BERGMANN
ARCHITECTS ENGINEERS PLANNERS

TECHNICAL MEMORANDUM

To: Mr. James P. Butler, PE
Professional Engineering Associates

Re: Proposed Candlewood Hotel - Rochester Hills, MI
Traffic Assessment

From: Timothy J. Likens, PE, PTOE
Transportation Engineer

Date: February 5, 2018

INTRODUCTION

This memorandum presents the results of a traffic assessment for the proposed Candlewood Suites Hotel in the City of Rochester Hills, Oakland County, Michigan. This 89-room hotel is proposed on the site of an existing Meijer store, on the southeast quadrant of the intersection of Rochester Road (M-150) and Auburn Road. There are several access points to this development; however the driveway located in direct proximity to the proposed hotel is on Auburn Road, approximately 1,200 feet east of M-150.

This project is subject to review and approval by the City of Rochester Hills and our office has been provided copies of review letters from the City DPS / Engineering Department (January 24, 2018) and Planning & Economic Development Department (January 25, 2018). The City's review indicates to main points:

1. This project does not warrant a traffic impact assessment or study; [however]
2. The City has required a study to determine if a right turn lane, taper, or other modifications are necessary at the commercial driveway approach to Auburn Road.

Therefore, the purpose of this memorandum is to specifically address the City's concern related to the site access point to Auburn Road. We have communicated with the City's Engineering Department as well as received input via the City from the Michigan Department of Transportation (MDOT). Both Auburn Road and M-150 are under MDOT jurisdiction.

EXISTING CONDITIONS

According to the MDOT interactive Annual Average Daily Traffic (AADT) system, along the site frontage, Auburn Road carries approximately 13,500 vehicles per day and M-150 carries approximately 52,000 vehicles per day. MDOT has also published via their Traffic Monitoring Information System (TMIS) hourly directional volumes collected in the site vicinity, most recently from 2015. These volumes indicate that the PM peak hour volumes are approximately 17% higher than during the AM peak hour. During the PM peak hour, Auburn Road carries approximately 1,150 vehicles along the site frontage, while M-150 carries over three times that volume, or 3,550 vehicles per hour.

The subject driveway is opposed on the north side by a driveway serving Kohl's, Target, and other commercial development. This driveway has 2 egress lanes to Auburn Road and one ingress lane. There is a center lane for left turns on Auburn Road along the site frontage that serves this driveway. There are no right turn treatments at this location on the north or south side of Auburn Road.

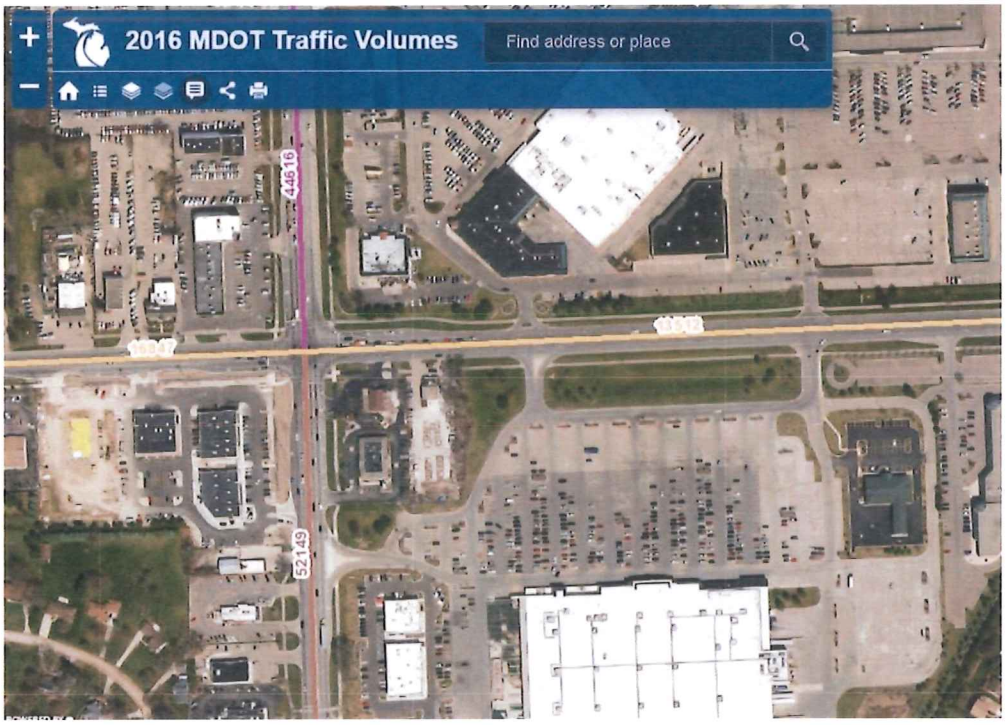

Figure 1. Average Daily Traffic Volumes

MDOT (via the City) provided historical crash data for Auburn Road from January 1, 2014 through December 31, 2017. Data were provided for 500 feet in either direction of the subject driveway. These data were reviewed in order to determine if any existing crash pattern(s) exist at this location that may be subject to countermeasure or safety enhancement. The crash type that is most correctable by the installation of a right turn treatment (relative to this project) are rear-end collisions that would occur in the eastbound direction.

The crash data indicate that 42 crashes have occurred during this 4-year period in the vicinity of the subject driveway, or approximately 10 crashes per year. Thirty (30) of these crashes (71%) resulted in Property Damage Only (PDO), with 3 A-level incapacitating injury crashes and 1 fatal crash. Nine (9) crashes were coded as rear-end types, 6 of which occurred in the eastbound direction. All 6 eastbound rear-end crashes occurred during the afternoon and were related to the traffic signal at Barclay Circle. There were zero (0) rear-end crash types related to the subject driveway and traffic turning right to enter the subject development.

The crash data do reveal that 15 angle crashes have occurred at the subject driveway, with zero (0) of these 15 resulting in A-level incapacitating injury, and 1 resulting in fatality. Further investigation of the UD-10 crash reports indicate that the fatal crash involved an elderly driver that failed to yield

to cross traffic on Auburn Road. This driver was attempting to cross from the subject driveway to the Kohl's development driveway on the north side, and was struck broadside by a westbound vehicle. The other 14 angle crashes resulted in 4 C-level possible injury and 10 PDO severity crashes. The angle collisions involved an approximately even split of vehicles exiting the Meijer and Kohl's developments.

The three A-level incapacitating injury crashes were also investigated in further detail based on the information recorded in the respective UD-10 reports. One of these crashes involved a motorcycle that lost control when a vehicle pulled out of the Kohl's driveway (and subsequently fled the scene). The other 2 severe injury crashes involved through traffic on Auburn Road and were unrelated to driveway operations. One was a multi-vehicle incident that was potentially caused by aggressive driving. The other was a single vehicle that lost control, rolled over, and was cited for careless / negligent driving.

SITE TRIP GENERATION AND DISTRIBUTION

The number of AM and PM peak hour vehicle trips that would be generated by a proposed development are typically forecast based on data published by ITE in *Trip Generation*. These data indicate trip generation rates and equations relative to the type and density of land use. For this assessment, the estimated number of trips currently generated by the Meijer development was compared to the trip generation potential of the site with the proposed hotel, as shown in Table 1. The trip generation for the Meijer development is a generalization of the overall size of the Meijer store and supporting outlot development and is calculated only for an order of magnitude comparison.

Table 1. Site Trip Generation Comparison

Land Use	ITE Code	Amount	Units	Average Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Meijer	813	225,000	SF	11,408	233	183	416	477	497	974
Candlewood Hotel	310	89	Rooms	1,088	32	23	55	32	33	65
Hotel Percentage of Total Site Traffic				*9%*		*12%*			*6%*	

This comparison indicates that the proposed hotel will generate approximately 9% of the daily traffic as compared to the overall development. Furthermore, the hotel will generate a maximum of 33 directional peak hour trips. This is less than the threshold of 50 directional peak hour trips that would require a Traffic Impact Assessment (TIA) based on MDOT *Traffic & Safety Note 613B*. Therefore, this calculation confirms the City's statement that this project does not warrant a traffic impact assessment or study. It is important to note that the hotel forecast was conservatively calculated based on the number of occupied rooms, assuming 100% occupancy. The resulting calculations are slightly conservative compared to using the total number of rooms as the independent variable, which represents more typical occupancies of less than 100%.

As mentioned above, the driveway located in direct proximity to the proposed hotel is on Auburn Road, approximately 1,200 feet east of M-150. Therefore, this driveway is anticipated to carry the majority of hotel traffic. During both the AM and PM peak hours, the hotel is forecast to generate 32 inbound trips.

Due to the relative magnitude of traffic on M-150 (3 times that of Auburn Road) and the proximity and connectivity to M-59 for travelers, it is reasonable to assume that 25% of hotel traffic will utilize the signalized access point to M-150. Although there is another access point on Auburn Road, 75% of hotel traffic is assumed to utilize the subject driveway in direct proximity to the hotel. Based on the relative volumes of traffic on M-150 and directionally on Auburn Road, approximately 10% of hotel traffic is expected to travel to the site from the east via Auburn Road. Application of these distribution assumptions results in an estimated 21 vehicles that will turn right off of Auburn Road eastbound to enter the site, during the peak hour.

TURN LANE WARRANT

The expected number of inbound right turns associated with the hotel were evaluated based on MDOT *Traffic & Safety Note 604A*. As shown on Figure 2, the hotel would not warrant any right turn treatment based on the peak hour expected number of right turns and the volume of eastbound traffic on Auburn Road.

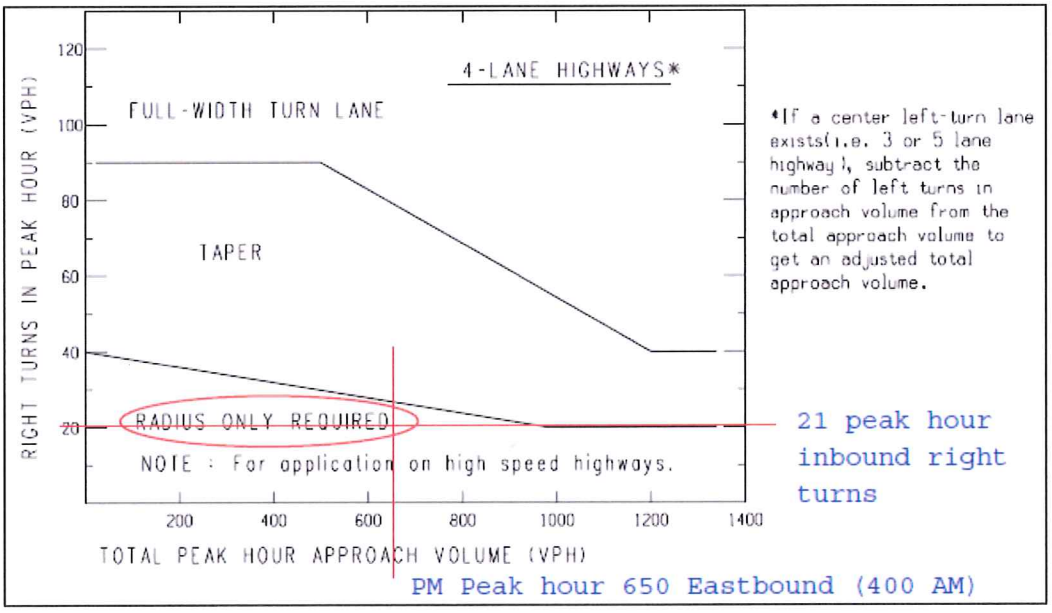

Figure 2. MDOT Right Turn Lane Warrant Evaluation

This evaluation does not include the number of ingress right turns that are currently generated at this driveway by the existing Meijer development. Right turn treatment at this location was not required by MDOT or the City of Rochester Hills at the time the original development was proposed,

approved, and permitted. If the current volumes warrant a right turn lane or treatment at this location, the condition for improvement should not be the responsibility of the current project.

CONCLUSIONS

The following conclusions of this assessment are based on the information outlined herein regarding the proposed use, historical crash patterns, existing traffic volumes, and forecast trip generation:

- No crash pattern exists at the subject driveway that would be correctable (or improved) by the construction of a right turn lane or taper.
- Ingress traffic volumes that will be generated by the proposed hotel will not warrant the construction of a right turn lane or taper.
- Occurrence of angle crashes at the subject driveway are an existing condition that should not incur the responsibility for improvements at this location on the proposed hotel.
- Traffic that will be generated by the proposed hotel will not create any discernable change in traffic operations and motorist safety as compared to current conditions.

The referenced traffic volume and crash data are attached. Please direct any questions regarding this memorandum to Bergmann Associates.

Attached: MDOT Traffic Volume Data
MDOT Historical Crash Data

MDOT - Bureau of Transportation Planning
Annual Average Daily Traffic Report

Selection Criteria: Year between 2015 and 2018, CS#= 63042

From	To	Section #	CS #	BMP	EMP	AADT	CAADT	DHV%	DF	Count	Class
Year 2015											
Route OLD - 59											
ECL ROCHESTER HILLS @ ADAMS RD	M-59	2	63042	1.98	5.52	12336	360	10.0	53	Y	Y
M-59	JCT M-150	3	63042	5.52	6.06	16325	360	10.0	65	Y	
JCT M-150	E CO L	4	63042	6.06	8.06	13093	176	10.0	65	Y	

MDOT - Bureau of Transportation Planning
Hourly Count Report

County	Oakland	**Station**	35	**CS #**	63042	**CS MP**	5.96
Route Desc	AUBURN RD(OLD M-59TB			**PR #**	625105	**PR MP**	8.04
Station Desc	0.1 MI. W.OF M-150 (ROCHESTER ROAD)-AVON TWP.			**City**	None		
Direction	East ADT approx 80% lower east of M-150			**Year**	2015		

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	24 Hour Total	Day
10/25/2015 Sunday																									
0	0	0	0	0	0	0	0	0	0	0	0	617	652	690	446	462	411	384	381	189	105	77	47	**7239**	4461
AM High		**0**		**AM High Hour**		**01:00**				**PM High**		**690**		**PM High Hour**			**15:00**								
10/26/2015 Monday																									
25	12	22	4	24	85	213	366	509	450	454	614	694	651	596	758	751	813	663	418	315	180	89	66	**8684**	8772
AM High		**614**		**AM High Hour**		**12:00**				**PM High**		**813**		**PM High Hour**			**18:00**								
10/27/2015 Tuesday																									
17	17	9	9	14	78	203	431	447	402	476	587	625	530	593	640	784	805	610	480	302	183	95	60	**7374**	8397
AM High		**587**		**AM High Hour**		**12:00**				**PM High**		**805**		**PM High Hour**			**18:00**								
10/28/2015 Wednesday																									
21	13	12	5	18	63	226	378	498	433	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	1667
AM High		**498**		**AM High Hour**		**09:00**				**PM High**		**0**		**PM High Hour**											

AM = 500 EB Auburn

PM = 800 EB Auburn

These volumes are raw axle counts and are not adjusted for the impact of vehicles with more than 2 axles

MDOT - Bureau of Transportation Planning
Hourly Count Report

County	Oakland	**Station**	35	**CS #**	63042	**CS MP**	5.96
Route Desc	AUBURN RD(OLD M-59TB			**PR #**	0	**PR MP**	0.00
Station Desc	0.1 MI. W.OF M-150 (ROCHESTER ROAD)-AVON TWP.			**City**	None		
Direction	West ADT approx 80% lower east of M-150			**Year**	2015		

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	24 Hour Total	Day
10/25/2015 Sunday																									
0	0	0	0	0	0	0	0	0	0	0	0	580	564	528	483	519	519	447	332	235	134	105	42	**7115**	4488
AM High		**0**		**AM High Hour**		**01:00**				**PM High**		**580**		**PM High Hour**			**13:00**								
10/26/2015 Monday																									
31	15	10	8	22	82	251	478	583	349	358	440	594	551	566	566	563	566	526	412	376	193	117	44	**7804**	7701
AM High		**583**		**AM High Hour**		**09:00**				**PM High**		**594**		**PM High Hour**			**13:00**								
10/27/2015 Tuesday																									
25	28	13	4	18	94	256	501	518	379	399	495	626	534	591	595	550	503	463	438	360	192	108	53	**6982**	7743
AM High		**518**		**AM High Hour**		**09:00**				**PM High**		**626**		**PM High Hour**			**13:00**								
10/28/2015 Wednesday																									
28	15	11	8	19	80	267	527	552	462	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	1969
AM High		**552**		**AM High Hour**		**09:00**				**PM High**		**0**		**PM High Hour**											

AM = 550 WB Auburn

PM = 600 WB Auburn

These volumes are raw axle counts and are not adjusted for the impact of vehicles with more than 2 axles

MDOT - Bureau of Transportation Planning

Annual Average Daily Traffic Report

Selection Criteria: Year between 2015 and 2018, PR#= 4413538

From	To	Section #	CS #	BMP	EMP	AADT	CAADT	DHV%	DF	Count	Class
Year 2015											
Route M - 150											
JCT M-59	AUBURN RD	110	63131	4.76	5.45	50532	1113	10.0	55	Y	
AUBURN RD	AVON RD	120	63132	0.00	2.08	43233	1113	10.0	53	Y	
AVON RD	NCL ROCHESTER HILLS@ DIVERSION	130	63132	2.08	2.64	40725	1113	10.0	53	Y	
SCL ROCHESTER @ DIVERSION	ROMEO ST	140	63132	2.64	3.42	32211	1113	10.0	59	Y	
ROMEO ST	NCL ROCHESTER	150	63132	3.42	3.89	29272	1113	10.0	60	Y	
SCL ROCHESTER HILLS	TIENKEN RD	160	63132	3.89	4.11	33428	1113	10.0	63	Y	

MDOT - Bureau of Transportation Planning

Hourly Count Report

County	Oakland	**Station**	40	**CS #**	63131	**CS MP**	5.20
Route Desc	M-150 ROCHESTER RD			**PR #**	4413538	**PR MP**	9.69
Station Desc	100 FEET SOUTH OF AUBURN RD (OLD M-59) - AVON TWP			**City**	None		
Direction	North			**Year**	2015		

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	24 Hour Total	Day
10/25/2015 Sunday																									
0	0	0	0	0	0	0	0	0	0	0	0	1754	1819	1551	1586	1650	1588	1307	1122	772	592	418	274	**21903**	14433
AM High		**0**		**AM High Hour**		**01:00**				**PM High**		**1819**		**PM High Hour**			**14:00**								
10/26/2015 Monday																									
135	98	57	69	67	254	557	926	1255	1275	1321	1456	1603	1528	1636	1799	1993	2019	1853	1378	1020	659	429	286	**23852**	23673
AM High		**1456**		**AM High Hour**		**12:00**				**PM High**		**2019**		**PM High Hour**			**18:00**								
10/27/2015 Tuesday																									
155	97	50	76	69	248	585	905	1243	1333	1355	1533	1749	1710	1602	1882	1832	1833	1803	1470	1007	722	502	320	**19489**	24081
AM High		**1533**		**AM High Hour**		**12:00**				**PM High**		**1882**		**PM High Hour**			**16:00**								
10/28/2015 Wednesday																									
141	88	64	55	74	232	524	797	1082	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	3057
AM High		**1082**		**AM High Hour**		**09:00**				**PM High**		**0**		**PM High Hour**											

AM = 1,200 NB M-150

PM = 1,950 NB M-150

These volumes are raw axle counts and are not adjusted for the impact of vehicles with more than 2 axles

MDOT - Bureau of Transportation Planning

Hourly Count Report

County	Oakland	**Station**	40	**CS #**	63131	**CS MP**	5.20
Route Desc	M-150 ROCHESTER RD			**PR #**	0	**PR MP**	0.00
Station Desc	100 FEET SOUTH OF AUBURN RD (OLD M-59) - AVON TWP			**City**	None		
Direction	South			**Year**	2015		

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	24 Hour Total	Day
10/25/2015 Sunday																									
0	0	0	0	0	0	0	0	0	0	0	0	1577	1683	1670	1600	1583	1523	1397	1205	825	526	413	237	**24190**	14239
AM High		**0**		**AM High Hour**		**01:00**				**PM High**		**1683**		**PM High Hour**			**14:00**								
10/26/2015 Monday																									
140	78	67	55	127	572	1414	1998	1865	1294	1141	1200	1341	1408	1398	1491	1465	1514	1381	1232	931	764	436	256	**24340**	23568
AM High		**1998**		**AM High Hour**		**08:00**				**PM High**		**1514**		**PM High Hour**			**18:00**								
10/27/2015 Tuesday																									
139	86	54	55	150	532	1445	2008	1964	1491	1355	1444	1601	1613	1598	1709	1590	1494	1348	1367	984	783	452	265	**20930**	25527
AM High		**2008**		**AM High Hour**		**08:00**				**PM High**		**1709**		**PM High Hour**			**16:00**								
10/28/2015 Wednesday																									
143	101	56	53	142	527	1406	1875	1823	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	6126
AM High		**1875**		**AM High Hour**		**08:00**				**PM High**		**0**		**PM High Hour**											

AM = 2,000 SB M-150

PM = 1,600 SB M-150

These volumes are raw axle counts and are not adjusted for the impact of vehicles with more than 2 axles

Michigan Department of Transportation
One Line Listing Crash Report

State of Michigan

Report Module: Safety Management Analysis

Today's Date: Thursday, February 01, 2018

Dates: 1/1/2014 to 1/1/2018

Sort Order: PRNo, Milepoint, Date of Crash

Animal Crashes: Excluded

Criteria: Start Date >= 1/1/2014
End Date <= 1/1/2018
PR Number = 625105
BMP = 8.275
EMP = 8.46

Report Filter

Field Name	Operator	Value(s)
Year of Crash	>=	2010
ROAD: TSC	=	Oakland

Michigan Department of Transportation
One Line Listing Crash Report

Region	CS Number	CS MP	PR Number	PR MP	Area	Location	Crash Type	Vehicle 1 Dir	Vehicle 1 Impact	Vehicle 1 Intent	Vehicle 2 Dir	Vehicle 2 Impact	Vehicle 2 Intent	Weather	Surface Condition	Date	Day	Hour	UD-10	Totals Fatal	Totals A	Totals B	Totals C	Totals Injury	Totals PDO	Involves Alcohol	Involves Drugs
Metro	63042	4.126	625105	8.287	Midblock	Other Fwy Area	MISC-MV	W	Rear-Cen	Go straight	W	Front-Lft	Go straight	Clear	Dry	2/27/2015	FRI	05AM-06AM	9219286	0	1	0	1	2	N	No	Uncoded
Metro	63042	4.173	625105	8.334	Midblock	Other Fwy Area	OTURN	E	Roof	Go straight	U	Uncoded	Uncoded	Clear	Dry	4/23/2015	THU	11PM-MDNT	9338538	0	1	0	0	1	N	No	Uncoded
Metro	63042	4.243	625105	8.404	Intersection	Drvwy 150ft of Int	MISC-SV	W	Pass-side	Avoid veh at angle	U	Uncoded	Uncoded	Clear	Dry	8/25/2014	MON	01PM-02PM	9037832	0	1	0	0	1	N	No	Uncoded
Metro	63042	4.205	625105	8.366	Midblock	Drvwy Related	AN-DR	N	Pass-side	Go straight	W	Front-Cen	Go straight	Clear	Dry	12/6/2017	WED	02PM-03PM	1242779	1	0	1	0	1	N	No	No
Metro	63042	4.117	625105	8.278	Midblock	Other Fwy Area	FXOBJ	W	Rear-Rght	Avoid veh from fr/bk	U	Uncoded	Uncoded	Cloudy	Dry	1/8/2016	FRI	07AM-08AM	9606139	0	0	0	0	0	Y	No	Uncoded
Metro	63042	4.130	625105	8.291	Midblock	Straight Rd	R-END	E	Front-Cen	Go straight	E	Rear-Cen	Go straight	Clear	Dry	6/3/2015	WED	03PM-04PM	9305322	0	0	0	0	0	Y	No	Uncoded
Metro	63042	4.173	625105	8.334	Midblock	Other Fwy Area	SS-SM	W	Driver-side	Change lanes	W	Front-Rght	Go straight	Fog	Wet	4/4/2014	FRI	06AM-07AM	8936276	0	0	0	0	0	Y	No	Uncoded
Metro	63042	4.173	625105	8.334	Midblock	Other Fwy Area	MISC-SV	E	Pass-side	Go straight	U	Uncoded	Uncoded	Cloudy	Dry	7/8/2014	TUE	07AM-08AM	9003207	0	0	0	0	0	Y	No	Uncoded
Metro	63042	4.173	625105	8.334	Midblock	Other Fwy Area	FXOBJ	W	Front-Lft	Go straight	U	Uncoded	Uncoded	Snow	Snowy	1/9/2015	FRI	03AM-04AM	9165989	0	0	0	0	0	Y	No	Uncoded
Metro	63042	4.173	625105	8.334	Midblock	Straight Rd	MISC-SV	E	Front-Rght	Avoid veh from fr/bk	U	Uncoded	Uncoded	Rain	Wet	7/7/2015	TUE	01PM-02PM	9329539	0	0	0	0	0	Y	No	Uncoded
Metro	63042	4.173	625105	8.334	Midblock	Straight Rd	R-END	W	Front-Cen	Go straight	W	Rear-Cen	Stopped on Road	Clear	Dry	6/8/2016	WED	09AM-10AM	9731162	0	0	0	0	0	Y	No	No
Metro	63042	4.173	625105	8.334	Midblock	Straight Rd	RE-LT	W	Rear-Lft	Change lanes	W	Front-Rght	Go straight	Snow	Snowy	12/8/2016	THU	NOON-01PM	9903258	0	0	0	0	0	Y	No	No
Metro	63042	4.173	625105	8.334	Midblock	Other Fwy Area	R-END	W	Front-Cen	Go straight	W	Rear-Cen	Go straight	Clear	Dry	10/20/2017	FRI	07AM-08AM	1188848	0	0	0	0	0	Y	No	No
Metro	63042	4.174	625105	8.335	Midblock	Other Fwy Area	R-END	W	Front-Lft	Go straight	W	Rear-Rght	Go straight	Unknown	Icy	2/11/2016	THU	06AM-07AM	9641671	0	0	0	0	0	Y	No	No
Metro	63042	4.205	625105	8.366	Midblock	Drvwy Related	BCKNG	W	Rear-Lft	Backing	E	Front-Cen	Turn left	Clear	Dry	2/10/2015	TUE	07PM-08PM	9199463	0	0	0	0	0	Y	No	Uncoded
Metro	63042	4.224	625105	8.385	Intersection	Drvwy 150ft of Int	AN-DR	NW	Front-Rght	Turn left	SW	Front-Cen	Go straight	Cloudy	Dry	5/5/2014	MON	01PM-02PM	8955543	0	0	0	0	0	Y	No	Uncoded
Metro	63042	4.224	625105	8.385	Midblock	Drvwy Related	OT-DR	SE	Front-Cen	Turn left	W	Front-Lft	Go straight	Clear	Dry	7/6/2014	SUN	11AM-NOON	9002489	0	0	0	0	0	Y	No	Uncoded
Metro	63042	4.224	625105	8.385	Midblock	Drvwy Related	AN-DR	N	Front-Lft	Turn left	E	Front-Rght	Go straight	Clear	Dry	2/5/2016	FRI	08PM-09PM	9632103	0	0	0	0	0	Y	No	Uncoded
Metro	63042	4.224	625105	8.385	Intersection	Drvwy 150ft of Int	AN-DR	S	Rear-Rght	Turn left	E	Front-Rght	Go straight	Clear	Dry	3/8/2017	WED	07PM-08PM	9984990	0	0	0	0	0	Y	No	No

Michigan Department of Transportation
One Line Listing Crash Report

Region	CS Number	CS MP	PR Number	PR MP	Area	Location	Crash Type	Vehicle 1 Dir	Vehicle 1 Impact	Vehicle 1 Intent	Vehicle 2 Dir	Vehicle 2 Impact	Vehicle 2 Intent	Weather	Surface Condition	Date	Day	Hour	UD-10	Totals Fatal	Totals A B C	Totals Injury	Totals PDO	Involves Alcohol	Involves Drugs
Metro	63042	4.237	625105	8.398	Midblock	Straight Rd	R-END	E	Rear-Cen	Stopped on Road	E	Front-Cen	Go straight	Clear	Dry	2/4/2014	TUE	06PM-07PM	8887610	0	0 0 0	0	Y	No	Uncoded
Metro	63042	4.251	625105	8.412	Midblock	Straight Rd	R-END	E	Front-Cen	Slow/stop on Road	E	Rear-Cen	Slow/stop on Road	Clear	Dry	5/8/2015	FRI	04PM-05PM	9268419	0	0 0 0	0	Y	No	Uncoded
Metro	63042	4.262	625105	8.423	Intersection	Drvwy 150ft of Int	AN-DR	W	Front-Lft	Turn left	S	Rear-Lft	Turn left	Clear	Dry	10/15/2014	WED	11AM-NOON	9079592	0	0 0 0	0	Y	No	Uncoded
Metro	63042	4.262	625105	8.423	Midblock	Straight Rd	HD-LT	NW	Front-Rght	Turn left	E	Front-Lft	Go straight	Clear	Dry	11/11/2017	SAT	04PM-05PM	1203291	0	0 0 0	0	Y	No	No
Metro	63042	4.262	625105	8.423	Midblock	Drvwy Related	AN-DR	NW	Front-Lft	Turn left	SW	Driver-side	Turn left	Clear	Dry	12/1/2017	FRI	06AM-07AM	1236034	0	0 0 0	0	Y	No	No
Metro	63042	4.268	625105	8.429	Midblock	Other Fwy Area	SS-SM	W	Driver-side	Change lanes	W	Front-Rght	Go straight	Cloudy	Dry	12/2/2015	WED	07AM-08AM	9460944	0	0 0 0	0	Y	No	Uncoded
Metro	63042	4.268	625105	8.429	Midblock	Drvwy Related	AN-DR	S	Driver-side	Go straight	W	Front-Cen	Go straight	Clear	Dry	1/18/2016	MON	03PM-04PM	9617070	0	0 0 0	0	Y	No	Uncoded
Metro	63042	4.279	625105	8.440	Midblock	Drvwy Related	AN-DR	SE	Front-Cen	Turn left	NE	Driver-side	Turn left	Clear	Dry	11/24/2015	TUE	06PM-07PM	9454033	0	0 0 0	0	Y	No	Uncoded
Metro	63042	4.281	625105	8.442	Midblock	Straight Rd	R-END	E	Front-Cen	Go straight	E	Rear-Cen	Slow/stop on Road	Clear	Dry	2/26/2014	WED	NOON-01PM	8909214	0	0 0 0	0	Y	No	Uncoded
Metro	63042	4.281	625105	8.442	Midblock	Straight Rd	SS-SM	E	Front-Rght	Change lanes	E	Driver-side	Go straight	Clear	Dry	12/30/2015	WED	05PM-06PM	9597723	0	0 0 0	0	Y	No	Uncoded
Metro	63042	4.281	625105	8.442	Midblock	Drvwy Related	AN-DR	S	Front-Lft	Enter Road	W	Front-Rght	Go straight	Clear	Dry	10/10/2016	MON	07PM-08PM	9837395	0	0 0 0	0	Y	No	No
Metro	63042	4.281	625105	8.442	Midblock	Straight Rd	R-END	E	Front-Cen	Go straight	E	Rear-Cen	Stopped on Road	Clear	Dry	9/5/2017	TUE	04PM-05PM	1139176	0	0 0 0	0	Y	No	No
Metro	63042	4.287	625105	8.448	Midblock	Other Fwy Area	MISC-MV	U	None	Unknown	W	Front-Rght	Go straight	Clear	Dry	5/22/2016	SUN	05PM-06PM	9719070	0	0 0 0	0	Y	No	No
Metro	63042	4.291	625105	8.452	Intersection	Drvwy 150ft of Int	AN-DR	S	Front-Rght	Go straight	W	Front-Cen	Go straight	Cloudy	Dry	11/22/2017	WED	01PM-02PM	1229056	0	0 0 0	0	Y	No	No
Metro	63042	4.291	625105	8.452	Intersection	Drvwy 150ft of Int	AN-DR	N	Front-Cen	Turn right	E	Pass-side	Go straight	Cloudy	Dry	3/19/2016	SAT	02PM-03PM	9670370	0	0 0 0	0	Y	No	No
Metro	63042	4.173	625105	8.334	Midblock	Other Fwy Area	FXOBJ	W	Front-Cen	Go straight	U	Uncoded	Uncoded	Clear	Dry	11/10/2014	MON	01PM-02PM	9120608	0	0 1 0	1	N	No	Uncoded
Metro	63042	4.234	625105	8.395	Midblock	Other Fwy Area	FXOBJ	E	Front-Lft	Go straight	U	Uncoded	Uncoded	Rain	Wet	7/27/2014	SUN	05PM-06PM	9016781	0	0 1 0	1	N	No	Uncoded
Metro	63042	4.142	625105	8.303	Intersection	Drvwy 150ft of Int	AN-DR	U	None	Unknown	E	Pass-side	Go straight	Snow	Snowy	1/14/2014	TUE	10PM-11PM	8863168	0	0 0 3	3	N	No	Uncoded
Metro	63042	4.167	625105	8.328	Intersection	Drvwy 150ft of Int	AN-DR	N	Multi Areas	Go straight	W	Front-Cen	Go straight	Clear	Wet	11/30/2014	SUN	08PM-09PM	9130080	0	0 0 1	1	N	No	Uncoded

Michigan Department of Transportation
One Line Listing Crash Report

Region	CS Number	CS MP	PR Number	PR MP	Area	Location	Crash Type	Vehicle 1 Dir	Vehicle 1 Impact	Vehicle 1 Intent	Vehicle 2 Dir	Vehicle 2 Impact	Vehicle 2 Intent	Weather	Surface Condition	Date	Day	Hour	UD-10	Totals Fatal	Totals A	Totals B	Totals C	Totals Injury	Totals PDO	Involves Alcohol	Involves Drugs
Metro	63042	4.173	625105	8.334	Midblock	Other Fwy Area	FXOBJ	W	Front-Cen	Go straight	U	Uncoded	Uncoded	Rain	Wet	10/12/2016	WED	10PM-11PM	9838707	0	0	0	1	1	N	No	No
Metro	63042	4.224	625105	8.385	Intersection	Drvwy 150ft of Int	AN-DR	S	Pass-side	Enter Road	E	Front-Cen	Go straight	Clear	Dry	12/5/2016	MON	02PM-03PM	9901713	0	0	0	2	2	N	No	No
Metro	63042	4.224	625105	8.385	Intersection	Drvwy 150ft of Int	AN-DR	N	Front-Cen	Go straight	W	Driver-side	Go straight	Clear	Dry	10/10/2017	TUE	11AM-NOON	1173303	0	0	0	1	1	N	No	No
Metro	63042	4.243	625105	8.404	Midblock	Straight Rd	R-END	E	Front-Cen	Slow/stop on Road	E	Rear-Cen	Stopped on Road	Clear	Dry	7/8/2014	TUE	04PM-05PM	9004055	0	0	0	2	2	N	No	Uncoded

Michigan Department of Transportation
Summary of Crash Statistics

State of Michigan

Report Module: Safety Management Analysis

Today's Date: Thursday, February 01, 2018

Dates: 1/1/2014 to 1/1/2018

Animal Crashes: Excluded

Criteria: Start Date >= 1/1/2014
End Date <= 1/1/2018
PR Number = 625105
BMP = 8.275
EMP = 8.46

NOTE: For most of the categories, a crash may be counted in only one of the option items. For example, in the CRASHES BY DAY OF THE WEEK category, a crash may be counted in the total of only one day (the option item); i.e.-- a crash counted in the total for Monday is not counted in the totals for any of the other days. There are two exceptions to this rule: for the CRASHES BY INVOLVEMENT and CRASHES BY DRIVER VIOLATION categories a crash may be counted in more than one of the option items. For example, a crash may involve Drinking, Deer, and Fleeing Situation; in the CRASHES BY INVOLVEMENT category this crash would be counted in the totals of three of the option items (Drinking, Deer, and Fleeing Situation).

Also, the percentages listed in parenthesis are a representation of the total crashes for each option item as a percent of the TOTAL NUMBER OF CRASHES in the selected date range. The percentages listed after each Fatal + A-type option item total in the CRASHES BY DRIVER VIOLATION category are an exception; these percentages represent the total Fatal and A-type Injury crashes as a percentage of the Driver Violation option item total that they follow (and are grouped with, as indicated by the horizontal dividing lines).

Report Filter

Field Name	Operator	Value(s)
Year of Crash	>=	2010
ROAD: TSC	=	Oakland

Michigan Department of Transportation
Summary of Crash Statistics

Dates: 1/1/2014 to 1/1/2018

TOTAL NUMBER OF CRASHES: 42

CRASHES BY DAY OF WEEK		F	A	B/C and PDO	Total	% of Crashes
Sunday	=	0	0	4	4	9.5%
Monday	=	0	1	5	6	14.3%
Tuesday	=	0	0	9	9	21.4%
Wednesday	=	1	0	9	10	23.8%
Thursday	=	0	1	2	3	7.1%
Friday	=	0	1	7	8	19.0%
Saturday	=	0	0	2	2	4.8%

CRASHES BY SURFACE CONDITION						
Dry	=	1	3	29	33	78.6%
Wet	=	0	0	5	5	11.9%
Icy	=	0	0	1	1	2.4%
Snowy	=	0	0	3	3	7.1%
Muddy	=	0	0	0	0	0.0%
Slushy	=	0	0	0	0	0.0%
Debris	=	0	0	0	0	0.0%
Water	=	0	0	0	0	0.0%
Sand	=	0	0	0	0	0.0%
Oily	=	0	0	0	0	0.0%
Other	=	0	0	0	0	0.0%
Unknown	=	0	0	0	0	0.0%
Uncoded & Errors	=	0	0	0	0	0.0%

CRASHES BY TIME OF DAY						
MDNT-01AM	=	0	0	0	0	0.0%
01AM-02AM	=	0	0	0	0	0.0%
02AM-03AM	=	0	0	0	0	0.0%
03AM-04AM	=	0	0	1	1	2.4%
04AM-05AM	=	0	0	0	0	0.0%
05AM-06AM	=	0	1	0	1	2.4%
06AM-07AM	=	0	0	3	3	7.1%
07AM-08AM	=	0	0	4	4	9.5%
08AM-09AM	=	0	0	0	0	0.0%
09AM-10AM	=	0	0	1	1	2.4%
10AM-11AM	=	0	0	0	0	0.0%
11AM-NOON	=	0	0	3	3	7.1%
NOON-01PM	=	0	0	2	2	4.8%
01PM-02PM	=	0	1	4	5	11.9%
02PM-03PM	=	1	0	2	3	7.1%
03PM-04PM	=	0	0	2	2	4.8%
04PM-05PM	=	0	0	4	4	9.5%
05PM-06PM	=	0	0	3	3	7.1%
06PM-07PM	=	0	0	2	2	4.8%
07PM-08PM	=	0	0	3	3	7.1%
08PM-09PM	=	0	0	2	2	4.8%
09PM-10PM	=	0	0	0	0	0.0%
10PM-11PM	=	0	0	2	2	4.8%
11PM-MDNT	=	0	1	0	1	2.4%
Uncoded & Errors	=	0	0	0	0	0.0%

CRASHES BY TYPE		F	A	B/C and PDO	Total	% of Crashes
Angle Driveway	=	1	0	14	15	35.7%
Angle Straight	=	0	0	0	0	0.0%
Angle Turn	=	0	0	0	0	0.0%
Animal	=	0	0	0	0	0.0%
Backing	=	0	0	1	1	2.4%
Bicycle	=	0	0	0	0	0.0%
Fixed Object	=	0	0	5	5	11.9%
Head-on	=	0	0	0	0	0.0%
Head-on Left-Turn Driveway	=	0	0	0	0	0.0%
Head-on L-Turn Not Driveway	=	0	0	1	1	2.4%
Hit Train	=	0	0	0	0	0.0%
Misc. Multiple Vehicle	=	0	1	1	2	4.8%
Misc. Single Vehicle	=	0	1	2	3	7.1%
Other Driveway	=	0	0	1	1	2.4%
Other Object	=	0	0	0	0	0.0%
Overturn	=	0	1	0	1	2.4%
Parking	=	0	0	0	0	0.0%
Pedestrian	=	0	0	0	0	0.0%
Rear End Driveway	=	0	0	0	0	0.0%
Rear End Left Turn	=	0	0	1	1	2.4%
Rear End Right Turn	=	0	0	0	0	0.0%
Rear End Straight	=	0	0	9	9	21.4%
Side Swipe Opposite	=	0	0	0	0	0.0%
Side Swipe Same	=	0	0	3	3	7.1%

CRASHES BY MONTH						
January	=	0	0	4	4	9.5%
February	=	0	1	5	6	14.3%
March	=	0	0	2	2	4.8%
April	=	0	1	1	2	4.8%
May	=	0	0	3	3	7.1%
June	=	0	0	2	2	4.8%
July	=	0	0	5	5	11.9%
August	=	0	1	0	1	2.4%
September	=	0	0	1	1	2.4%
October	=	0	0	5	5	11.9%
November	=	0	0	5	5	11.9%
December	=	1	0	5	6	14.3%
Uncoded & Errors	=	0	0	0	0	0.0%

CRASHES BY WEATHER CONDITION						
Clear	=	1	3	24	28	66.7%
Cloudy	=	0	0	6	6	14.3%
Fog	=	0	0	1	1	2.4%
Rain	=	0	0	3	3	7.1%
Sleet/Hail	=	0	0	0	0	0.0%
Snow	=	0	0	3	3	7.1%
Wind	=	0	0	0	0	0.0%
Blowing Snow	=	0	0	0	0	0.0%
Blowing Dirt	=	0	0	0	0	0.0%
Smoke	=	0	0	0	0	0.0%
Unknown	=	0	0	1	1	2.4%
Uncoded & Errors	=	0	0	0	0	0.0%

Michigan Department of Transportation
Summary of Crash Statistics

Dates: 1/1/2014 to 1/1/2018

CRASHES BY LIGHT CONDITION		F	A	B/C and PDO	Total	% of Crashes
Daylight	=	1	1	22	24	57.1%
Dawn	=	0	0	2	2	4.8%
Dusk	=	0	1	1	2	4.8%
Dark, Lighted	=	0	1	10	3	7.1%
Dark, Unlighted	=	0	0	3	11	26.2%
Other	=	0	0	0	0	0.0%
Unknown	=	0	0	0	0	0.0%
Uncoded & Errors	=	0	0	0	0	0.0%

CRASHES BY SEVERITY			
Fatal	=	1	2.4%
A-Incapacitating	=	3	7.1%
B-Non-Incapacitating	=	2	4.8%
C-Possible Injury	=	6	14.3%
Uninjured	=	30	71.4%
Uncoded & Errors	=	0	0.0%

CRASHES BY INVOLVEMENT			
Drinking	=	0	0.0%
Drugs	=	0	0.0%
Truck/Bus	=	0	0.0%
Snowmobile	=	0	0.0%
Emergency Vehicle	=	0	0.0%
Off Road Vehicle	=	0	0.0%
Pedestrian	=	0	0.0%
Bicyclist	=	0	0.0%
Farm Equipment	=	0	0.0%
Animal	=	0	0.0%
School Bus	=	0	0.0%
Motorcycle	=	1	2.4%
Train	=	0	0.0%
Hit and Run	=	2	4.8%
Fleeing Situation	=	0	0.0%

CRASHES BY DRIVER VIOLATION			
Careless or Negligent	=	1	2.4%
Fatal + A-Type	=	1	100.0%
Disobeyed TCD	=	0	0.0%
Fatal + A-Type	=	0	0.0%
Drove Left of Center	=	0	0.0%
Fatal + A-Type	=	0	0.0%
Drove Wrong Way	=	0	0.0%
Fatal + A-Type	=	0	0.0%
Fail to Stop ACD	=	11	26.2%
Fatal + A-Type	=	1	9.1%
Failed to Yield	=	19	45.2%
Fatal + A-Type	=	1	5.3%
Improper Backing	=	1	2.4%
Fatal + A-Type	=	0	0.0%
Improper Lane Use	=	0	0.0%
Fatal + A-Type	=	0	0.0%
Improper Pass	=	0	0.0%
Fatal + A-Type	=	0	0.0%
Improper Signal	=	0	0.0%
Fatal + A-Type	=	0	0.0%
Improper Turn	=	0	0.0%
Fatal + A-Type	=	0	0.0%
Other	=	2	4.8%
Fatal + A-Type	=	0	0.0%
Reckless Driving	=	0	0.0%
Fatal + A-Type	=	0	0.0%
Speed Too Fast	=	4	9.5%
Fatal + A-Type	=	0	0.0%
Speed Too Slow	=	0	0.0%
Fatal + A-Type	=	0	0.0%
Ran Red Light	=	1	2.4%
Fatal + A-Type	=	0	0.0%