	-	0.947	0.859	-	0.918	-	0.873	0.882	-	0.939	0.960
Lights	0	1325	591	0	1916	0	1220	459	0	1679	4140
% Lights	0%	99.7%	98.8%	0%	99.4%	0%	99.0%	99.4%	0%	99.1%	99.0%
Articulated Trucks	0	0	3	0	3	0	3	2	0	5	15
% Articulated Trucks	0%	0%	0.5%	0%	0.2%	0%	0.2%	0.4%	0%	0.3%	0.4%
Buses and Single-Unit Trucks	0	4	4	0	8	0	9	1	0	10	25
% Buses and Single-Unit Trucks	0%	0.3%	0.7%	0%	0.4%	0%	0.7%	0.2%	0%	0.6%	0.6%

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Thu Jun 10, 2021
 PM Peak (5 PM - 6 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845020, Location: 42.626661, -83.131167

[N] Rochester Rd (M-150)

Total: 3338

In: 1694

Out: 1644

462

1232

[W] Eastbound M-59 Ramp

Total: 1021

In: 559 Out: 462

315
244

Out: 598 In: 0

Total: 598

[E] Eastbound M-59 Ramp

1329

598

Out: 1476

In: 1927

Total: 3403

[S] Rochester Rd (M-150)

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 Full Length (12 PM-2 PM, 5 PM-7 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845028, Location: 42.626661, -83.131167



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Eastbound M-59 Ramps Eastbound						Eastbound M-59 Ramps Westbound					
	L	T	R	U	RR	App	L	T	R	U	App	
Time												
2021-06-12 12:00PM	84	0	23	0	24	131	0	0	0	0	0	
12:15PM	86	0	34	0	19	139	0	0	0	0	0	
12:30PM	78	0	21	0	26	125	0	0	0	0	0	
12:45PM	94	0	23	0	19	136	0	0	0	0	0	
Hourly Total	342	0	101	0	88	531	0	0	0	0	0	
1:00PM	78	0	18	0	25	121	0	0	0	0	0	
1:15PM	88	0	31	0	18	137	0	0	0	0	0	
1:30PM	99	0	39	0	12	150	0	0	0	0	0	
1:45PM	73	0	23	0	26	122	0	0	0	0	0	
Hourly Total	338	0	111	0	81	530	0	0	0	0	0	
5:00PM	81	0	17	0	31	129	0	0	0	0	0	
5:15PM	70	0	17	0	34	121	0	0	0	0	0	
5:30PM	67	1	12	0	23	103	0	0	0	0	0	
5:45PM	66	0	25	0	32	123	0	0	0	0	0	
Hourly Total	284	1	71	0	120	476	0	0	0	0	0	
6:00PM	65	0	28	0	20	113	0	0	0	0	0	
6:15PM	64	0	16	0	41	121	0	0	0	0	0	
6:30PM	50	0	13	0	41	104	0	0	0	0	0	
6:45PM	55	0	12	0	34	101	0	0	0	0	0	
Hourly Total	234	0	69	0	136	439	0	0	0	0	0	
Total	1198	1	352	0	425	1976	0	0	0	0	0	
% Approach	60.6%	0.1%	17.8%	0%	21.5%	-	0%	0%	0%	0%	-	
% Total	8.3%	0%	2.4%	0%	2.9%	13.7%	0%	0%	0%	0%	0%	
Lights	1189	1	350	0	422	1962	0	0	0	0	0	
% Lights	99.2%	100%	99.4%	0%	99.3%	99.3%	0%	0%	0%	0%	-	
Articulated Trucks	2	0	0	0	0	2	0	0	0	0	0	
% Articulated Trucks	0.2%	0%	0%	0%	0%	0.1%	0%	0%	0%	0%	-	
Buses and Single-Unit Trucks	7	0	2	0	3	12	0	0	0	0	0	
% Buses and Single-Unit Trucks	0.6%	0%	0.6%	0%	0.7%	0.6%	0%	0%	0%	0%	-	

*L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 Full Length (12 PM-2 PM, 5 PM-7 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845028, Location: 42.626661, -83.131167



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Rochester Rd (M-150) Northbound					Rochester Rd (M-150) Southbound					Int
	L	T	R	U	App	L	T	R	U	App	
2021-06-12 12:00PM	0	307	89	0	396	0	342	100	0	442	969
12:15PM	0	241	93	0	334	0	309	105	0	414	887
12:30PM	0	314	123	0	437	0	328	120	0	448	1010
12:45PM	0	279	94	0	373	0	293	119	0	412	921
Hourly Total	0	1141	399	0	1540	0	1272	444	0	1716	3787
1:00PM	0	281	108	0	389	0	319	120	0	439	949
1:15PM	0	299	94	0	393	0	363	99	0	462	992
1:30PM	0	258	103	0	361	0	338	106	0	444	955
1:45PM	0	321	111	0	432	0	380	114	0	494	1048
Hourly Total	0	1159	416	0	1575	0	1400	439	0	1839	3944
5:00PM	0	265	84	0	349	0	282	100	0	382	860
5:15PM	0	244	111	0	355	0	297	86	0	383	859
5:30PM	0	270	99	0	369	0	280	81	0	361	833
5:45PM	0	252	101	0	353	0	297	78	0	375	851
Hourly Total	0	1031	395	0	1426	0	1156	345	0	1501	3403
6:00PM	0	265	103	0	368	0	314	107	0	421	902
6:15PM	0	251	105	0	356	0	285	99	0	384	861
6:30PM	0	252	88	0	340	0	226	75	0	301	745
6:45PM	0	251	101	0	352	0	287	56	0	343	796
Hourly Total	0	1019	397	0	1416	0	1112	337	0	1449	3304
Total	0	4350	1607	0	5957	0	4940	1565	0	6505	14438
% Approach	0%	73.0%	27.0%	0%	-	0%	75.9%	24.1%	0%	-	-
% Total	0%	30.1%	11.1%	0%	41.3%	0%	34.2%	10.8%	0%	45.1%	-
Lights	0	4329	1590	0	5919	0	4914	1551	0	6465	14346
% Lights	0%	99.5%	98.9%	0%	99.4%	0%	99.5%	99.1%	0%	99.4%	99.4%
Articulated Trucks	0	7	8	0	15	0	3	1	0	4	21
% Articulated Trucks	0%	0.2%	0.5%	0%	0.3%	0%	0.1%	0.1%	0%	0.1%	0.1%
Buses and Single-Unit Trucks	0	14	9	0	23	0	23	13	0	36	71
% Buses and Single-Unit Trucks	0%	0.3%	0.6%	0%	0.4%	0%	0.5%	0.8%	0%	0.6%	0.5%

*L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 Full Length (12 PM-2 PM, 5 PM-7 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845028, Location: 42.626661, -83.131167

[N] Rochester Rd (M-150)

Total: 12053

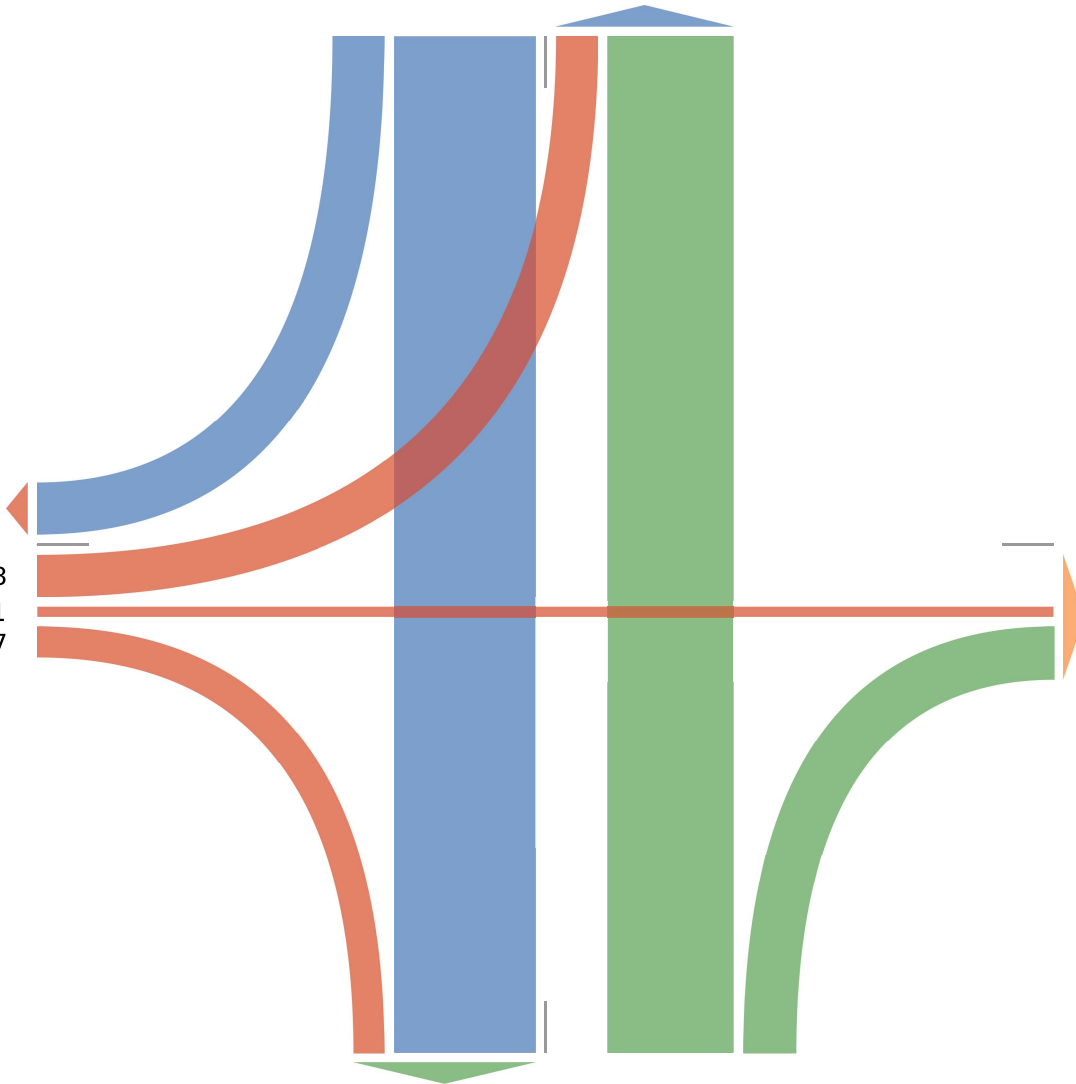
In: 6505 Out: 5548

1565 4940

[W] Eastbound M-59 Ramps

Total: 3541
 In: 1976 Out: 1565

1198
 1
 777



Out: 5717 In: 5957
 Total: 11674
 [S] Rochester Rd (M-150)

4350 1607

[E] Eastbound M-59 Ramps

Out: 1608 In: 0
 Total: 1608

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 PM Peak (WKND), Forced Peak (1 PM - 2 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845028, Location: 42.626661, -83.131167



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Eastbound M-59 Ramps Eastbound						Eastbound M-59 Ramps Westbound					
	L	T	R	U	RR	App	L	T	R	U	App	
Time												
2021-06-12 1:00PM	78	0	18	0	25	121	0	0	0	0	0	
1:15PM	88	0	31	0	18	137	0	0	0	0	0	
1:30PM	99	0	39	0	12	150	0	0	0	0	0	
1:45PM	73	0	23	0	26	122	0	0	0	0	0	
Total	338	0	111	0	81	530	0	0	0	0	0	
% Approach	63.8%	0%	20.9%	0%	15.3%	-	0%	0%	0%	0%	-	
% Total	8.6%	0%	2.8%	0%	2.1%	13.4%	0%	0%	0%	0%	0%	
PHF	0.854	-	0.712	-	0.779	0.883	-	-	-	-	-	
Lights	335	0	110	0	81	526	0	0	0	0	0	
% Lights	99.1%	0%	99.1%	0%	100%	99.2%	0%	0%	0%	0%	-	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	
Buses and Single-Unit Trucks	3	0	1	0	0	4	0	0	0	0	0	
% Buses and Single-Unit Trucks	0.9%	0%	0.9%	0%	0%	0.8%	0%	0%	0%	0%	-	

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC

Sat Jun 12, 2021

PM Peak (WKND), Forced Peak (1 PM - 2 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 845028, Location: 42.626661, -83.131167

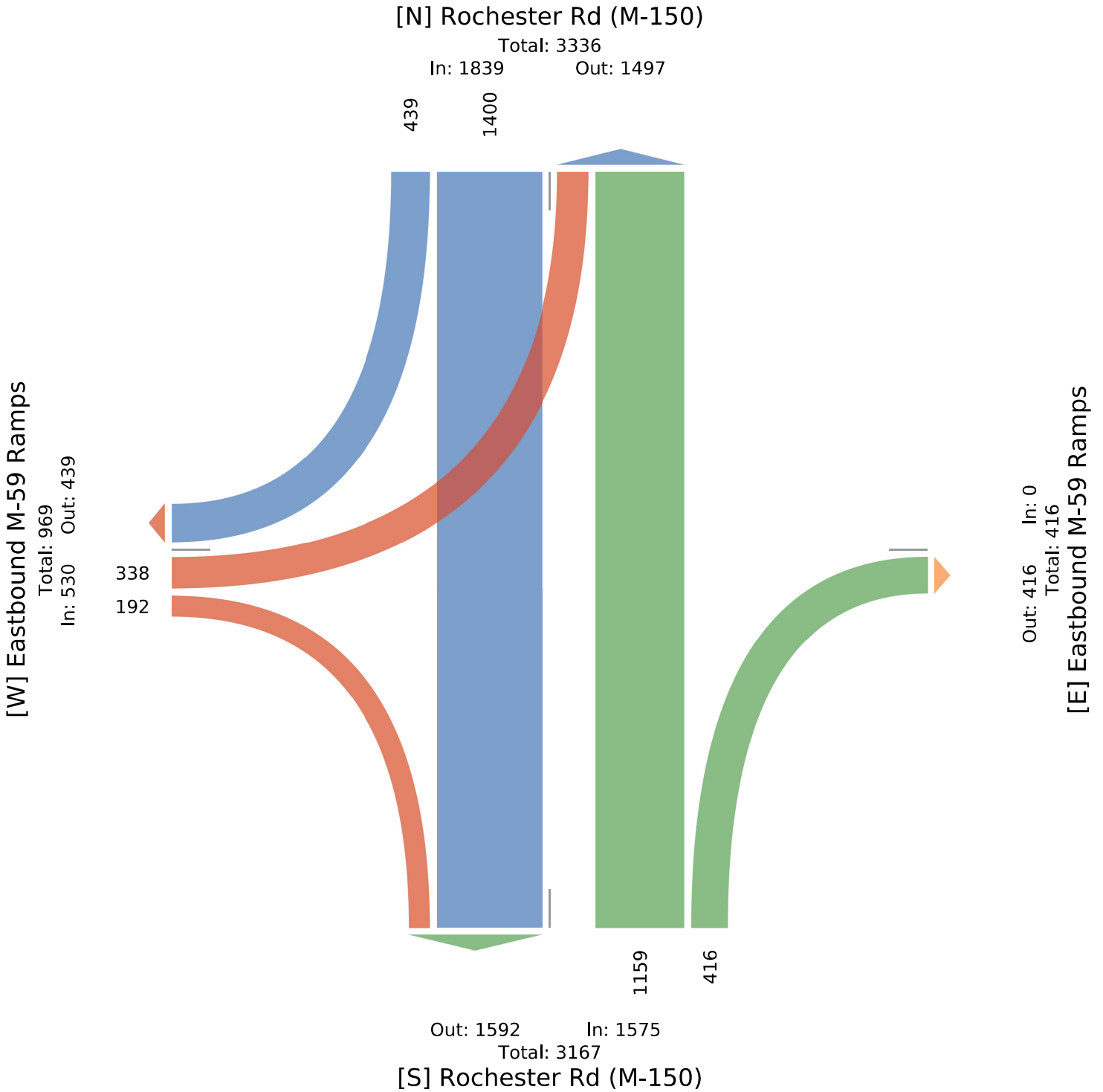


Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Rochester Rd (M-150) Northbound					Rochester Rd (M-150) Southbound					Int
	L	T	R	U	App	L	T	R	U	App	
2021-06-12 1:00PM	0	281	108	0	389	0	319	120	0	439	949
1:15PM	0	299	94	0	393	0	363	99	0	462	992
1:30PM	0	258	103	0	361	0	338	106	0	444	955
1:45PM	0	321	111	0	432	0	380	114	0	494	1048
Total	0	1159	416	0	1575	0	1400	439	0	1839	3944
% Approach	0%	73.6%	26.4%	0%	-	0%	76.1%	23.9%	0%	-	-
% Total	0%	29.4%	10.5%	0%	39.9%	0%	35.5%	11.1%	0%	46.6%	-
PHF	-	0.903	0.937	-	0.911	-	0.921	0.915	-	0.931	0.941
Lights	0	1152	412	0	1564	0	1392	432	0	1824	3914
% Lights	0%	99.4%	99.0%	0%	99.3%	0%	99.4%	98.4%	0%	99.2%	99.2%
Articulated Trucks	0	2	1	0	3	0	1	0	0	1	4
% Articulated Trucks	0%	0.2%	0.2%	0%	0.2%	0%	0.1%	0%	0%	0.1%	0.1%
Buses and Single-Unit Trucks	0	5	3	0	8	0	7	7	0	14	26
% Buses and Single-Unit Trucks	0%	0.4%	0.7%	0%	0.5%	0%	0.5%	1.6%	0%	0.8%	0.7%

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 PM Peak (WKND), Forced Peak (1 PM - 2 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845028, Location: 42.626661, -83.131167



Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 Forced Peak (5:30 PM - 6:30 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845028, Location: 42.626661, -83.131167



Provided by: Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Eastbound M-59 Ramps Eastbound						Eastbound M-59 Ramps Westbound					
	L	T	R	U	RR	App	L	T	R	U	App	
Time												
2021-06-12 5:30PM	67	1	12	0	23	103	0	0	0	0	0	0
5:45PM	66	0	25	0	32	123	0	0	0	0	0	0
6:00PM	65	0	28	0	20	113	0	0	0	0	0	0
6:15PM	64	0	16	0	41	121	0	0	0	0	0	0
Total	262	1	81	0	116	460	0	0	0	0	0	0
% Approach	57.0%	0.2%	17.6%	0%	25.2%	-	0%	0%	0%	0%	-	-
% Total	7.6%	0%	2.3%	0%	3.4%	13.3%	0%	0%	0%	0%	0%	0%
PHF	0.978	0.250	0.723	-	0.707	0.935	-	-	-	-	-	-
Lights	261	1	81	0	115	458	0	0	0	0	0	0
% Lights	99.6%	100%	100%	0%	99.1%	99.6%	0%	0%	0%	0%	-	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-
Buses and Single-Unit Trucks	1	0	0	0	1	2	0	0	0	0	0	0
% Buses and Single-Unit Trucks	0.4%	0%	0%	0%	0.9%	0.4%	0%	0%	0%	0%	-	-

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC

Sat Jun 12, 2021

Forced Peak (5:30 PM - 6:30 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 845028, Location: 42.626661, -83.131167

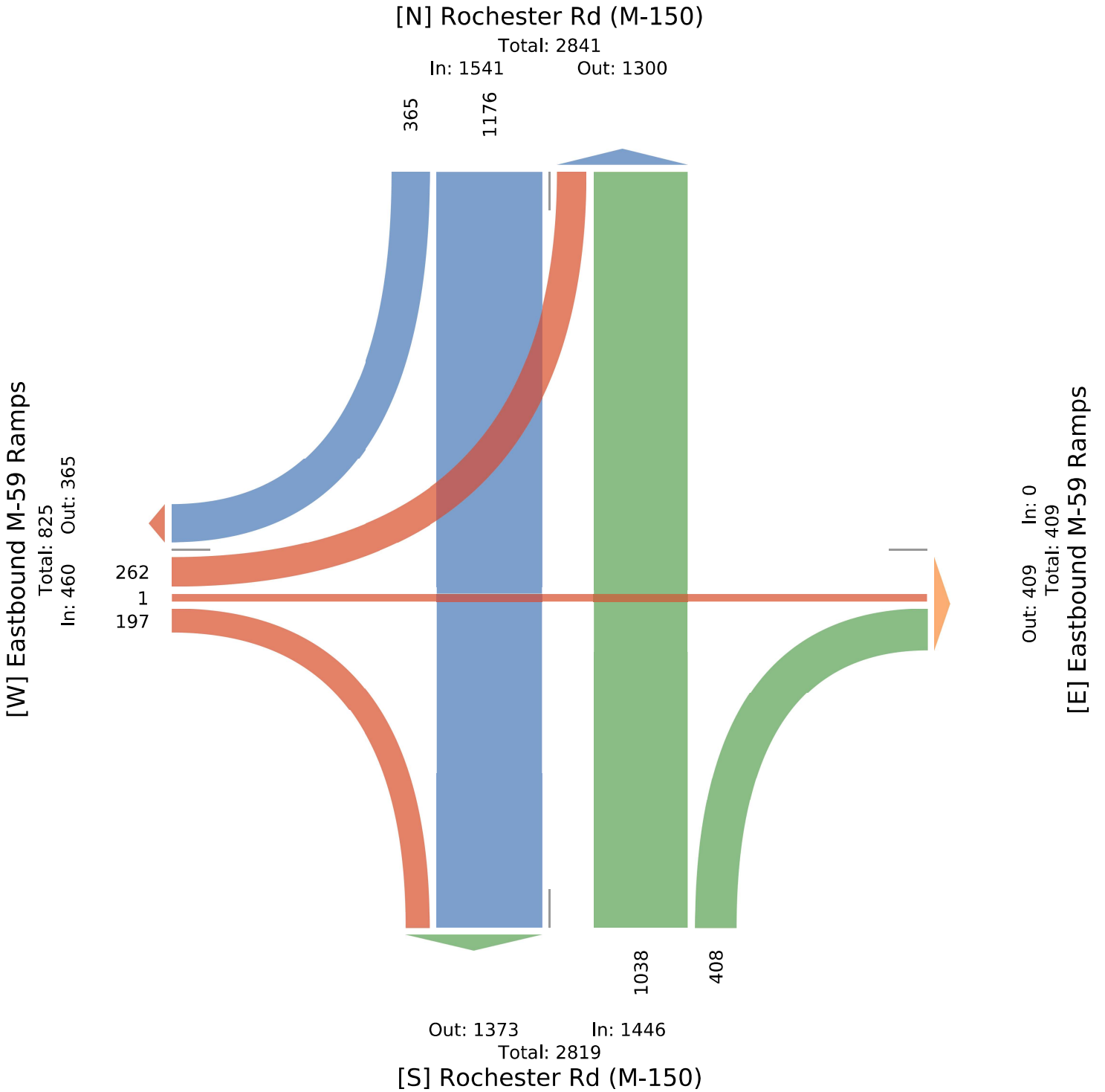


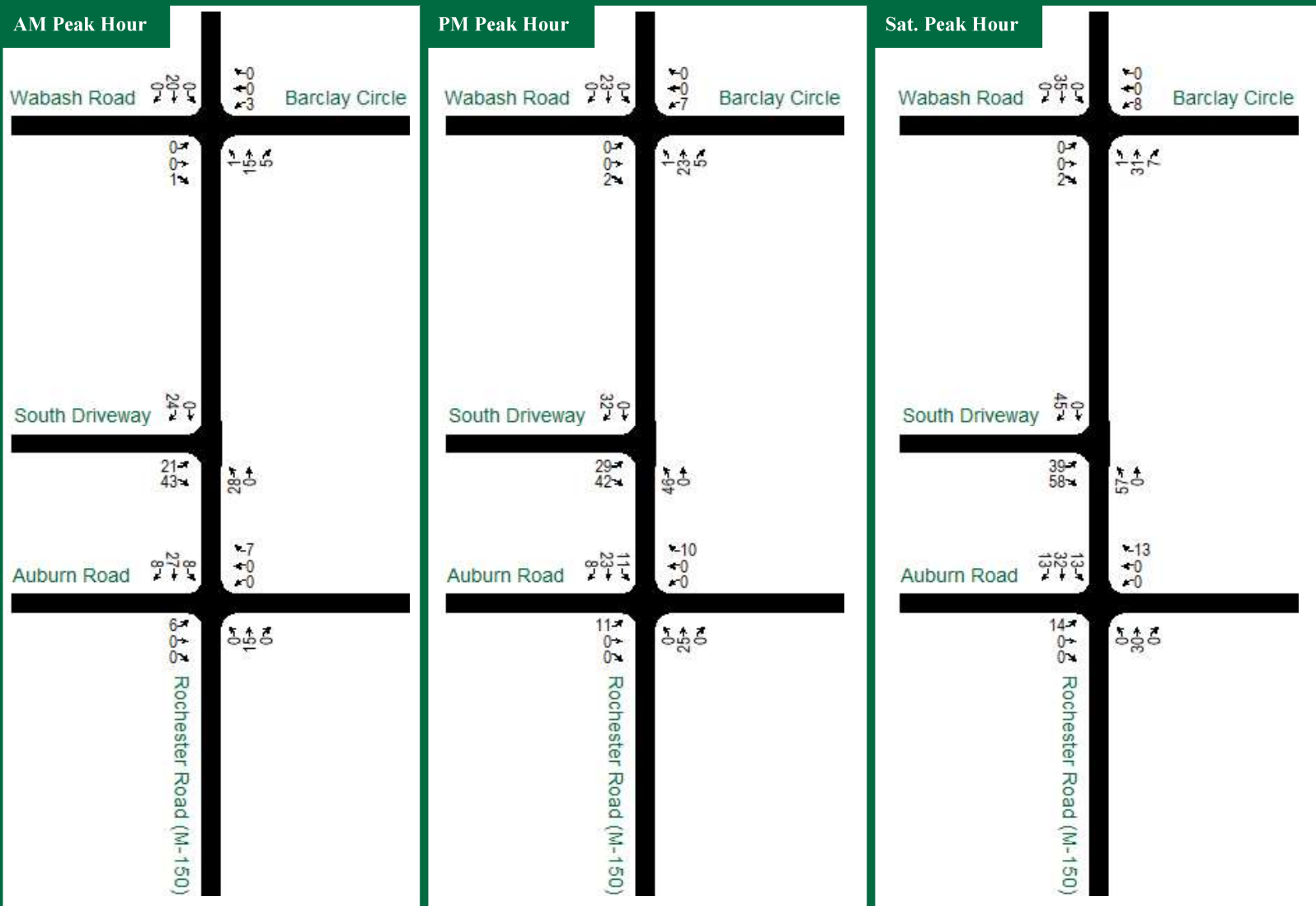
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

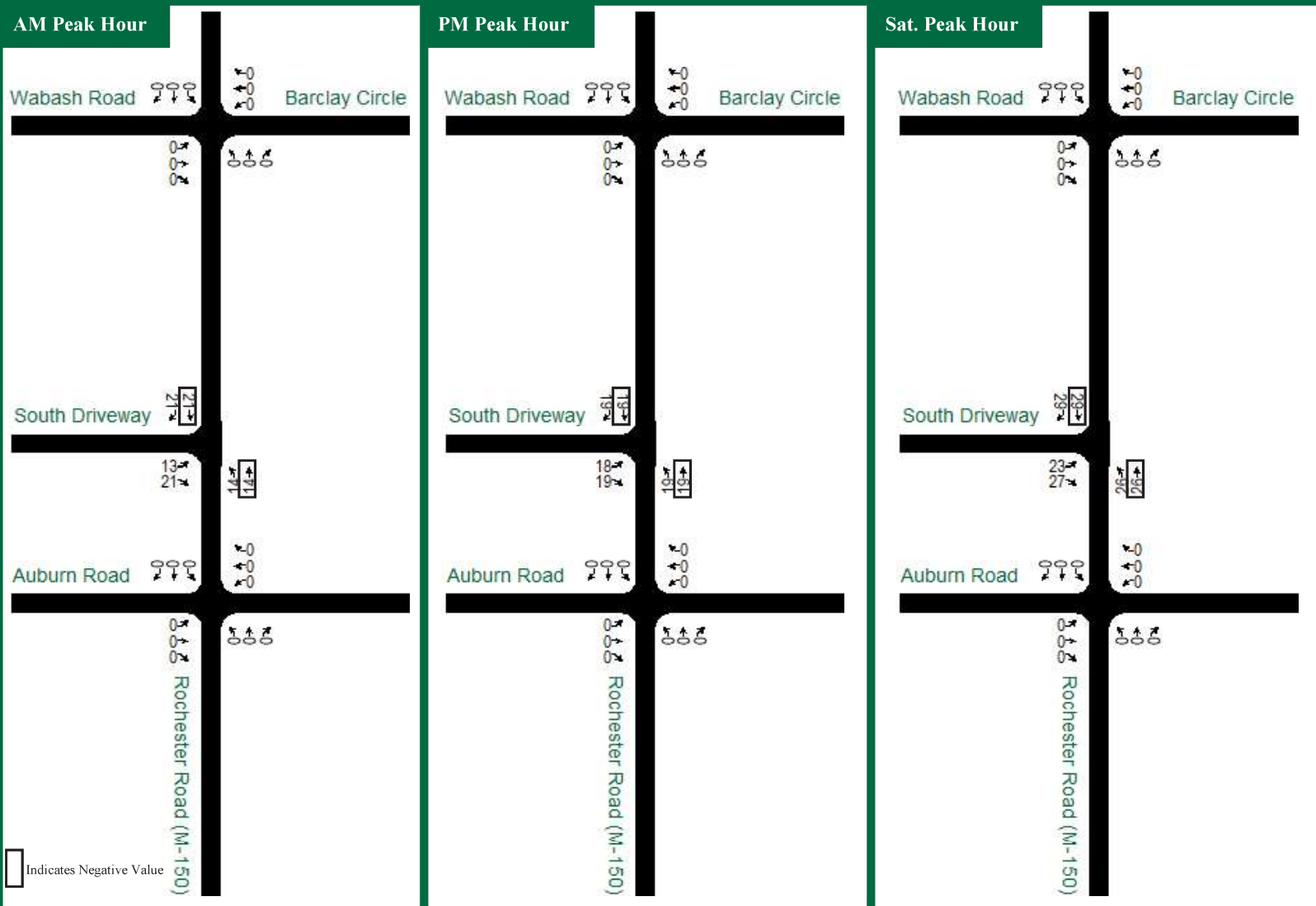
Leg Direction	Rochester Rd (M-150) Northbound					Rochester Rd (M-150) Southbound					Int
	L	T	R	U	App	L	T	R	U	App	
2021-06-12 5:30PM	0	270	99	0	369	0	280	81	0	361	833
5:45PM	0	252	101	0	353	0	297	78	0	375	851
6:00PM	0	265	103	0	368	0	314	107	0	421	902
6:15PM	0	251	105	0	356	0	285	99	0	384	861
Total	0	1038	408	0	1446	0	1176	365	0	1541	3447
% Approach	0%	71.8%	28.2%	0%	-	0%	76.3%	23.7%	0%	-	-
% Total	0%	30.1%	11.8%	0%	41.9%	0%	34.1%	10.6%	0%	44.7%	-
PHF	-	0.961	0.971	-	0.980	-	0.936	0.853	-	0.915	0.955
Lights	0	1034	401	0	1435	0	1171	363	0	1534	3427
% Lights	0%	99.6%	98.3%	0%	99.2%	0%	99.6%	99.5%	0%	99.5%	99.4%
Articulated Trucks	0	3	5	0	8	0	0	0	0	0	8
% Articulated Trucks	0%	0.3%	1.2%	0%	0.6%	0%	0%	0%	0%	0%	0.2%
Buses and Single-Unit Trucks	0	1	2	0	3	0	5	2	0	7	12
% Buses and Single-Unit Trucks	0%	0.1%	0.5%	0%	0.2%	0%	0.4%	0.5%	0%	0.5%	0.3%

* L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Rochester Rd (M-150) and Eastbound M-59 ramp... - TMC
 Sat Jun 12, 2021
 Forced Peak (5:30 PM - 6:30 PM)
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
 All Movements
 ID: 845028, Location: 42.626661, -83.131167







**OAKLAND COUNTY ROAD COMMISSION
TRAFFIC - SAFETY DEPARTMENT
SIGNAL WORK ORDER**

LOCATION: WB M-59 OFF Ramp & Rochester Rd DATE: 1/4/12
 CITY/TOWNSHIP: Rochester Hills BY: E Labiano
 COUNTY#: 4307 STATE#: 63043-01-008 CHARGES: 78 0 43070

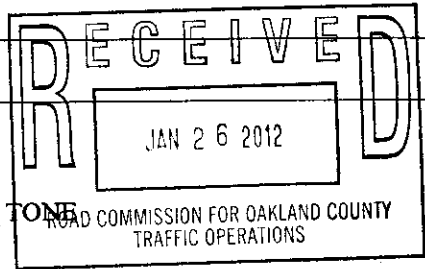
PLEASE PERFORM THE FOLLOWING:

ELECTRICAL DEVICE: INSTALL MODERNIZE MAINTENANCE
 UNDERGROUND: _____
 EDISON OK: YES NO JOB#: _____
 COORDINATE W/DISTRICT 7: _____

DIAL..	1	1	1	1		2	2	2	2		3	3	3	3		4	4	4	4
SPLIT.	1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4
<input type="checkbox"/> CHANGE TIMING.....																			
<input type="checkbox"/> CHANGE OFFSET.....																			
<input type="checkbox"/> CHANGE CYCLE LENGTH.....																			
<input type="checkbox"/> ADD DIAL/SPLIT.....																			

CHANGE BREAKOUT OR EPROM: Rev 3 (Flexi changes)
 CHANGE HOURS OF OPERATION:

OLD: _____
 NEW: _____
 REPROGRAM TBC
 INSTALL INTERCONNECT: TBC MINITROL TONE
 MBT OK: YES NO
 NO CHANGE - RECORD CORRECTION



OTHER: Requires a checksum change

APPROVED BY: [Signature] DATE: 1/9/12
 DATE INSTALLED: 1-24-12
 INSTALLED BY: Schjolin

INTERSECTION :- 4307 WB M50 Off Ramp & Rochester Road
DESCRIPTION PROMS :- X04307 / F2004
SOFTWARE :- MOD 52 SCATS
INPUTS :-

1. SB Rochester L (LK)
 2. SB Rochester R (LK)
 3. NB Rochester L (LK)
 4. NB Rochester R (LK)
 5. WB M59 Off Ramp L (LK)
 6. WB M59 Off Ramp CL (LK)
 7. WB M59 Off Ramp CR (LK)
 8. WB M59 Off Ramp R (LK)
- Note : All detectors are autoscope
(SOLO cameras)

APPROACHES :-

A APP 1 : SB Rochester L,R A APP 2 : NB Rochester L,R
B APP 1 : WB M59 Off Ramp L,CL,CR,R

FLEXIDATA :-

SEQUENCE A,B A,B
AUTO REL
R- REL A A
R+ REL B B
Q- REL
Q+ REL

PEDESTRIANS :-

SPECIAL FEATURES :-

Personality revision is 3 (=C).
A stage has a permanent demand.
Demand for B stage in flexi and isol, set ZNEG to disable.
ZPOS sets demand to turn on "NTOR" Case Sign.

P44-16 CABINET

LOAD SWITCH 2	NB Rochester	A	FLA
LOAD SWITCH 4	WB M59 Off Ramp	B	FLR
LOAD SWITCH 6	SB Rochester	C	FLA
LOAD SWITCH 7	Disappearing Case sign (G ONLY)		

JUMPERS

C52-PB10, C56-PB10, D22-D26, D35-D50, D52-PB10, D56-PB10, 8RED-PB9,
9RED-PB9, 10RED-PB9, 11RED-PB9, 12RED-PB9

SIGNAL MONITOR: 2-6, 2-7, 6-7

ALL SWITCHES EXCEPT DUAL SELECT A&B; GY ENABLE; SSM 2, 4, 6.

MINIMUM FLASH = 4 + 2 + 1

NOTES:

HOOK UP CONTINUOUS GREEN ARROW (CR) ON PB11

***** Checksums:

* CONTROLLER INFORMATION SHEET *	Ti:	67/147
* FOR SITE NO. 4307 *	Pers:	D8/330
* E LABIANO *	Total:	BF/277
* 16-DEC-2011 *		

FLEXILINK PLAN DATA

Intersection # 4307 **State #** 63043-01-008 **Date:** 01/03/12 **Prepared By:** E. LABIANO
Intersection: WB M59 Off Ramp & Rochester Road **City:** Rochester Hills
Hours of Operation: 7 Days: 24 Hours **Approved By:** Rachel Jones
Hours of Flashing: None

Note: Z+ in plan 1, 2, 3, 4 run NTOR case sign.

		PL0	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8
0	CL		140	140	140	90	140	140	140	90
1	A		0	0	0	0	0	0	0	0
2	B		90	98	92	57	90	98	92	57
3	C									
4	D									
5	E									
6	F									
7	G									
8	R-									
9	R+									
10	Of (Y-)		114	24	129	80	114	24	129	80
11	Y+	C								
12	Z-									
13	Z+		C	C	C	C				
14	Q-									
15	Q+									
16	XH									
17	XL									

NOTE: Stages with 1 second of phase time are skipped. Blank entries are default values equal to 0. Except for an AWA controller, entries #8 to #15 (=254) and 'C' entry means continuous (=255).

		Timers								
Phase	Direction	Min	Max	ECO	Amber	All Red	Gap	Hdwy	Waste	
A	Rochester	10.0	89.0		4.3	1.9	3.0	1.2	10.0	
B	WB M59 Off Ramp	7.0	37.0		3.5	2.5	3.0	1.2	10.0	

	Day	Hours	Plan#
SC1	8	5:00	6
SC2	8	7:00	2
SC3	8	10:00	1
SC4	8	14:00	3
SC5	8	19:00	1
SC6	13	7:00	4
SC7	13	8:00	1
SC8	14	0:00	8
SC9	/14	21:00	5
SC10	14	22:00	8
SC11			
SC12			

Pedestrian Crossing Times

Direction	Walk	CL 1	CL 2

Normal Operating Mode

Isolated	Flexilink	Masterlink	Master Isolated	Flexi Isolated
		X		

DAY OF WEEK CODE NUMBER

0	End of Schedule	4	WED	8	MON-FRI	12	MON,FRI,SAT
1	SUN	5	THUR	9	MON-SAT	13	SAT,SUN
2	MON	6	FRI	10	TUE,WED,THU	14	EVERY DAY
3	TUE	7	SAT	11	MON,FRI	15	NEVER

Autoscope SOLO

Mod 50

Mini-Hub II Detector Port Master Front Panel Input/Output Pin Assignment

The Mini-Hub II has inputs and outputs available through the front panel Input/ Output connector and through the back edge connector. The pin assignments for the Mini-Hub II front connector are listed in the following table. Edge connector pins are identified by **NUMBER** on the component (front) side of the board. Edge connector pins are identified by **LETTER** on the backside of board.

#	Mini-Hub II conn.	Edge conn.	Front Harness	Description	D-Conn. Term #	D-Conn. Detector Descript.	On Print Detector number	Phase
1	Output 1 LED	F	1	SB ROCHESTER THRU L	1	Det 9	1	6
1	Output 2 LED	W	14	SB ROCHESTER THRU R	2	Det 10	2	6
2	Output 3 LED	S	2	NB ROCHESTER THRU L	3	Det 11	3	2
2	Output 4 LED	Y	15	NB ROCHESTER THRU R	4	Det 12	4	2
3	Output 5 LED	(JP1)4	3	WB MS9 OFF RAMP LT L	5	Det 13	5	4
3	Output 6 LED	(JP7)5	16	WB MS9 OFF RAMP LT R	6	Det 14	6	4
4	Output 7 LED	(JP2)8	4	WB MS9 OFF RAMP RT L	7	Det 15	7	4
4	Output 8 LED	(JP8)9	17	WB MS9 OFF RAMP RT R	8	Det 16	8	4
	Output 9 LED	(JP3)13	5					
	Output 10 LED	(JP9)14	18					
	Output 11 LED	(JP4)17	6					
	Output 12 LED	(JP10)18	19					
	Output 13 LED		7					
	Output 14 LED		20					
	Output 15 LED		8					
	Output 16 LED		21					
	Input 1 LED	(JP5)1	9					
	Input 2 LED	(JP11)2	22	LS 2 RED (C-30)				
	Input 3 LED	(JP6)3	10					
	Input 4 LED	(JP12)10	23	LS 4 RED (C-36)				
	Input 5 LED		11					
	Input 6 LED		24	LS 6 RED (D-30)				
	Input 7 LED		12					
	Input 8 LED	(with JP14*)	25					

*Input 8 with JP14 inserted becomes 24VDC through Input/ Output Connector on front panel. Logic Ground is the GREY (pin 13) wire form Input/ Output connector on front panel.

Chapter 5

Connecting Solo MVP Power and Communications Cables

Usually, the Solo cable (the "pigtail" cable from the Solo MVP) is spliced to a Branch Cable, either in a junction box or in the hand-hole at the pole base. The Branch cable runs from the splice point to the cabinet, and terminates to the ACIP. Use the chart below (copy the blank table provided in Appendix A) to record which pairs of the Solo cable are spliced to the Branch cable pairs. For Branch cable lengths of 300 ft or less, a separate cable to power the Solo Pro is not normally necessary.

Be sure to use splicing methods and materials appropriate for low voltage communications splicing. When splicing is completed, properly seal the splice.

When the branch cables are brought into the cabinet, label each cable, starting with cable 1 from the Solo MVP viewing Phases 2 and 5, and working clockwise around the intersection, labeling cables 2, 3, and 4.

Terminate the cables to the ACIP in the same order. Taking care to assign the Sensor numbers (in the Autoscope Properties Editor) in the same order as the cables are terminated will facilitate easier maintenance and troubleshooting.

An example is shown in the table below. In this example, a separate power cable is shown. In installations where a 6-pair branch cable is used, power and communications are usually combined in one cable.

A blank copy of this table is provided for duplication in Appendix A.

*DRAIN WIRE of Solo MVP to WHT of GRN/WHI pair
then at CABINET WHI to shield of BRANCH CABLE*

to Ground Lug Solo System-Wide Interconnections INTERFACE PANEL

Duplicate the following table to keep track of all Solo MVP connections:

Solo MVP _____ <small>(write in sensor number)</small>			Branch Power Cable <small>(write in wire color)</small>	Branch Communications Cable <small>(write in wire color)</small>			Communications Interface Panel	
PIN	PAIR COLOR	WIRE COLOR	WIRE COLOR	PAIR	PAIR COLOR	WIRE COLOR	SIGNAL	TERMINAL
A	BRN/BLK	* BRN *	BRN		BRN/WHI	BRN	24V PWR	1
B	BRN/BLK	* BLK *	WHI		BRN/WHI	WHI	24V RTN	2
N	----	*GRNYEL*	GRN		GRN/WHI	GRN	EARTH GND	3
P	BLU/BLK	BLU	BLU	1	BLU/WHI	BLU	SUP RX+	4
U	BLU/BLK	BLK	WHI	1	BLU/WHI	WHI	SUP RX-	5
D	RED/BLK	RED	RED	2	RED/BLU	RED	SUP TX+	6
R	RED/BLK	BLK	BLU	2	RED/BLU	BLU	SUP TX-	7
F	YEL/BLK	YEL	ORG	3	ORG/WHI	ORG	DET+	8
E	YEL/BLK	BLK	WHI	3	ORG/WHI	WHI	DET-	9
J	WHI/BLK	WHI	GREY	4	GREY/WHI	GREY	VIDEO+	10
H	WHI/BLK	BLK	WHI	4	GREY/WHI	WHI	VIDEO-	11

* IS SEPARATE POWER FEED BRN - BLK
WHI - WHI

OAKLAND COUNTY ROAD COMMISSION
 TRAFFIC - SAFETY DEPARTMENT
 SIGNAL WORK ORDER

Handwritten initials in red ink.

LOCATION: EB M-59 OFF Ramp & Rochester Rd DATE: 12/16/11
 CITY/TOWNSHIP: Rochester Hills BY: E Labiano
 COUNTY#: 4309 STATE#: 63043-01-021 CHARGES: 78 0 43090

PLEASE PERFORM THE FOLLOWING:

ELECTRICAL DEVICE: INSTALL MODERNIZE MAINTENANCE
 UNDERGROUND: _____
 EDISON OK: YES NO JOB#: _____
 COORDINATE W/DISTRICT 7: _____

DIAL..	1	1	1	1		2	2	2	2		3	3	3	3		4	4	4	4
SPLIT.	1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4
CHANGE TIMING.....																			
CHANGE OFFSET.....																			
CHANGE CYCLE LENGTH.....																			
ADD DIAL/SPLIT.....																			

CHANGE BREAKOUT OR EPROM: Rev 2
 CHANGE HOURS OF OPERATION: (schedules)

OLD: _____
 NEW: _____

REPROGRAM TBC
 INSTALL INTERCONNECT: TBC MINITROL TONE
 MBT OK: YES NO



NO CHANGE - RECORD CORRECTION
 OTHER: Requires a checksum changer

APPROVED BY: [Signature] DATE: 12/19/11
 DATE INSTALLED: 1-24-12
 INSTALLED BY: Schjolin

INTERSECTION :- 4309 EB M59 Off Ramp & Rochester Rd

DESCRIPTION PROMS :- X04309 / F2003

SOFTWARE :- MOD 52 SCATS

INPUTS :-

- 1. EB M59 Off Ramp L (LK)
- 2. EB M59 Off Ramp R (LK)
- 3. EB M59 Off Ramp RT (NL)
- 4. NB Rochester L (LK)
- 5. NB Rochester R (LK)
- 6. SB Rochester L (LK)
- 7. SB Rochester R (LK)

NOTE : All detectors are autoscope (solo cameras).

APPROACHES :-

A APP 1 : NB Rochester L,R A APP 2 : SB Rochester L,R

B APP 1 : EB M59 Off Ramp L,R EB M59 Off Ramp RT

FLEXIDATA :-

SEQUENCE A,B A,B

AUTO REL

R- REL A A

R+ REL B B

Q- REL

Q+ REL

PEDESTRIANS :-

SPECIAL FEATURES :-

Personality revision is 2 (=B).

A stage has a permanent demand.

Demand for B stage in flexi and isol, set ZNEG to disable.

P44-16 CABINET

LOAD SWITCH 2	NB Rochester	A	FLA
LOAD SWITCH 6	SB Rochester	B	FLA
LOAD SWITCH 8	EB M59 Off Ramp	C	FLR

JUMPERS

C52-PB10, C56-PB10, D22-D26, D52-PB10, D56-PB10, 4RED-PB9, 9RED-PB9, 10RED-PB9, 11RED-PB9, 12RED-PB9

MMU: (MENU : SET/VIEW CONFIG)

Dual Indication Enable: R+G: Channel 2,6,8
 R+Y: Channel 2,6,8
 G+Y: Channel 2,6,8

Red Fail Enable: Enable: Channel 2, 6 & 8

Unit Options: All OFF except:
 Recurrent pulse
 Program Memory Card

Y & R Clearance Disable: Channel 2, 6 & 8 Enabled

Program Card: Compatible Channels: 2-6
 Min Flash Time : 4+2+1
 Min Yellow Change Disable: None
 Voltage Monitor Latch: NONE

NOTES:

HOOK UP CONTINUOUS GREEN ARROW (AR) ON PB11

 * CONTROLLER INFORMATION SHEET *
 * FOR SITE NO. 4309 *
 * E LABIANO *
 * 16-DEC-2011 *

CHECKSUMS:
 TI: AE/256
 PERS: 63/143
 TOTAL: CD/315

FLEXILINK PLAN DATA

Intersection # 4309 State # 63043-01-021 Date: 12/16/11 Prepared By: E LABIANO

Intersection: EB M59 Off Ramp & Rochester Road City: Rochester Hills

Hours of Operation: 7 Days: 24 Hours Approved By: Rachel Jones

Hours of Flashing: None

		PL0	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8
0	CL		140	140	140	90				
1	A		0	0	0	0				
2	B		90	106	102	63				
3	C									
4	D									
5	E									
6	F									
7	G									
8	R-									
9	R+									
10	Of (Y-)		118	27	120	72				
11	Y+	C								
12	Z-									
13	Z+									
14	Q-									
15	Q+									
16	XH									
17	XL									

NOTE: Stages with 1 second of phase time are skipped. Blank entries are default values equal to 0. Except for an AWA controller, entries #8 to #15 (=254) and 'C' entry means continuous (=255).

Phase	Direction	Min	Max	ECO	Amber	All Red	Timers		
							Gap	Hdwy	Waste
A	Rochester	10.0	60.0		4.3	1.9	3.0	1.2	10.0
B	EB M59 Off Ramp	7.0	20.0		3.5	2.5	3.0	1.2	10.0
C									
D									
E									
F									
G									

	Day	Hours	Plan#
SC1	8	5:00	2
SC2	8	10:00	1
SC3	8	14:00	3
SC4	8	19:00	1
SC5	13	8:00	1
SC6	13	19:00	4
SC7	14	0:00	4
SC8	14	22:00	4
SC9			
SC10			

Pedestrian Crossing Times

Direction	Walk	CL 1	CL 2

Normal Operating Mode

Isolated	Flexilink	Masterlink	Master Isolated	Flexi Isolated
		X		

DAY OF WEEK CODE NUMBER

0	End of Schedule	4	WED	8	MON-FRI	12	MON,FRI,SAT
1	SUN	5	THUR	9	MON-SAT	13	SAT,SUN
2	MON	6	FRI	10	TUE,WED,THU	14	EVERY DAY
3	TUE	7	SAT	11	MON,FRI	15	NEVER

Autoscope SOLO

Mod 50

Mini-Hub II Detector Port Master Front Panel Input/Output Pin Assignment

The Mini-Hub II has inputs and outputs available through the front panel Input/ Output connector and through the back edge connector. The pin assignments for the Mini-Hub II front connector are listed in the following table. Edge connector pins are identified by NUMBER on the component (front) side of the board. Edge connector pins are identified by LETTER on the backside of board.

#	Mini-Hub II conn.	Edge conn.	Front Harness	Description	D-Conn. Term #	D-Conn. Detector Descript.	On Print Detector number	Phase
1	Output 1 LED	F	1	EB MS9 OFF RAMP L	1	Det 9	1	8
1	Output 2 LED	W	14	EB MS9 OFF RAMP C	2	Det 10	2	8
1	Output 3 LED	S	2	EB MS9 OFF RAMP R	3	Det 11	3	8
2	Output 4 LED	Y	15	NB ROCHESTER L	4	Det 12	4	2
2	Output 5 LED	(JP1)4	3	NB ROCHESTER R	5	Det 13	5	2
3	Output 6 LED	(JP7)5	16	SB ROCHESTER L	6	Det 14	6	6
3	Output 7 LED	(JP2)8	4	SB ROCHESTER R	7	Det 15	7	6
	Output 8 LED	(JP8)9	17					
	Output 9 LED	(JP3)13	5					
	Output 10 LED	(JP9)14	18					
	Output 11 LED	(JP4)17	6					
	Output 12 LED	(JP10)18	19					
	Output 13 LED		7					
	Output 14 LED		20					
	Output 15 LED		8					
	Output 16 LED		21					
	Input 1 LED	(JP5)1	9					
	Input 2 LED	(JP11)2	22	LS2 RED (C-30)				
	Input 3 LED	(JP6)3	10					
	Input 4 LED	(JP12)10	23					
	Input 5 LED		11					
	Input 6 LED		24	LS6 RED (D-30)				
	Input 7 LED		12					
	Input 8 LED	(with JP14*)	25	LS8 RED (D-36)				

*Input 8 with JP14 inserted becomes 24VDC through Input/ Output Connector on front panel. Logic Ground is the GREY (pin 13) wire form Input/ Output connector on front panel.

Chapter 5 Connecting Solo MVP Power and Communications Cables

Usually, the Solo cable (the "pigtail" cable from the Solo MVP) is spliced to a Branch Cable, either in a junction box or in the hand-hole at the pole base. The Branch cable runs from the splice point to the cabinet, and terminates to the ACIP. Use the chart below (copy the blank table provided in Appendix A) to record which pairs of the Solo cable are spliced to the Branch cable pairs. For Branch cable lengths of 300 ft or less, a separate cable to power the Solo Pro is not normally necessary.

Be sure to use splicing methods and materials appropriate for low voltage communications splicing. When splicing is completed, properly seal the splice.

When the branch cables are brought into the cabinet, label each cable, starting with cable 1 from the Solo MVP viewing Phases 2 and 5, and working clockwise around the intersection, labeling cables 2, 3, and 4.

Terminate the cables to the ACIP in the same order. Taking care to assign the Sensor numbers (in the Autoscope Properties Editor) in the same order as the cables are terminated will facilitate easier maintenance and troubleshooting.

An example is shown in the table below. In this example, a separate power cable is shown. In installations where a 6-pair branch cable is used, power and communications are usually combined in one cable.

A blank copy of this table is provided for duplication in Appendix A.

DRAIN WIRE of Solo MVP to WHT of GRN/WHI pair
then at CABINET WHT to shield of BRANCH CABLE
to Ground Lug

Solo System-Wide Interconnections

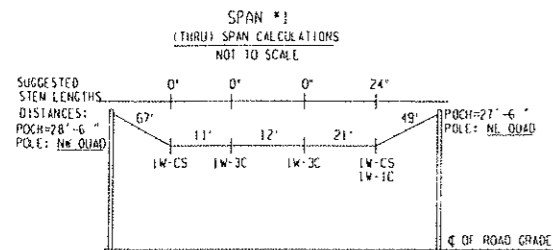
INTERFACE PANEL

Duplicate the following table to keep track of all Solo MVP connections:

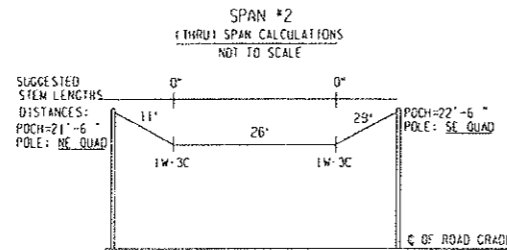
Solo MVP _____ <small>(write in sensor number)</small>			Branch Power Cable <small>(write in wire color)</small>	Branch Communications Cable <small>(write in wire color)</small>			Communications Interface Panel	
PIN	PAIR COLOR	WIRE COLOR	WIRE COLOR	PAIR	PAIR COLOR	WIRE COLOR	SIGNAL	TERMINAL
A	BRN/BLK	* BRN *	BRN		BRN/WHI	BRN	24V PWR	1
B	BRN/BLK	* BLK *	WHI		BRN/WHI	WHI	24V RTN	2
N	----	* GRN/YEL *	GRN		GRN/WHI	GRN	EARTH GND	3
P	BLU/BLK	BLU	BLU	1	BLU/WHI	BLU	SUP RX+	4
U	BLU/BLK	BLK	WHI	1	BLU/WHI	WHI	SUP RX-	5
D	RED/BLK	RED	RED	2	RED/BLU	RED	SUP TX+	6
R	RED/BLK	BLK	BLU	2	RED/BLU	BLU	SUP TX-	7
F	YEL/BLK	YEL	ORG	3	ORG/WHI	ORG	DET+	8
E	YEL/BLK	BLK	WHI	3	ORG/WHI	WHI	DET-	9
J	WHI/BLK	WHI	GREY	4	GREY/WHI	GREY	VIDEO+	10
H	WHI/BLK	BLK	WHI	4	GREY/WHI	WHI	VIDEO-	11

* IS SEPARATE POWER FEED
BRN - BLK
R. V. - WHI

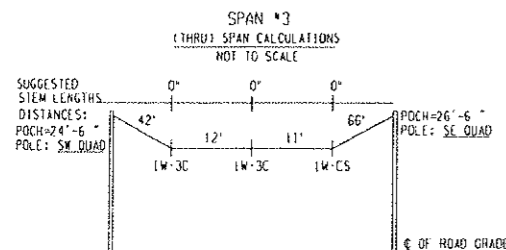
RIGHT-OF-WAY LINES ON THE NORTH SIDE OF THE INTERSECTION FALL BEYOND THE LIMITS OF THIS PLAN VIEW THUS ARE NOT SHOWN



NOTE: POCH (POLE CONTACT HEIGHT) IS SHOWN ABOVE G GRADE. FIELD ADJUSTMENTS ARE TO BE MADE FOR ANY DIFFERENCE IN GRADE AT POLE VS. ROAD GRADE. POCH IS CALCULATED AT 1000 POUNDS TENSION.

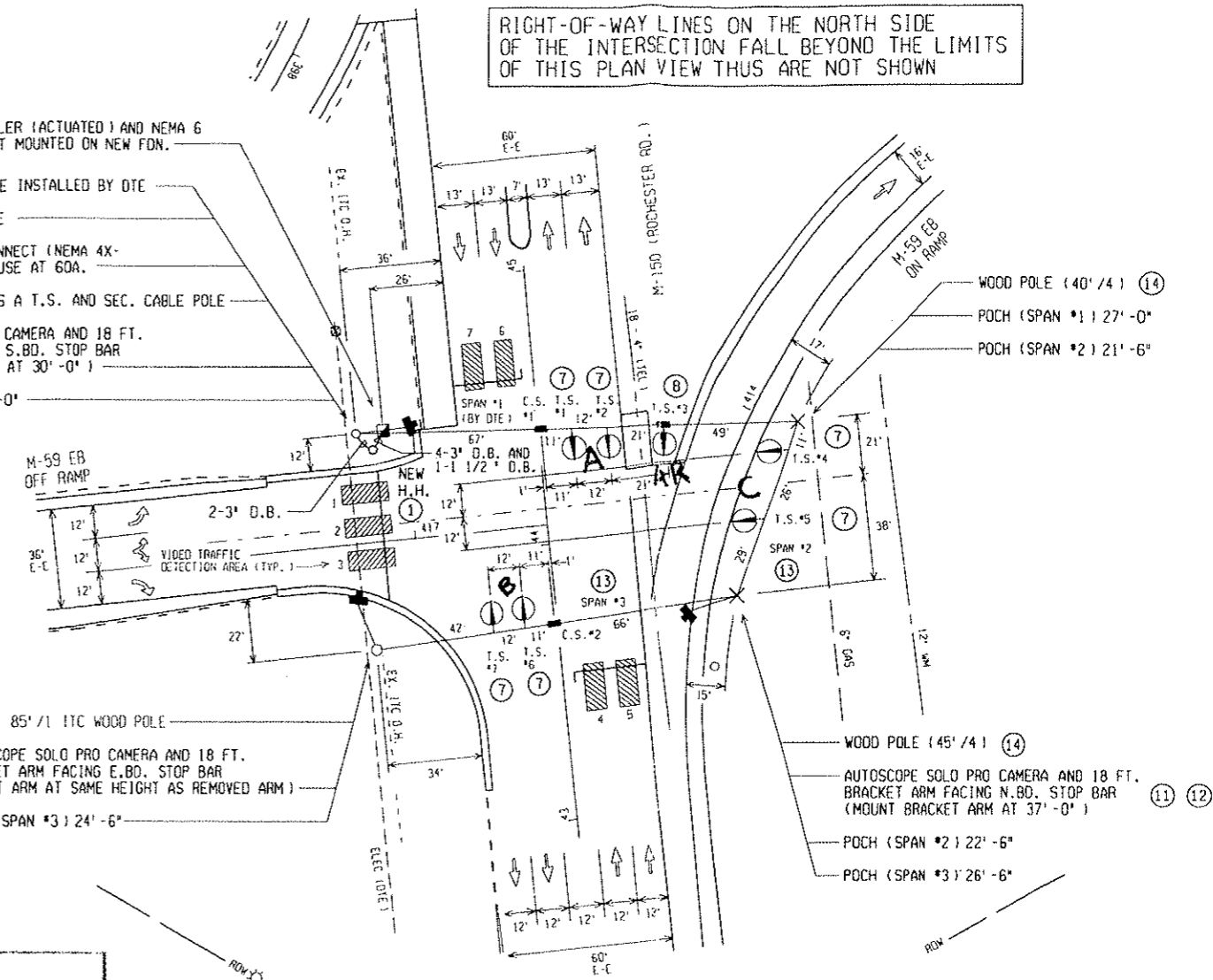


NOTE: POCH (POLE CONTACT HEIGHT) IS SHOWN ABOVE G GRADE. FIELD ADJUSTMENTS ARE TO BE MADE FOR ANY DIFFERENCE IN GRADE AT POLE VS. ROAD GRADE. POCH IS CALCULATED AT 1000 POUNDS TENSION.



NOTE: POCH (POLE CONTACT HEIGHT) IS SHOWN ABOVE G GRADE. FIELD ADJUSTMENTS ARE TO BE MADE FOR ANY DIFFERENCE IN GRADE AT POLE VS. ROAD GRADE. POCH IS CALCULATED AT 1000 POUNDS TENSION.

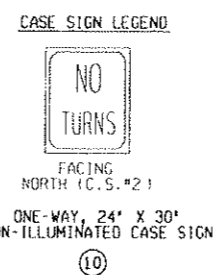
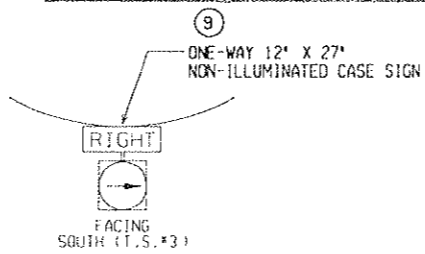
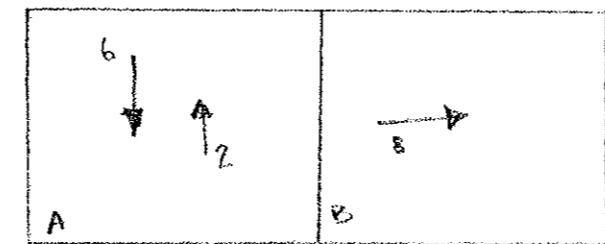
- ③ ④ ⑤ DIGITAL TYPE CONTROLLER (ACTUATED) AND NEMA 6 (16 L.S. BAY) CABINET MOUNTED ON NEW FDN.
- NEW WOOD POLE TO BE INSTALLED BY DTE
- PROP. 120V. SERVICE
- ⑥ 60A. SERVICE DISCONNECT (NEMA 4X-STAINLESS STEEL) FUSE AT 60A.
- ② FIT UP WOOD POLE AS A T.S. AND SEC. CABLE POLE
- ⑪ ⑫ AUTOSCOPE SOLO PRO CAMERA AND 18 FT. BRACKET ARM FACING S.BD. STOP BAR (MOUNT BRACKET ARM AT 30'-0")
- POCH (SPAN #1) 28'-0"



SIGNALS SHALL BE BUILT DURING STAGE I OR AS DIRECTED BY THE ENGINEER. ALL STRUCTURES SHALL BE BUILT TO PROPOSED GRADES. SEE ROAD PLANS.

ALL SPAN WIRES INSTALLED BY DTE SHALL BE GUYED BY DTE. ALL SPAN WIRES INSTALLED BY THE CONTRACTOR SHALL BE GUYED BY THE CONTRACTOR.

LIST OF MATERIAL			
NO.	ITEM	QUANTITIES	ITEM CODE
①	Hh. Round	1 Ea	8190260
②	Wood Pole, Fit Up, TS and Sec Cable Pole	1 Ea	8190500
③	Controller and Cabinet, Digital Type	1 Ea	8200031
④	Controller and Cabinet, Digital Type, Delivered	1 Ea	8200032
⑤	Controller Fdn. Base Mount	1 Ea	8200045
⑥	Serv Disconnect	1 Ea	8200135
⑦	TS, One Way Span Wire Mtd (LED)	6 Ea	8200313
⑧	TS, One Way Span Wire Mtd, RTGA (LED)	1 Ea	8200318
⑨	Case Sign, One Way, 12 inch by 27 inch, Non-Illuminated	1 Ea	8200433
⑩	Case Sign, One Way, 24 inch by 30 inch, Non-Illuminated	2 Ea	8200434
⑪	Bracket, Truss, With 18 Foot Arm	3 Ea	8200378
⑫	Autoscope Camera	3 Ea	8207050
⑬	Span Wire	2 Ea	8200140
⑭	Wood Pole	2 Ea	8190465
○	Conduit, DB, 1, 1 1/2 inch	10 Ft	8190027
○	Conduit, DB, 2, 3 inch	10 Ft	8190032
○	Conduit, DB, 4, 3 inch	10 Ft	8190038
○	Cable, Sec. 600V, 1, 2/C#4, #6 Ground	60 Ft	8190398



(1) NEW WOOD POLE, (1) SPAN WIRE, GUYING & 120V. SERVICE BY DTE. CONTACT MS. NANCY MOLNAR, (586) 412-4722. ESTIMATED CHARGES WILL BE \$2100.00

TRAFFIC SIGNAL CONTROLLER AND CABINET SHALL BE MODEL 52 SCATS NEMA COMPATIBLE.

FOR ELECTRICAL SERVICE INSPECTION CONTACT THE MICHIGAN DEPARTMENT OF CONSUMER INDUSTRY & SERVICES AT (248) 312-0163. ESTIMATED COST TO CONTRACTOR WILL BE \$80.00.

M.D.O.T. DISTRICT SOILS ENGINEER SHALL INSPECT CONSTRUCTION OF FOUNDATION. CONTACT MR. ALAN OSTROWSKI (248) 483-5100 3 WORKING DAYS PRIOR TO DRILLING OF FOUNDATION SO THAT HE MAY BE PRESENT AT TIME OF DRILLING.

SPEED LIMITS	
M-59 OFF RAMP	MPH
M-150	45 MPH
OPENINGS	22
CYCLIC WATTS	264
STEADY WATTS	151
PLAN	63043-01-021

M-59 EB OFF RAMP AT M-150 (ROCHESTER RD.) CITY OF ROCHESTER HILLS OAKLAND COUNTY

TRAFFIC SIGNAL **cont 4309**
M-59 (CROOKS TO RYAN)

DATE	SCALE	CONT. SEC.	JOB NO.	TRAFFIC UNIT	SHEET NO.
5/11/09	1" = 30'	63043	55850A	SWEENEY	463

MANSELL ASSOCIATES INC.
ENGINEERING CONSULTANTS
33608 Grand River Farmington, MI 48335
(248) 473-7070

MDOT
Michigan Department of Transportation

DATE: WORKED ON BY: CHECKED BY: FILE NAME: M63043-01-021

OAKLAND COUNTY ROAD COMMISSION
TRAFFIC - SAFETY DEPARTMENT
SIGNAL WORK ORDER

LOCATION: Rochester & Mcijers / Lowes DATE: 12/15/11
 CITY/TOWNSHIP: Rochester Hills BY: E Labiano
 COUNTY#: 12200 STATE#: _____ CHARGES: 78 12200 0

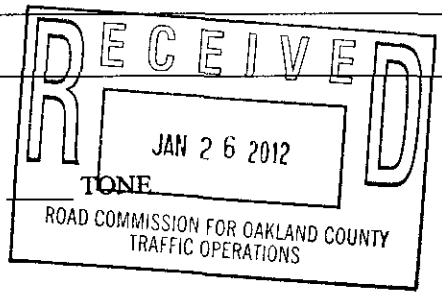
PLEASE PERFORM THE FOLLOWING:

ELECTRICAL DEVICE: INSTALL MODERNIZE MAINTENANCE
 UNDERGROUND: _____
 EDISON OK: YES NO JOB#: _____
 COORDINATE W/DISTRICT 7: _____

DIAL..	1	1	1	1		2	2	2	2		3	3	3	3		4	4	4	4
SPLIT.	1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4
CHANGE TIMING.....																			
CHANGE OFFSET.....																			
CHANGE CYCLE LENGTH.....																			
ADD DIAL/SPLIT.....																			

CHANGE BREAKOUT OR EPROM: Rev 3
 CHANGE HOURS OF OPERATION: _____

OLD: _____
 NEW: _____
 REPROGRAM TBC
 INSTALL INTERCONNECT: TBC MINITROL
 MBT OK: YES NO
 NO CHANGE - RECORD CORRECTION



OTHER: Requires a checksum change

APPROVED BY: [Signature] DATE: 12/16/11
 DATE INSTALLED: 1-24-12
 INSTALLED BY: Schjolin

INTERSECTION :-12200 M-150 (Rochester Rd) & Meijer's/Lowe's Dr.
 DESCRIPTION PROMS :- X00020R / F4808
 CONTROLLER TYPE :- STANDARD PERSONALITY CONTROLLER
 SOFTWARE :- MOD 52 SCATS/SCATS

PHYSICAL INPUTS :-

- | | | |
|------------------------|------|---|
| 1. EB ALEX LT | (LK) | NOTE: ALL DETECTION IS AUTOSCOPE SOLOS |
| 2. EB ALEX | (LK) | |
| 3. NB ROCHESTER LT | (LK) | |
| 4. NB ROCHESTER L | (LK) | |
| 5. NB ROCHESTER R | (LK) | |
| 6. NB ROCHESTER RT | (NL) | |
| 7. Meijer's/Lowe's Dr. | (LK) | Ped2: (WA & WC) ROCHESTER RD PED WEST WFG |
| 8. Meijer's/Lowe's Dr. | (LK) | Ped4: (WB) LOWES/MEIJERS PED NOTH P.B. |
| 9. SB ROCHESTER LT | (LK) | |
| 10. SB ROCHESTER L | (LK) | |
| 11. SB ROCHESTER R | (LK) | |

APPROACHES :-

- | | |
|---------------------------------|---------------------------------|
| A APPR 1 : ROCHESTER RD (M-150) | A APPR 2 : ROCHESTER RD (M-150) |
| B APPR 1 : LOWES/MEIJERS | B APPR 2 : ALEX DR. |

FLEXIDATA:-

SEQUENCE A,B A,B
 AUTO REL
 R- REL A A
 R+ REL B B
 Q- REL
 Q+ REL
 LOOKAHEAD

PEDESTRIANS:-

PED2: ROCHESTER RD PED WEST LEG WFG
 PED4: LOWES/MEIJERS PED NOTH LEG P.B.

SPECIAL FEATURES :-

Controller Software must be C7V4R146 or later (VC=4)
 A STAGE HAS A PERMANENT DEMAND
 DEMAND FOR STAGE B IN FLEXI AND ISOLATED. SET Z- TO DISABLE.
 The personality revision number is currently 3 (=C).

Backpanel for size P44-16 cabinet:

Load Switch 2:	ROCHESTER RD	A&C	FLA
Load Switch 4:	LOWES/MEIJERS	B&D	FLR
Load Switch 13:	ROCHESTER RD PED	WA&WC	-
Load Switch 14:	LOWES/MEIJERS PED	WB	-

Jumper:

A28-A29, A34-A35, A37-A38, A43-A44, B52-B53, B55-B56, C52-PB10,
 C56-PB10, D22-D26, D52-PB10, D56-PB10, 6R-PB10, 8R-PB9, 9R-PB9,
 10R-PB9, 11R-PB9, 12R-PB9,

Signal Monitor: NONE.

All switches OFF EXCEPT: Dual Select A&B; G&Y Enable;SSM 2,4.

Minimum Flash = 4 + 2 + 1

 * CONTROLLER INFORMATION SHEET *
 * FOR SITE NO. 12200 *
 * ED LABIANO *
 * DATE : 1-Nov-2007 12:10 *

Checksums:
 Times
 Pers
 Total

C6/306
 2B/053
 ED/355

FLEXILINK PLAN DATA

Intersection # 12200 State # 63131-01-019 Date: 12/15/11 Prepared By: ED LABIANO

Intersection: M-150 (Rochester Rd) & Meijer's/Lowe's Dr. City: ROCHESTER

Hours of Operation: 7 days: 24 hours Approved By: R JONES

Hours of Flashing: NONE

		PL0	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8
0	CL		140	140	140	90				
1	A		0	0	0	0				
2	B		112	112	100	72				
3	C									
4	D									
5	E									
6	F									
7	G									
8	R-									
9	R+									
10	Of (Y-)		114	125	1	40				
11	Y+	C								
12	Z-									
13	Z+									
14	Q-									
15	Q+		98	98	86	58				
16	XH									
17	XL									

NOTE: Stages with 1 second of phase time are skipped. Blank entries are default values equal to 0. Except for an AWA controller, entries #8 to #15 (=254) and 'C' entry means continuous (=255).

Phase	Direction	Min	Max	ECO	Amber	All Red	Timers		
							Gap	Hdwy	Waste
A	M-150 (Rochester Rd)	10.0	50.0		4.7	1.6	3.0	1.0	6.0
B	Meijer's/Lowe's Dr.	7.0	30.0		3.5	2.5	3.0	1.0	6.0
C									
D									
E									
F									
G									

	Day	Hours	Plan#
SC1	8	5:00	2
SC2	8	10:00	1
SC3	8	14:00	3
SC4	8	19:00	1
SC5	14	0:00	4
SC6	14	22:00	4
SC7	13	8:00	1
SC8			
SC9			
SC10			

Pedestrian Crossing Times

Direction	Walk	CL 1	CL 2
Rochester ped west leg	7.0	13.5	3.5
Lowes/Meijers ped north leg	7.0	15.3	4.7

Q+ Terminates PED 2 in FLEXI

Normal Operating Mode

Isolated	Flexilink	Masterlink	Master Isolated	Flexi Isolated
		X		

DAY OF WEEK CODE NUMBER

	End of Schedule						
0	End of Schedule	4	WED	8	MON-FRI	12	MON,FRI,SAT
1	SUN	5	THUR	9	MON-SAT	13	SAT,SUN
2	MON	6	FRI	10	TUE,WED,THU	14	EVERY DAY
3	TUE	7	SAT	11	MON,FRI	15	NEVER

**Mini-Hub II Detector Port Master
Front Panel Input/Output Pin Assignment**

The Mini-Hub II has inputs and outputs available through the front panel Input/ Output connector and through the back edge connector. The pin assignments for the Mini-Hub II front connector are listed in the following table. Edge connector pins are identified by NUMBER on the component (front) side of the board. Edge connector pins are identified by LETTER on the backside of board.

am #	Mini-Hub II conn.	Edge conn.	Front Harness	Description	D-Conn. Term #	D-Conn. Detector Descript.	On Print Detector number	Phase
1	Output 1 LED	F	1	EB Alex Dr LT	1	Det 9	1	4
1	Output 2 LED	W	14	EB Alex	2	Det 10	2	4
2	Output 3 LED	S	2	NB Rochester LT	3	Det 11	3	2
2	Output 4 LED	Y	15	NB Rochester L	4	Det 12	4	2
3	Output 5 LED	(JP1)4	3	NB Rochester R	5	Det 13	5	2
3	Output 6 LED	(JP7)5	16	NB Rochester RT	6	Det 14	6	2
	Output 7 LED	(JP2)8	4		7			1
	Output 8 LED	(JP8)9	17		8			
	Output 9 LED	(JP3)13	5		9	Det 17		
	Output 10 LED	(JP9)14	18		10	Det 18		
	Output 11 LED	(JP4)17	6		11	Det 19	11	2
	Output 12 LED	(JP10)18	19					
	Output 13 LED		7					
	Output 14 LED		20					
	Output 15 LED		8					
	Output 16 LED		21					
	Input 1 LED	(JP5)1	9					
	Input 2 LED	(JP11)2	22	LS 2 Red (C30)				
	Input 3 LED	(JP6)3	10					
	Input 4 LED	(JP12)10	23	LS 4 Red (C36)				
	Input 5 LED		11					
	Input 6 LED		24					
	Input 7 LED		12					
	Input 8 LED	(with JP14*)	25					

*Input 8 with JP14 inserted becomes 24VDC through Input/ Output Connector on front panel.
Logic Ground is the GREY (pin 13) wire form Input/ Output connector on front panel.

Chapter 5 Connecting Solo MVP Power and Communications Cables

Usually, the Solo cable (the "pigtail" cable from the Solo MVP) is spliced to a Branch Cable, either in a junction box or in the hand-hole at the pole base. The Branch cable runs from the splice point to the cabinet, and terminates to the ACIP. Use the chart below (copy the blank table provided in Appendix A) to record which pairs of the Solo cable are spliced to the Branch cable pairs. For Branch cable lengths of 300 ft or less, a separate cable to power the Solo Pro is not normally necessary.

Be sure to use splicing methods and materials appropriate for low voltage communications splicing. When splicing is completed, properly seal the splice.

When the branch cables are brought into the cabinet, label each cable, starting with cable 1 from the Solo MVP viewing Phases 2 and 5, and working clockwise around the intersection, labeling cables 2, 3, and 4.

Terminate the cables to the ACIP in the same order. Taking care to assign the Sensor numbers (in the Autoscope Properties Editor) in the same order as the cables are terminated will facilitate easier maintenance and troubleshooting.

An example is shown in the table below. In this example, a separate power cable is shown. In installations where a 6-pair branch cable is used, power and communications are usually combined in one cable.

A blank copy of this table is provided for duplication in Appendix A.



*DRAIN WIRE of Solo MVP to WHT of GRN/WHI pair
then at CABINET WHI to Shield of BRANCH CABLE*

Solo System-Wide Interconnections on INTERFACE PANEL

Duplicate the following table to keep track of all Solo MVP connections:

Solo MVP _____ <small>(write in sensor number)</small>			Branch Power Cable <small>(write in wire color)</small>	Branch Communications Cable <small>(write in wire color)</small>			Communications Interface Panel	
PIN	PAIR COLOR	WIRE COLOR	WIRE COLOR	PAIR	PAIR COLOR	WIRE COLOR	SIGNAL	TERMINAL
A	BRN/BLK	* BRN *	BRN		BRN/WHI	BRN	24V PWR	1
B	BRN/BLK	* BLK *	WHI		BRN/WHI	WHI	24V RTN	2
N	---	* GRN/YEL *	GRN		GRN/WHI	GRN	EARTH GND	3
P	BLU/BLK	BLU	BLU	1	BLU/WHI	BLU	SUP RX+	4
U	BLU/BLK	BLK	WHT	1	BLU/WHI	WHI	SUP RX-	5
D	RED/BLK	RED	RED	2	RED/BLU	RED	SUP TX+	6
R	RED/BLK	BLK	BLU	2	RED/BLU	BLU	SUP TX-	7
F	YEL/BLK	YEL	ORG	3	ORG/WHI	ORG	DET+	8
E	YEL/BLK	BLK	WHT	3	ORG/WHI	WHI	DET-	9
J	WHI/BLK	WHI	GREY	4	GREY/WHI	GREY	VIDEO+	10
H	WHI/BLK	BLK	WHT	4	GREY/WHI	WHI	VIDEO-	11

* IS SEPARATE POWER FEED
BRN - BLK
BLK - WHT

Mini-Hub II Detector Port Master Front Panel Input/Output Pin Assignment

The Mini-Hub II has inputs and outputs available through the front panel Input/ Output connector and through the back edge connector. The pin assignments for the Mini-Hub II front connector are listed in the following table. Edge connector pins are identified by NUMBER on the component (front) side of the board. Edge connector pins are identified by LETTER on the backside of board.

am #	Mini-Hub II conn.	Edge conn.	Front Harness	Description	D-Conn. Term #	D-Conn. Detector Descript.	On Print Detector number	Phase
1	Output 1 LED	F	1	Meijer's/Lowes Dr L	7	Det 15	7	4
1	Output 2 LED	W	14	Meijer's/Lowes Dr R	8	Det 16	8	4
2	Output 3 LED	S	2	SB Rochester LT	9	Det 17	9	2
3	Output 4 LED	Y	15	SB Rochester L	10	Det 18	10	2
3	Output 5 LED	(JP1)4	3	SB Rochester R	11	Det 19	11	2
	Output 6 LED	(JP7)5	16					
	Output 7 LED	(JP2)8	4					
	Output 8 LED	(JP8)9	17					
	Output 9 LED	(JP3)13	5					
	Output 10 LED	(JP9)14	18					
	Output 11 LED	(JP4)17	6					
	Output 12 LED	(JP10)18	19					
	Output 13 LED		7					
	Output 14 LED		20					
	Output 15 LED		8					
	Output 16 LED		21					
	Input 1 LED	(JP5)1	9					
	Input 2 LED	(JP11)2	22	LS 2 Red (C30)				
	Input 3 LED	(JP6)3	10					
	Input 4 LED	(JP12)10	23	LS 4 Red (C36)				
	Input 5 LED		11					
	Input 6 LED		24					
	Input 7 LED		12					
	Input 8 LED	(with JP14*)	25					

*Input 8 with JP14 inserted becomes 24VDC through Input/ Output Connector on front panel.
Logic Ground is the GREY (pin 13) wire form Input/ Output connector on front panel.

Chapter 5

Connecting Solo MVP Power and Communications Cables

Usually, the Solo cable (the "pigtail" cable from the Solo MVP) is spliced to a Branch Cable, either in a junction box or in the hand-hole at the pole base. The Branch cable runs from the splice point to the cabinet, and terminates to the ACIP. Use the chart below (copy the blank table provided in Appendix A) to record which pairs of the Solo cable are spliced to the Branch cable pairs. For Branch cable lengths of 300 ft or less, a separate cable to power the Solo Pro is not normally necessary.

Be sure to use splicing methods and materials appropriate for low voltage communications splicing. When splicing is completed, properly seal the splice.

When the branch cables are brought into the cabinet, label each cable, starting with cable 1 from the Solo MVP viewing Phases 2 and 5, and working clockwise around the intersection, labeling cables 2, 3, and 4.

Terminate the cables to the ACIP in the same order. Taking care to assign the Sensor numbers (in the Autoscope Properties Editor) in the same order as the cables are terminated will facilitate easier maintenance and troubleshooting.

An example is shown in the table below. In this example, a separate power cable is shown. In installations where a 6-pair branch cable is used, power and communications are usually combined in one cable.

A blank copy of this table is provided for duplication in Appendix A.



*DRAIN WIRE of Solo MVP to WHT of BRN/WHT pair
then at CABINET WHT to shield of BRANCH CABLE*

Solo System-Wide Interconnections

Ind to Ground Lug on INTERFACE PANEL.

Duplicate the following table to keep track of all Solo MVP connections:

Solo MVP _____ <small>(code in sensor number)</small>			Branch Power Cable <small>(code in wire color)</small>	Branch Communications Cable <small>(code in wire color)</small>			Communications Interface Panel	
PIN	PAIR COLOR	WIRE COLOR	WIRE COLOR	PAIR	PAIR COLOR	WIRE COLOR	SIGNAL	TERMINAL
A	BRN/BLK	* BRN *	BRN		BRN/WHT	BRN	24V PWR	1
B	BRN/BLK	* BLK *	WHT		BRN/WHT	WHT	24V RTN	2
N	—	* GRN/YEL *	GRN		GRN/WHT	GRN	EARTH GND	3
P	BLU/BLK	BLU	BLU	1	BLU/WHT	BLU	SUP RX+	4
U	BLU/BLK	BLK	WHT	1	BLU/WHT	WHT	SUP RX-	5
D	RED/BLK	RED	RED	2	RED/BLU	RED	SUP TX+	6
R	RED/BLK	BLK	BLU	2	RED/BLU	BLU	SUP TX-	7
F	YEL/BLK	YEL	ORG	3	ORG/WHT	ORG	DET+	8
E	YEL/BLK	BLK	WHT	3	ORG/WHT	WHT	DET-	9
J	WHT/BLK	WHT	GREY	4	GREY/WHT	GREY	VIDEO+	10
H	WHT/BLK	BLK	WHT	4	GREY/WHT	WHT	VIDEO-	11

* IS SEPARATE POWER FEED
BRN — BLK
BLK — WHT

OAKLAND COUNTY ROAD COMMISSION
TRAFFIC - SAFETY DEPARTMENT
SIGNAL WORK ORDER

LOCATION: Auburn & Rochester DATE: 3/21/18

CITY/TOWNSHIP: Rochester Hills BY: Dawn Bierlein

COUNTY#: 13201 STATE#: _____ CHARGES: 78 013201 0

PLEASE PERFORM THE FOLLOWING:

_____ ELECTRICAL DEVICE: _____ INSTALL _____ MODERNIZE _____ MAINTENANCE

_____ UNDERGROUND: _____

_____ EDISON OK: _____ YES _____ NO JOB#: _____

_____ COORDINATE W/DISTRICT 7: _____

OAKLAND COUNTY
 APR 10 2018
 TRAFFIC DEPARTMENT

DIAL..	1	1	1	1		2	2	2	2		3	3	3	3		4	4	4	4
SPLIT.	1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4
_____ CHANGE TIMING.....																			
_____ CHANGE OFFSET.....																			
_____ CHANGE CYCLE LENGTH.....																			
_____ ADD DIAL/SPLIT.....																			

_____ CHANGE BREAKOUT OR EPROM: _____

_____ CHANGE HOURS OF OPERATION:

OLD: _____

NEW: _____

_____ REPROGRAM TBC

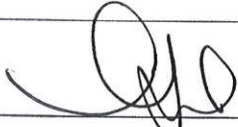
_____ INSTALL INTERCONNECT: _____ TBC _____ MINITROL _____ TONE

_____ MBT OK: _____ YES _____ NO

_____ NO CHANGE - RECORD CORRECTION

X OTHER: ^{HOOK UP} ~~XXXX~~ detector 20 (EB Auburn RT (Backpanel VD4 - 131)) PER PAPERWORK

(Requires a checksum change) (Rev 2). _____

APPROVED BY:  DATE: 3/29/18

DATE INSTALLED: 4/5/18

INSTALLED BY: JAMES OBERATS

INTERSECTION :- 13201 Rochester & Auburn
DESCRIPTION PROMS :- X00020R / F4808
CONTROLLER TYPE :- STANDARD PERSONALITY CONTROLLER
SOFTWARE TYPE :- MOD 52 SCATS
PHYSICAL INPUTS :-

INPUTS :-

- | | |
|-----------------------------|-----------------------|
| 1. NB ROCHESTER LT(LK) | |
| 2. NB ROCHESTER LT ADV(LK) | |
| 3. NB ROCHESTER L (LK) | |
| 4. NB ROCHESTER C (LK) | |
| 5. NB ROCHESTER RT(NL) | |
| 6. WB AUBURN LT (LK) | |
| 7. WB AUBURN LT ADV(LK) | |
| 8. WB AUBURN RD L (LK) | |
| 9. WB AUBURN RD C (LK) | |
| 10. WB AUBURN RD RT(NL) | |
| 11. SB ROCHESTER LT(LK) | |
| 12. SB ROCHESTER LT ADV(LK) | |
| 13. SB ROCHESTER L (LK) | |
| 14. SB ROCHESTER C (LK) | |
| 15. SB ROCHESTER RT(NL) | |
| 16. EB AUBURN LT (LK) | |
| 17. EB AUBURN LT ADV(LK) | (BACKPANEL VD1 - 101) |
| 18. EB AUBURN L (LK) | (BACKPANEL VD2 - 109) |
| 19. EB AUBURN R (LK) | (BACKPANEL VD3 - 123) |
| 20. EB AUBURN RT (NL) | (BACKPANEL VD4 - 131) |
- Note: All detectors are Autoscope 2004
- PED 2: NB ROCHESTER PED (EAST LEG) P.B
PED 4: WB Auburn PED (NORTH LEG) P.B.
PED 6: SB ROCHESTER PED (WEST LEG) P.B.
PED 8: EB Auburn PED (SOUTH LEG) P.B.

APPROACHES :-

- | | |
|----------------------------|----------------------------|
| A APPR 1 : SB ROCHESTER | A APPR 2 : NB ROCHESTER |
| B APPR 1 : EB Auburn LT | B APPR 2 : WB Auburn LT |
| B APPR 3 : EB Auburn | B APPR 4 : WB Auburn |
| C APPR 1 : EB Auburn | C APPR 2 : WB Auburn |
| D APPR 1 : SB ROCHESTER LT | D APPR 2 : NB ROCHESTER LT |
| D APPR 3 : NB ROCHESTER | D APPR 4 : SB ROCHESTER |

FLEXIDATA:-

SEQUENCE	A, B, C, D	A, B, C, D
AUTO REL		
R- REL	A	A
R+ REL	B	B
Q- REL	C	C
Q+ REL	D	D
LOOKAHEAD		

PEDESTRIANS:-

1. -
2. NB ROCHESTER PED (EAST LEG) P.B.
3. -
4. WB Auburn PED (NORTH LEG) P.B.
5. -
6. SB ROCHESTER PED (WEST LEG) P.B.
7. -
8. EB Auburn PED (SOUTH LEG) P.B.

SPECIAL FEATURES :-

The personality revision number is currently 2 (=B)
A STAGE HAS A PERMANENT DEMAND
DEMAND FOR STAGES B, C, D IN FLEXI AND ISOLATED. SET XSF8 TO DISABLE.
Night Flash code: Set Y+ to activate the night flash in Flexilink

SCATS XSF BIT1 ignores demand for vg 1 so holds SB LT signal red.
SCATS XSF BIT2 ignores demand for vg 3 so holds EB LT signal red.
SCATS XSF BIT3 ignores demand for vg 5 so holds NB LT signal red.
SCATS XSF BIT4 ignores demand for vg 7 so holds WB LT signal red.

IN MASTERLINK AND FLEXILINK:

Z- ON CAUSES D1 TURN TO APPEAR AND HOLD IN D STAGE
Z+ ON CAUSES D2 TURN TO APPEAR AND HOLD IN D STAGE
Z- & Z+ ON CAUSES BOTH TURNS TO APPEAR AND HOLD IN D
B1-C O/L OR B2-C O/L MAY APPEAR IN B1 OR B2 RESPECTIVELY
HOWEVER IF THE OVERLAP TERMINATES IN B THEN THE C AMBER
AND C RED TIMES ARE USED FOR B STAGE

Set BT = nS in SCATS data to enable Z5 flag in B stage to C.
This allows termination of o/lap phase minimum timer if the
appropriate phase o/lap is to occur and C is next, otherwise
phase minimum is guaranteed by phase minimum timer.

Backpanel for size P44-16 cabinet:

Load Switch 1:	SB Rochester LT	CL	FLR
Load Switch 2:	NB Rochester	A	FLR
Load Switch 3:	EB Auburn LT	DL	FLR
Load Switch 4:	WB Auburn	B	FLR
Load Switch 5:	NB Rochester LT	AL	FLR
Load Switch 6:	SB Rochester	C	FLR
Load Switch 7:	WB Auburn LT	BL	FLR
Load Switch 8:	EB Auburn	B	FLR
Load Switch 9:	NB Rochester Ped (East Leg)	WA	
Load Switch 10:	WB Auburn Ped (North Leg)	WB	
Load Switch 11:	SB Rochester Ped (West Leg)	WC	
Load Switch 12:	EB Auburn Ped (South Leg)	WD	

Jumpers:

189-190, 191-192, 193-194, 195-196, 197-198, 199-200, 201-202, 207-208,
211-212, 213-214, 215-216, 217-218, 219-220, 221-222, 223-224, 229-230,
233-234, 235-236, 237-238, 239-240, 241-242, 243-244, 245-246, 251-252,
255-256, 257-258, 259-260, 261-262, 263-264, 265-266, 267-268, 273-274,
298-302, 321-322, 323-324, 325-326, 327-328, 329-PB1, 334-335, 343-344,
345-346, 347-348, 349-350, 351-PB1, 356-357, 365-366, 367-368, 369-370,
371-372, 373-PB1, 378-379, 387-388, 389-390, 391-392, 393-394, 395-PB1,
400-401.

MMU: (MENU : SET/VIEW CONFIG)

Dual Indication Enable: R+G: Channel 1, 2, 3, 4, 5, 6, 7, 8
R+Y: Channel 1, 2, 3, 4, 5, 6, 7, 8
G+Y: Channel 1, 2, 3, 4, 5, 6, 7, 8

Red Fail Enable: Enable: Channel 1, 2, 3, 4, 5, 6, 7, 8

Unit Options: All OFF except:
Recurrent pulse
Program Memory Card

Y & R Clearance Disable: Channel 1, 2, 3, 4, 5, 6, 7, 8 Enabled

Program Card: Compatible Channels: 1-5, 1-6, 2-5, 2-6, 3-7,
3-8, 4-7, 4-8.
Min Flash Time: 4+2+1
Min Yellow Change Disable: None
Voltage Monitor Latch: NONE

* CONTROLLER INFORMATION SHEET *	* CHECKSUMS:
* FOR SITE NO. 13201 *	* TIMES: EC/354
* Dawn Bierlein *	* PERS: A6/246
* DATE : 21-MAR-2018 *	* TOTAL: 4A/112

FLEXILINK PLAN DATA

Intersection # 13201 State # 63132-01-001 Date: 03/21/18 Prepared By: Dawn Bierlein

Intersection: Auburn & Rochester Road City: Rochester Hills

Hours of Operation: 7 Days: 24 hrs Approved By: R Jones

Hours of Flashing: None

		PL0	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8
0	CL		100	140	140					
1	A		0	0	0					
2	B		42	76	64					
3	C		63	102	91					
4	D		81	125	121					
5	E									
6	F									
7	G									
8	R-									
9	R+									
10	Of (Y-)		0	0	0					
11	Y+	C								
12	Z-									
13	Z+									
14	Q-									
15	Q+									
16	XH									
17	XL									

NOTE: Stages with 1 second of phase time are skipped. Blank entries are default values equal to 0. Except for an AWA controller, entries #8 to #15 (=254) and 'C' entry means continuous (=255).

Phase	Direction	Min	Max	ECO	Amber	All Red	Timers		
							Gap	Hdwy	Waste
A	Rochester	10.0	40.0		4.7	1.9	3.0	1.2	10.0
B	Auburn LT	4.0	12.0		4.3	2.3	3.2	1.2	10.0
C	Auburn THRU	10.0	20.0		4.3	2.3	3.0	1.2	10.0
D	Rochester LT	4.0	12.0		4.7	1.9	3.2	1.2	10.0
E									
F									
G									

	Day	Hours	Plan#
SC1	14	0:00	1
SC2	8	6:00	2
SC3	8	10:00	1
SC4	8	14:00	3
SC5	8	19:00	1
SC6			
SC7			
SC8			
SC9			
SC10			

Pedestrian Crossing Times

Direction	Walk	CL 1	CL 2
NB Rochester Eleg PED	7.0	18.0	4.7
WB Auburn Nleg PED	7.0	23.0	4.3
SB Rochester Wleg PED	7.0	12.0	4.7
EB Auburn Sleg PED	7.0	17.0	4.3

Normal Operating Mode

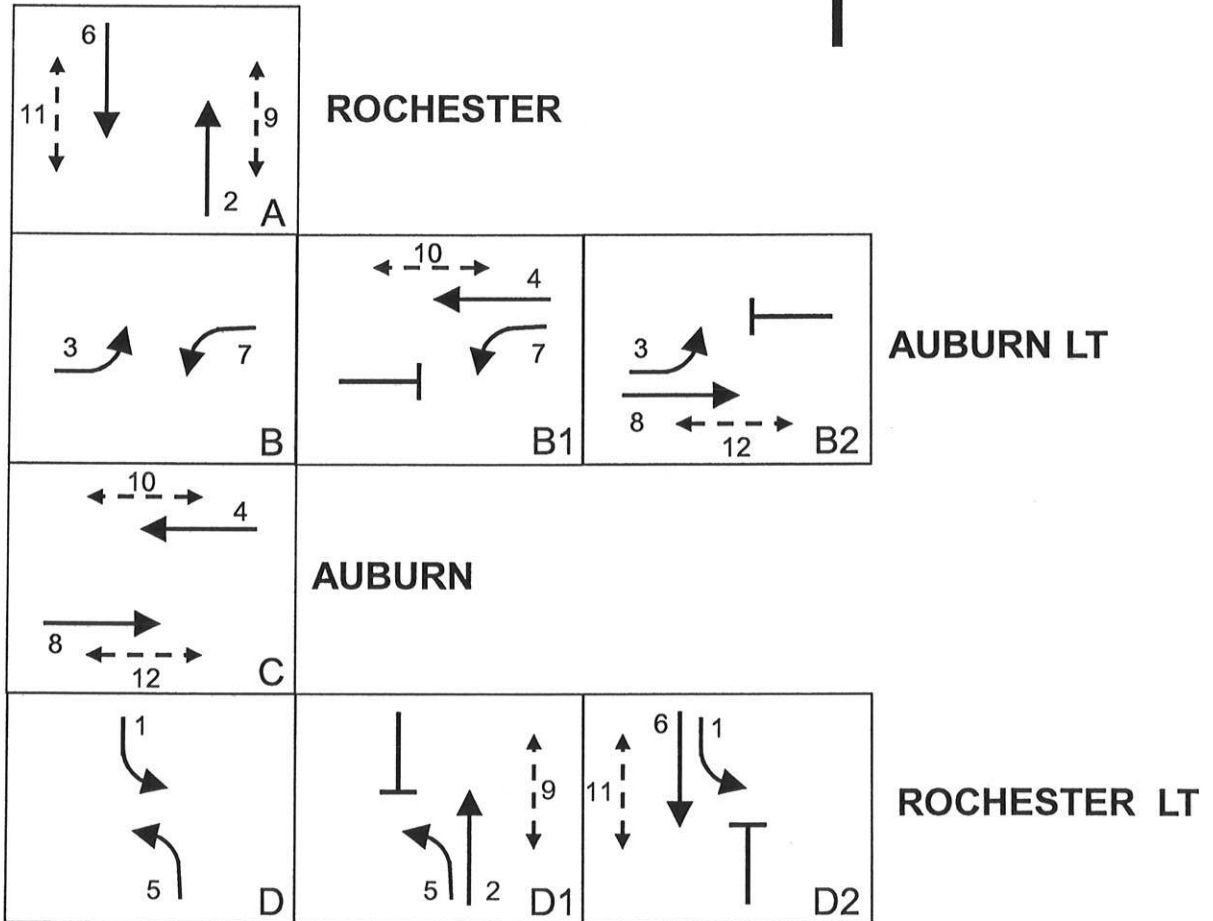
Isolated	Flexilink	Masterlink	Master Isolated	Flexi Isolated
		X		

DAY OF WEEK CODE NUMBER

0	End of Schedule	4	WED	8	MON-FRI	12	MON,FRI,SAT
1	SUN	5	THUR	9	MON-SAT	13	SAT,SUN
2	MON	6	FRI	10	TUE,WED,THU	14	EVERY DAY
3	TUE	7	SAT	11	MON,FRI	15	NEVER

#13201 – AUBURN & ROCHESTER

• Movement Diagram



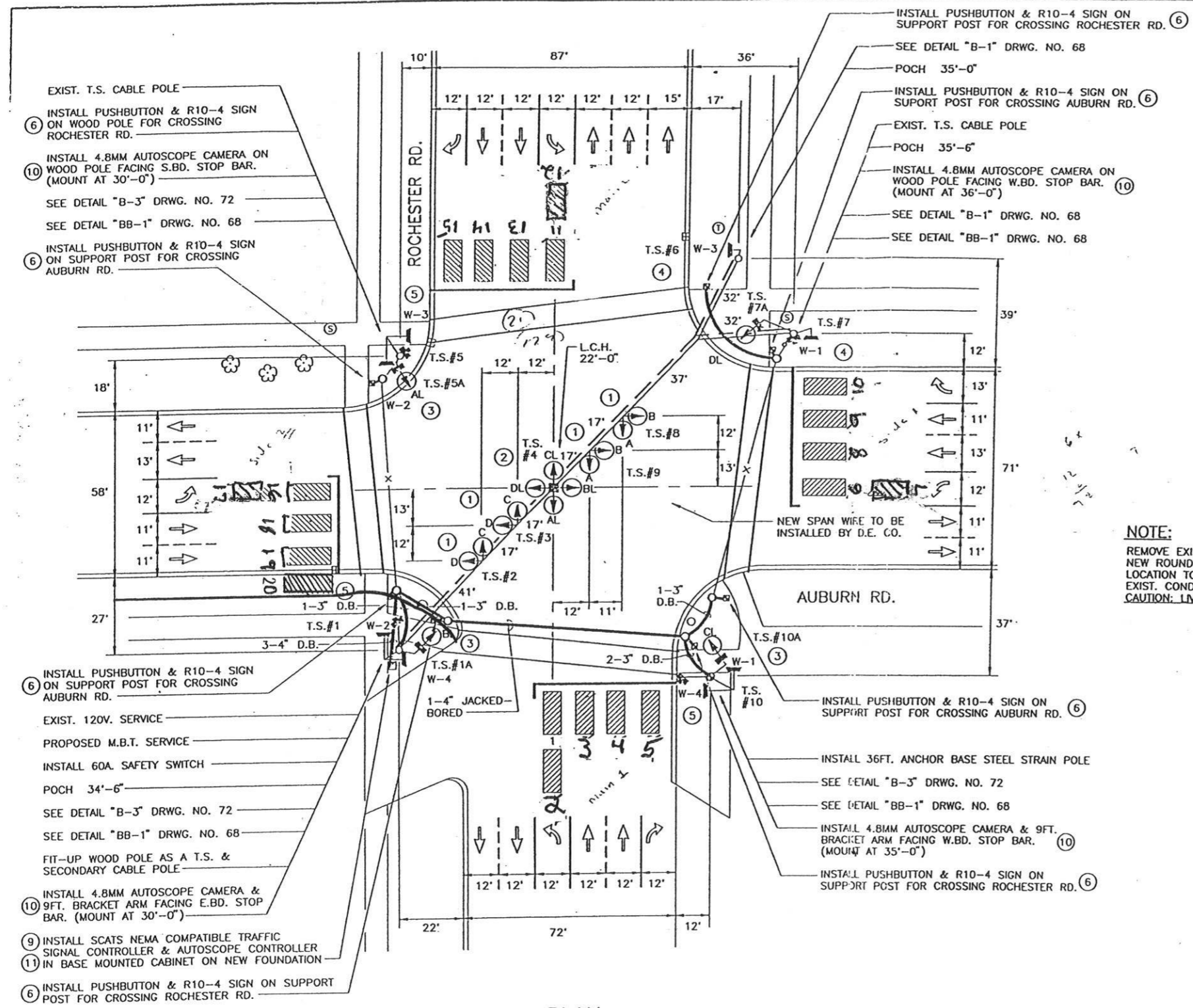
Autoscope 37-Pin Male Output Harness (33457G2) Wiring

Autoscope Output Harness Pins #1 & #20 to Logic Common & Pins #18 & # 37 to +24 VDC

Camera Number	EIM Switch Position	EIM LED#	Output Harness Pin#	D-Conn Pin (1,2,...)	Vehicle Detector No.		Detector Description	Phase No. (1,2,3,...)
					D-Conn format (9,10,...)	On Print (1,2,...)		
1	1	1	29	1	9	1	NB Rochester LT	5
	1	2	30	2	10	2	NB Rochester LT ADV	5
	1	3	31	3	11	3	NB Rochester L	2
	1	4	32	4	12	4	NB Rochester R	2
	1	5	33	5	13	5	NB Rochester RT	2
	1	6	34					
	1	7	35					
	1	8	36					
2	2	1	10	6	14	6	WB Auburn LT	7
	2	2	11	7	15	7	WB Auburn LT ADV	7
	2	3	12	8	16	8	WB Auburn L	4
	2	4	13	9	17	9	WB Auburn R	4
	2	5	14	10	18	10	WB Auburn RT	4
	2	6	15					
	2	7	16					
	2	8	17					
3	3	1	21	11	19	11	SB Rochester LT	1
	3	2	22	12	20	12	SB Rochester LT ADV	1
	3	3	23	13	21	13	SB Rochester L	6
	3	4	24	14	22	14	SB Rochester R	6
	3	5	25	15	23	15	SB Rochester RT	6
	3	6	26					
	3	7	27					
	3	8	28					
4	4	1	2	16	24	16	EB Auburn LT	3
	4	2	3	17	(VD1 - 101)	17	EB Auburn LT ADV	3
	4	3	4	18	(VD2 - 109)	18	EB Auburn L	8
	4	4	5	19	(VD3 - 123)	19	EB Auburn R	8
	4	5	6	20	(VD4 - 131)	20	EB Auburn RT	8
	4	6	7					
	4	7	8					
	4	8	9					

Autoscope 37-Pin Female Input Harness (33457G3) Wiring

EIM Switch Position	EIM LED#	Input Harness Pin#	Phase Status Input From +24 VDC	Backpanel Terminal Position and Number
5	1	29	Phase 8 Green	LS 8 Green (180)
5	1	30	Phase 7 Green	LS 7 Green (177)
5	1	31	Phase 6 Green	LS 6 Green (174)
5	1	32	Phase 5 Green	LS 5 Green (171)
5	1	33	Phase 4 Green	LS 4 Green (168)
5	1	34	Phase 3 Green	LS 3 Green (165)
5	1	35	Phase 2 Green	LS 2 Green (162)
5	1	36	Phase 1 Green	LS 1 Green (159)
6	2	10	Phase 8 Red	LS 8 Red (178)
6	2	11	Phase 7 Red	LS 7 Red (175)
6	2	12	Phase 6 Red	LS 6 Red (172)
6	2	13	Phase 5 Red	LS 5 Red (169)
6	2	14	Phase 4 Red	LS 4 Red (166)
6	2	15	Phase 3 Red	LS 3 Red (163)
6	2	16	Phase 2 Red	LS 2 Red (160)
6	2	17	Phase 1 Red	LS 1 Red (157)



LIST OF MATERIALS			
NO.	ITEM	QUANTITIES	CODE NO.
(1)	2-WAY SPAN WIRE MOUNTED T.S.	4 EACH	6910241
(2)	4-WAY SPAN WIRE MOUNTED T.S.	1 EACH	6910245
(3)	1-WAY BRACKET ARM MOUNTED T.S.	4 EACH	6910251
(4)	1-WAY BRACKET ARM MOUNTED PEDESTRIAN T.S.	2 EACH	6910255
(5)	2-WAY BRACKET ARM MOUNTED PEDESTRIAN T.S.	3 EACH	6910257
(6)	PUSHBUTTON & SIGN	8 EACH	6910267
(7)	ONE-WAY CASE SIGN, 12"X27"	4 EACH	6910300
(8)	FOUR-WAY CASE SIGN, 12"X27"	1 EACH	6910302
(9)	SOLID STATE ACTUATED CONTROLLER & CABINET	1 EACH	6910337
(10)	AUTOSCOPE CAMERA	4 EACH	6917340
(11)	AUTOSCOPE CONTROLLER	1 EACH	6917341
DIRECT BURIAL CONDUIT, 1-1/4" D.B.		90 LIN. FT.	6910351
DIRECT BURIAL CONDUIT, 1-3"		60 LIN. FT.	6900062
DIRECT BURIAL CONDUIT, 2-3"		30 LIN. FT.	6900065
DIRECT BURIAL CONDUIT, 3-4"		25 LIN. FT.	6907061
JACKED-BORED CONDUIT		80 LIN. FT.	6910368
HANDHOLE (ROUND)		6 EACH	6910369
FIT-UP WOOD POLE AS A T.S. & SECONDARY CABLE POLE		1 EACH	6910403
ANCHOR BASE STEEL STRAIN POLE, 36FT.		1 EACH	6910424
ANCHOR BASE STEEL STRAIN POLE FOUNDATION		1 EACH	6910426
BASE MOUNT CONTROLLER FOUNDATION		1 EACH	6910427
SAFETY SWITCH		1 EACH	6910458
CLAMP-ON BRACKET ARM, 9FT.		2 EACH	6917410
PUSHBUTTON SUPPORT		7 EACH	6917285
600V., 1-2/C#4 SECONDARY CABLE		70 LIN. FT.	6910470
REMOVE HANDHOLE		4 EACH	6910176

NOTE:
REMOVE EXIST. HANDHOLE (4) & BUILD NEW ROUND HANDHOLE (4) IN SAME LOCATION TO ACCOMMODATE NEW & EXIST. CONDUIT, AS SHOWN ON PLANS. CAUTION: LIVE CABLES!!

INSTALL PIPE EXTENSIONS AS SHOWN:
T.S./2 = 46" PIPE EXTENSION
T.S./3 = 18" PIPE EXTENSION
T.S./8 = 26" PIPE EXTENSION
T.S./9 = 8" PIPE EXTENSION

MOVEMENT DIAGRAM

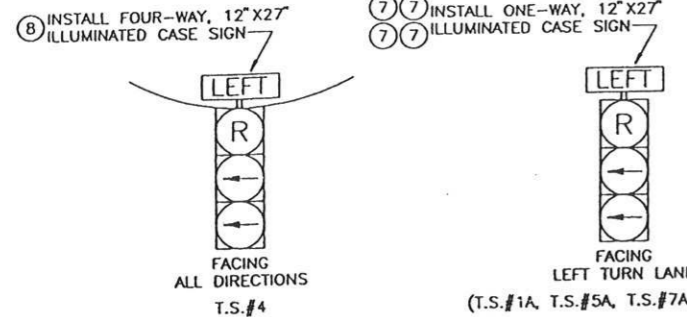
(A) STAGE	(B) STAGE	(C) STAGE	(D) STAGE ALTERNATIVES	
			(D1)	(D2)
V1 / V2	V1 / V3	V2 / V4	V7 / V8	V7 / V5
				V6 / V8

STAGE ALTERNATIVES	
(A1)	(B2)
V7 / V5	V8 / V6

PLAN

SCALE: 1"=20"

NOTE:
1. USE 1-1/4" DIRECT BURIAL CONDUIT FOR PUSHBUTTON CABLE TO SUPPORT POST.



LOAD	AMPS	WATTS
SIGNALS	0	0
CASE SIGNS	0	0

TRAFFIC-SAFETY DEPARTMENT

M.D.O.T. PLAN NO. 63132-01-00
AUBURN RD. & ROCHESTER RD.
CO. 13201
ATS 11

ASSOCIATE CONSULTANT
MANSELL ASSOCIATES INC.
ENGINEERING CONSULTANTS

32560 Grand River Farmington, NH 06036
(313) 473-7070

DATE: 12-22-93
DRAWN BY: MAJ
APPROVED: /
M1345A

Search...

Crash and Road Data

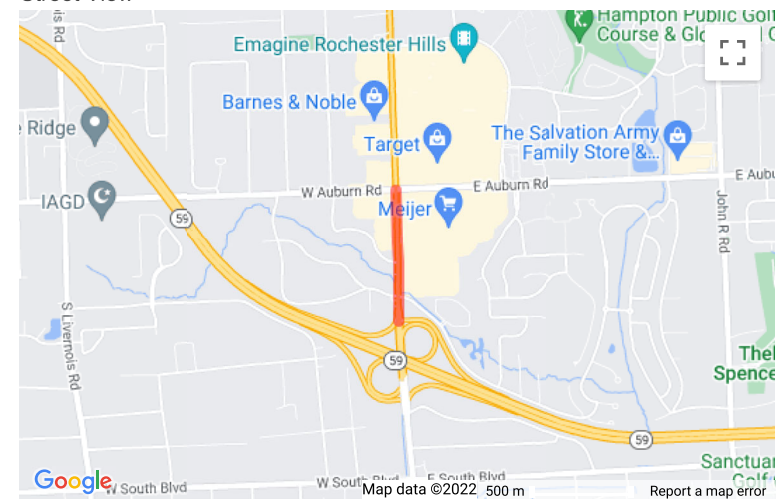
Road Segment Report

Rochester Rd S, (PR Number 4413538)

From:	S M 150/W M 59 Ramp 9.295 BMP
To:	Auburn Rd E 9.708 EMP
FALINK ID:	18373
Community:	City of Rochester Hills
County:	Oakland
Functional Class:	3 - Other Principal Arterial
Direction:	2 Way
Length:	0.413 miles
Number of Lanes:	5
Posted Speed:	50 (source: TCO)
Route Classification:	Not a route
Annual Crash Average 2016-2020:	<u>60</u>
Traffic Volume (2018)*:	44,400 (Observed AADT)
Pavement Type (2021):	Asphalt
Pavement Rating (2021):	Fair
Short Range (TIP) Projects:	No TIP projects for this segment.
Long Range (RTP) Projects:	No long-range projects for this segment.

* AADT values are derived from **Traffic Counts**

Street View



Search...

Crash and Road Data

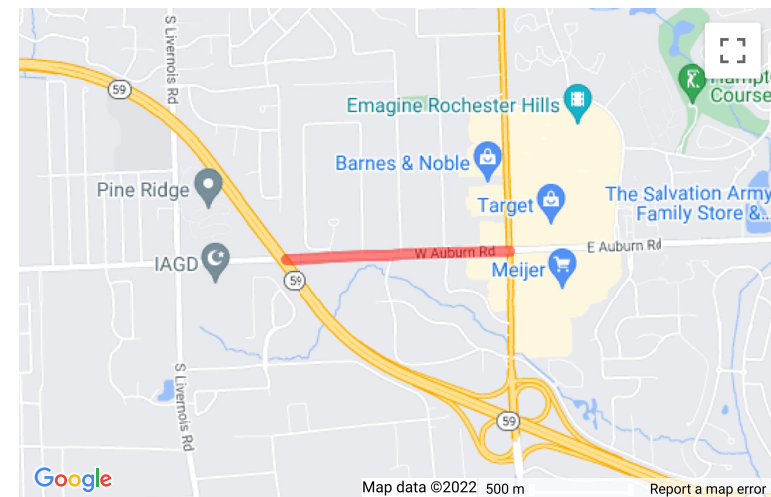
Road Segment Report

Auburn Rd W, (PR Number 625105)

From:	W M 59 7.443 BMP
To:	Rochester Rd S 8.145 EMP
FALINK ID:	524
Community:	City of Rochester Hills
County:	Oakland
Functional Class:	4 - Minor Arterial
Direction:	2 Way
Length:	0.702 miles
Number of Lanes:	2
Posted Speed:	45 (source: TCO)
Route Classification:	Not a route
Annual Crash Average 2016-2020:	<u>24</u>
Traffic Volume (2018)*:	15,200 (Observed AADT)
Pavement Type (2021):	Asphalt
Pavement Rating (2021):	Fair
Short Range (TIP) Projects:	No TIP projects for this segment.
Long Range (RTP) Projects:	No long-range projects for this segment.

* AADT values are derived from [Traffic Counts](#)

Street View



Search...

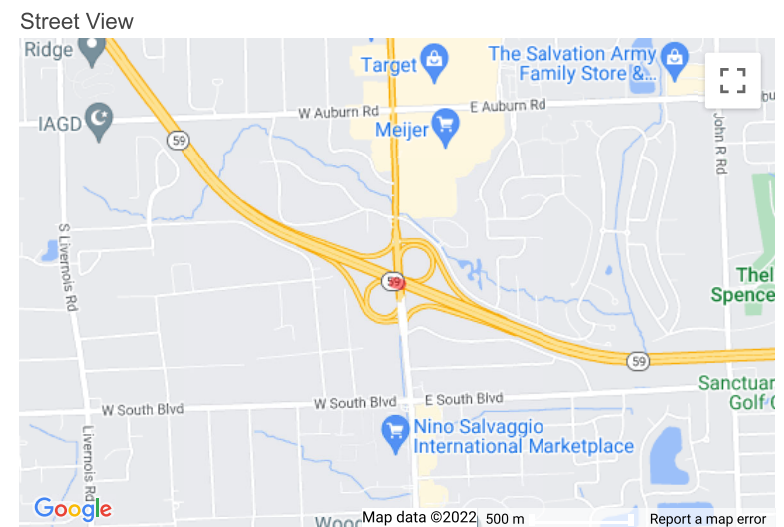
Crash and Road Data

Road Segment Report

E M 59, (PR Number 648906)

From:	S M 150/E M 59 Ramp 29.747 BMP
To:	Rochester Rd S 29.766 EMP
FALINK ID:	1816
Community:	City of Rochester Hills
County:	Oakland
Functional Class:	2 - Other Freeway
Direction:	1 Way
Length:	0.019 miles
Number of Lanes:	3
Posted Speed:	65 (source: TCO)
Route Classification:	Not a route
Annual Crash Average 2016-2020:	<u>1</u>
Traffic Volume (2018)*:	39,300 (Interpolated AADT)
Pavement Type (2021):	Concrete
Pavement Rating (2021):	Good
Short Range (TIP) Projects:	No TIP projects for this segment.
Long Range (RTP) Projects:	No long-range projects for this segment.

* AADT values are derived from **Traffic Counts**



Search...

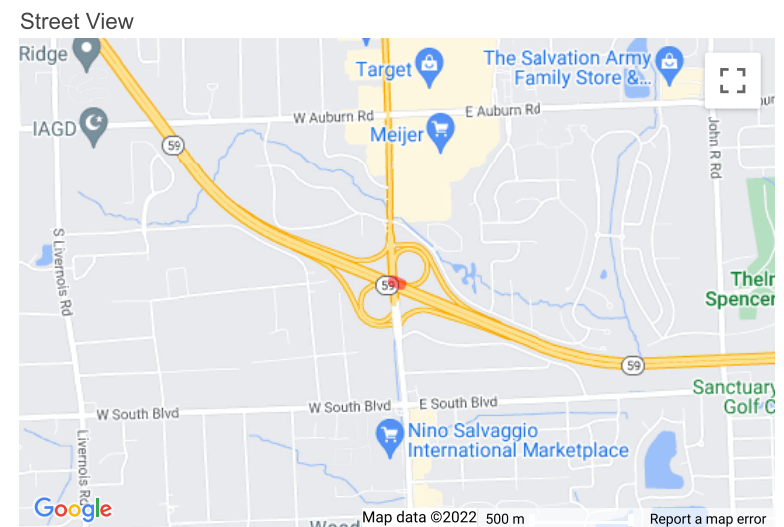
Crash and Road Data

Road Segment Report

W M 59, (PR Number 677208)

From:	Rochester Rd S 8.215 BMP
To:	N M 150/W M 59 Ramp 8.235 EMP
FALINK ID:	2581
Community:	City of Rochester Hills
County:	Oakland
Functional Class:	2 - Other Freeway
Direction:	1 Way
Length:	0.020 miles
Number of Lanes:	3
Posted Speed:	65 (source: TCO)
Route Classification:	Not a route
Annual Crash Average 2016-2020:	<u>1</u>
Traffic Volume (2016)*:	37,900 (Observed AADT)
Pavement Type (2021):	Concrete
Pavement Rating (2021):	Good
Short Range (TIP) Projects:	No TIP projects for this segment.
Long Range (RTP) Projects:	No long-range projects for this segment.

* AADT values are derived from **Traffic Counts**



Community Profiles

YOU ARE VIEWING DATA FOR:

City of Rochester Hills

1000 Rochester Hills Dr
Rochester Hills, MI
48309-3033
<https://www.rochesterhills.org/>



Census 2020 Population:
76,300
Area: 32.9 square miles

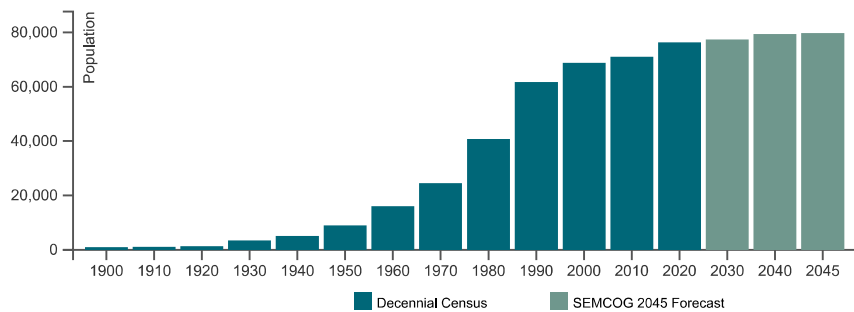
[VIEW COMMUNITY EXPLORER MAP](#)

[VIEW 2020 CENSUS MAP](#)

Population and Households

Link to American Community Survey (ACS) Profiles: **Select a Year** **Social | Demographic**
Population and Household Estimates for Southeast Michigan, 2021

Population Forecast



Note for City of Rochester Hills : Incorporated in 1984 from Avon Charter Township. Population numbers prior to 1984 are of the township.

Population and Households

Population and Households	Census 2020	Census 2010	Change 2010-2020	Pct Change 2010-2020	SEMCOG Jul 2021	SEMCOG 2045
Total Population	76,300	70,995	5,305	7.5%	76,909	79,709
Group Quarters Population	1,280	1,181	99	8.4%	1,280	1,494
Household Population	75,020	69,814	5,206	7.5%	75,629	78,215
Housing Units	31,208	29,494	1,714	5.8%	31,359	-
Households (Occupied Units)	29,711	27,578	2,133	7.7%	29,962	32,471
Residential Vacancy Rate	4.8%	6.5%	-1.7%	-	4.5%	-
Average Household Size	2.52	2.53	-0.01	-	2.52	2.41

Source: U.S. Census Bureau and SEMCOG 2045 Regional Development Forecast

Components of Population Change

Components of Population Change	2000-2005 Avg.	2006-2010 Avg.	2011-2018 Avg.
Natural Increase (Births - Deaths)	384	233	176
Births	950	755	751
Deaths	566	522	575
Net Migration (Movement In - Movement Out)	-368	185	269
Population Change (Natural Increase + Net Migration)	16	418	445

Source: Michigan Department of Community Health Vital Statistics, U.S. Census Bureau, and SEMCOG

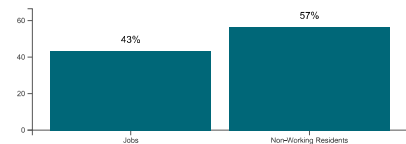
Forecasted Jobs by Industry Sector

Forecasted Jobs By Industry Sector	2015	2020	2025	2030	2035	2040	2045	Change 2015-2045	Pct Change 2015-2045
Natural Resources, Mining, & Construction	1,755	2,005	1,907	1,886	1,911	1,938	1,967	212	12.1%
Manufacturing	5,018	4,705	4,429	4,098	3,886	3,704	3,505	-1,513	-30.2%
Wholesale Trade	1,437	1,484	1,482	1,465	1,465	1,464	1,454	17	1.2%
Retail Trade	6,186	6,284	5,952	5,927	5,740	5,662	5,599	-587	-9.5%
Transportation, Warehousing, & Utilities	699	723	721	719	730	743	756	57	8.2%
Information & Financial Activities	3,877	4,008	3,960	3,911	3,955	3,973	3,952	75	1.9%
Professional and Technical Services & Corporate HQ	3,552	3,647	3,850	4,080	4,551	5,061	5,412	1,860	52.4%
Administrative, Support, & Waste Services	3,708	3,835	3,885	3,906	3,992	4,080	4,134	426	11.5%
Education Services	2,261	2,377	2,375	2,363	2,389	2,419	2,449	188	8.3%
Healthcare Services	6,774	7,303	7,578	7,758	8,230	8,705	9,124	2,350	34.7%
Leisure & Hospitality	3,951	4,433	4,527	4,572	4,660	4,776	4,818	867	21.9%
Other Services	1,982	2,041	1,993	1,956	1,950	1,937	1,910	-72	-3.6%
Public Administration	359	361	359	354	354	351	351	-8	-2.2%
Total Employment Numbers	41,559	43,206	43,018	42,995	43,813	44,813	45,431	3,872	9.3%

Source: SEMCOG 2045 Regional Development Forecast

Daytime Population

Daytime Population	ACS 2016
Jobs	28,136
Non-Working Residents	36,638
Age 15 and under	14,444
Not in labor force	20,456
Unemployed	1,738
Daytime Population	64,774



Source: 2012-2016 American Community Survey 5-Year Estimates and 2012-2016 Census Transportation Planning Products Program (CTPP). For additional information, visit SEMCOG's [Interactive Commuting Patterns Map](#)

Note: The number of residents attending school outside Southeast Michigan is not available. Likewise, the number of students commuting into Southeast Michigan to attend school is also not known.

Level of Service for Signalized Intersections

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. LOS can be characterized for the entire intersection, each intersection approach, and each lane group. Specifically, level-of-service (LOS) criteria are stated in terms of the average stopped delay per vehicle. The criteria are given in Exhibit 19-8. Delay may be measured in the field or estimated using procedures presented later in this chapter. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

LOS A describes operations with a control delay of 10 s/veh or less. This level is typically assigned when the volume-to-capacity ratio is low and either progression is extremely favorable or the cycle length is very short. If LOS A is the result of favorable progression, most vehicles arrive during a green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

Exhibit 19.8. Level-of-Service Criteria for Signalized Intersections (Motorized Vehicles)

LEVEL OF SERVICE	STOPPED DELAY PER VEHICLE (SEC)
A	≤ 10.0
B	> 10.0 and ≤ 20.0
C	> 20.0 and ≤ 35.0
D	> 35.0 and ≤ 55.0
E	> 55.0 and ≤ 80.0
F	> 80.0

1. If the v/c ratio for a lane group exceeds 1.0, a LOS F is assigned to the individual lane group. LOS for approach-based and intersection-wide assessments are determined solely by the control delay.

LOS C describes operations with control delay between 20 and 35 s/veh. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e. one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicle stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D describes operations with control delay between 35 and 55 s/veh. This level is typically assigned when when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

























LOS E describes operations with control delay between 55 and 80 s/veh. This level is typically assigned when when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level, considered to be unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of the intersection. This level is typically assigned when the volume-to-capacity ratio is high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: Highway Capacity Manual, 6th Edition. Transportation Research Board, National Research Council

HCM 6th Signalized Intersection Summary
 1: Rochester Road (M-150) & Auburn Road

Existing Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	219	124	200	349	82	70	732	114	63	1025	105
Future Volume (veh/h)	141	219	124	200	349	82	70	732	114	63	1025	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1953	1953	1953	1953	1953	1953	1953	1953	1953	1969	1969	1969
Adj Flow Rate, veh/h	158	246	139	213	371	87	88	915	142	66	1079	111
Peak Hour Factor	0.89	0.89	0.89	0.94	0.94	0.94	0.80	0.80	0.80	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	184	373	166	238	479	214	110	1996	890	85	1961	875
Arrive On Green	0.10	0.10	0.10	0.13	0.13	0.13	0.06	0.54	0.54	0.05	0.52	0.52
Sat Flow, veh/h	1860	3711	1655	1860	3711	1655	1860	3711	1655	1875	3741	1668
Grp Volume(v), veh/h	158	246	139	213	371	87	88	915	142	66	1079	111
Grp Sat Flow(s),veh/h/ln	1860	1856	1655	1860	1856	1655	1860	1856	1655	1875	1870	1668
Q Serve(g_s), s	11.7	8.9	11.5	15.8	13.5	6.8	6.5	21.2	6.1	4.9	27.0	4.7
Cycle Q Clear(g_c), s	11.7	8.9	11.5	15.8	13.5	6.8	6.5	21.2	6.1	4.9	27.0	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	184	373	166	238	479	214	110	1996	890	85	1961	875
V/C Ratio(X)	0.86	0.66	0.84	0.90	0.77	0.41	0.80	0.46	0.16	0.77	0.55	0.13
Avail Cap(c_a), veh/h	258	435	194	258	479	214	112	1996	890	113	1961	875
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.1	60.7	61.8	60.1	59.0	56.0	65.1	19.8	16.4	66.1	22.3	17.0
Incr Delay (d2), s/veh	18.1	2.9	23.4	29.3	7.7	1.2	32.5	0.8	0.4	21.2	1.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	4.3	5.8	9.2	6.8	2.9	4.0	8.8	2.3	2.8	11.4	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.3	63.6	85.2	89.5	66.7	57.3	97.5	20.6	16.7	87.3	23.4	17.3
LnGrp LOS	F	E	F	F	E	E	F	C	B	F	C	B
Approach Vol, veh/h		543			671			1145			1256	
Approach Delay, s/veh		74.0			72.7			26.0			26.2	
Approach LOS		E			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	81.9	24.5	20.7	14.9	80.0	20.5	24.7				
Change Period (Y+Rc), s	* 6.6	* 6.6	* 6.6	* 6.6	* 6.6	* 6.6	* 6.6	* 6.6				
Max Green Setting (Gmax), s	* 8.4	* 69	* 19	* 16	* 8.4	* 69	* 19	* 16				
Max Q Clear Time (g_c+I1), s	6.9	23.2	17.8	13.5	8.5	29.0	13.7	15.5				
Green Ext Time (p_c), s	0.0	7.4	0.1	0.5	0.0	8.9	0.2	0.2				
Intersection Summary												
HCM 6th Ctrl Delay			42.0									
HCM 6th LOS			D									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary
 2: Rochester Road (M-150) & Site Drive/Meijer-Lowe's Drive

Existing Conditions
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑	↗	↖	↑↑	
Traffic Volume (veh/h)	1	2	2	56	1	12	6	965	33	23	1364	3
Future Volume (veh/h)	1	2	2	56	1	12	6	965	33	23	1364	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2000	2000	2000	1891	1891	1891	1938	1938	1938	1969	1969	1969
Adj Flow Rate, veh/h	2	3	1	79	1	0	7	1109	33	25	1499	3
Peak Hour Factor	0.63	0.63	0.63	0.71	0.71	0.71	0.87	0.87	0.87	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	7	7	7	4	4	4	2	2	2
Cap, veh/h	154	103	34	146	136	0	340	3093	1380	465	3218	6
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1439	1435	478	1356	1891	0	344	3681	1642	493	3830	8
Grp Volume(v), veh/h	2	0	4	79	1	0	7	1109	33	25	732	770
Grp Sat Flow(s),veh/h/ln	1439	0	1914	1356	1891	0	344	1841	1642	493	1870	1967
Q Serve(g_s), s	0.2	0.0	0.3	8.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.3	8.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.25	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	154	0	138	146	136	0	340	3093	1380	465	1571	1653
V/C Ratio(X)	0.01	0.00	0.03	0.54	0.01	0.00	0.02	0.36	0.02	0.05	0.47	0.47
Avail Cap(c_a), veh/h	277	0	301	262	297	0	340	3093	1380	465	1571	1653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.4	0.0	60.4	64.3	60.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	3.1	0.0	0.0	0.1	0.3	0.0	0.2	1.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	2.9	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.5	0.0	60.5	67.3	60.3	0.0	0.1	0.3	0.0	0.2	1.0	0.9
LnGrp LOS	E	A	E	E	E	A	A	A	A	A	A	A
Approach Vol, veh/h		6			80			1149			1527	
Approach Delay, s/veh		60.5			67.3			0.3			1.0	
Approach LOS		E			E			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		123.9		16.1		123.9		16.1				
Change Period (Y+Rc), s		* 6.3		6.0		* 6.3		6.0				
Max Green Setting (Gmax), s*		1.1E2		22.0		* 1.1E2		22.0				
Max Q Clear Time (g_c+1), s		2.0		2.3		2.0		10.3				
Green Ext Time (p_c), s		9.7		0.0		14.7		0.1				

Intersection Summary

HCM 6th Ctrl Delay	2.7
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.