

CITY OF BRIGHTON  
CITY COUNCIL MEETING  
CITY HALL  
December 18, 2014

Regular Blue Sky: 7:00 p.m.: Review of Agenda Items for this evening's meeting

**REGULAR SESSION - 7:30 P.M.**

1. Call to order
2. Pledge of Allegiance
3. Roll Call
4. Consider approval of the Agenda
5. Approval of [minutes: Regular Meeting of December 4, 2014](#)
6. Call to the Public

**Consent Agenda**

7. Consider approval of Council Liaison Member to the Planning Commission

**Policy Development & Customer Communications' action item**

8. Consider approval of a recommendation from the Traffic Safety Advisory Board regarding a [proposed street closing in the Pine Creek Subdivision located in Genoa Township](#) as proposed by the Pine Creek homeowners association

**Other Business**

9. Information for City Customers
  - a. Report from the City Manager on responses to Citizens Inquiries to City Council received since the last Council Meeting
  - b. Progress updates from the City Manager on City Council-adopted goals
10. Receive updates from Council Member Liaisons to other Boards and Commissions
11. Call to the Public
12. Closed session as requested by the City Attorney on pending litigation
13. Adjournment

**MINUTES OF THE MEETING OF THE CITY COUNCIL OF BRIGHTON**  
**HELD ON DECEMBER 4, 2014 AT THE BRIGHTON CITY HALL**  
**200 N. 1ST STREET, BRIGHTON, MICHIGAN**

**BLUE SKY SESSION**

The Council conducted an Early Blue Sky Session at 7:00 p.m. Present were Mayor Muzzin, Mayor Pro-Tem Pipoly, Councilmembers Bohn, Bandkau, Willis, Cooper and Tobbe. The Council reviewed the agenda items.

**REGULAR SESSION**

Mayor Muzzin called the regular meeting to order at 7:32 p.m. Following the Pledge of Allegiance, the roll was called. Present were Mayor Muzzin, Mayor Pro-Tem Pipoly, Councilmembers Willis, Bandkau, Cooper, Tobbe and Bohn. Also in attendance was Attorney Paul Burns, Staff members Dana Foster, Jennifer Burke, Patty Thomas, Kelly Hanna, Tom Wightman, Amy Cyphert and an audience of 2. Press and media included Tom Tolen from WHMI.

**AGENDA APPROVAL**

It was moved by Mayor Pro-Tem Pipoly, seconded by Tobbe to approve the agenda as written. Motion passed 7-0.

**MINUTE APPROVAL**

It was moved by Councilmember Bohn, seconded by Bandkau to approve the Regular Meeting minutes of November 20, 2014 as presented. Motion passed 7-0.

**CALL TO THE PUBLIC**

Mayor Muzzin opened the Call to the Public at 7:35 p.m. The following comment was heard:

Nancy Durance, Springhill, stated no work has been done on the site and that the inspector came out to inspect the wall.

Hearing no further comment, the Call to the Public was closed at 7:37 p.m.

**CONSENT AGENDA**

It was moved by Councilmember Pipoly, seconded by Cooper to approve the Consent Agenda as presented. Motion passed 7-0. The following items were approved:

1. Approval of a MDOT Category A Grant Resolution #14-22 for a Brighton Interiors Drive Improvement Project.
2. Approval of a Resolution #14-23 of Support for the SELCRA Board's millage related ballot proposal planning process.

3. Approval of the annual Budget Preparation & Review Process Calendar including the scheduling of dates for City Council Budget Review Worksessions

**RECEIVE REPORT FROM THE CITY ATTORNEY REGARDING PROCESS/TIMELINE FOR FILLING A FUTURE CITY COUNCIL VACANCY**

City Attorney, Paul Burns related the timeline for filling a City Council vacancy. He stated a new Councilmember shall be appointed 60 days from the last meeting of the former member.

It was moved by Councilmember Tobbe seconded by Bandkau to accept Councilmember Coopers resignation which is effective January 1, 2015 and the City would have 60 days from that date to fill the vacancy. Motion passed 7-0.

Applications will be seen at the January 15<sup>th</sup> meeting, a notice posted now and interviews will be held at the first meeting in February, and if a decision cannot be made, it will be discussed at second meeting in February.

**REVIEW OF POSSIBLE APPROVAL OF THE CITY MANAGER'S EMPLOYMENT AGREEMENT**

It was moved by Mayor Pro-Tem Pipoly, seconded by Cooper to release the attorney client privileged opinion letter regarding Manager Foster's employment agreement.

City Manager, Dana Foster recommended that the City Council request a pay and benefits study for all Administrative Non-Union positions including the City Manager, as it has been almost 3 years since the last professional study conducted by the MML.

It was moved by Councilmember Cooper, seconded by Bandkau to authorize the Mayor and City Clerk to execute the contract as presented, and that pay shall be retroactive to July 2014. Motion passed 7-0.

**CITY CUSTOMER INFORMATION**

Assistant DPW Director, Patty Thomas gave a leaf pickup update.

City Manager, Dana Foster gave an update on an MML Alert regarding Revenue Sharing.

It was moved by Councilmember Bandkau, seconded by Bohn to cancel the January 1, 2015 Council Meeting. Motion passed 7-0.

Mayor Pro-Tem Pipoly gave a PSD update.

Councilmember Bohn discussed the status of Springhill, stating the letter of credit is set to expire.

City Attorney, Paul Burns stated Engineer Gary Markstrom advised him that repairs have been made, he is preparing a Consent Judgment and they are addressing how to make the roads public.

Mayor Muzzin and Council send condolences to Diana Lowe for the passing of her mother.

City Council  
December 4, 2014  
Page 3

**CALL TO THE PUBLIC**

Mayor Muzzin gave a Call to the Public at 8:17 p.m. The following comments were heard:

Nancy Durance, 4616 Spring Mountain Drive, discussed the area including lot 11, 10 & 9 in Springhill stating that nothing has been done on-site and there are issues with the subdivision relative to homeowners association.

Hearing no further comment, Mayor Muzzin closed Call to the Public at 8:21 p.m.

**ADJOURNMENT**

It was moved by Councilmember Tobbe, seconded by Cooper to adjourn the meeting at 8:22 p.m. Motion passed 7-0.

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Jennifer Burke, Deputy City Clerk

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Jim Muzzin, Mayor



2911 Dorr Road  
Brighton, MI 48116  
810.227.5225  
810.227.3420 fax  
genoa.org

November 10, 2014

Mr. Dana Foster, Manager  
City of Brighton  
200 North First Street  
Brighton MI 48116

RE: Pine Creek Traffic Survey

When the Township Board last reviewed the request to gate the Pine Creek development they asked for input from the Livingston County Road Commission, Brighton Area Schools, emergency responders and the City of Brighton.

The homeowners have been securing reviews from the various parties. They have also commissioned a traffic survey. Please find attached a copy of the survey and a review letter from the Township Engineer.

Please let me know how you wish to proceed and how much time you would like to review this information. I want to provide the City ample time to review the survey and offer any input you wish to provide prior to placing this matter on an upcoming Board agenda.

Best regards,

Michael Archinal, Manager  
Genoa Charter Township

**SUPERVISOR**

Gary T. McCririe

**CLERK**

Paulette A. Skolarus

**TREASURER**

Robin L. Hunt

**TRUSTEES**

H. James Mortensen

Jean W. Ledford

Todd W. Smith

Linda Rowell

**MANAGER**

Michael C. Archinal

Cc: Township Board  
Kelly VanMarter, Assistant Township Manager



**TETRA TECH**

November 7, 2014

Mr. Mike Archinal, Manager  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

**Re: Pine Creek Traffic Survey Review**

Dear Mr. Archinal:

Pursuant to your direction, Tetra Tech has reviewed the traffic survey prepared for the Pine Creek subdivision by Beaubien Engineering dated April 2014. The survey was commissioned to quantify the volume of traffic entering and exiting the Pine Creek subdivision and, based on that information, provide recommendations as to improvements or changes to address noted traffic concerns. The primary concern of the subdivision property owners appears to be the pass-through traffic from nonresidents of the subdivision.

Tetra Tech's traffic engineer, Kyle Ramakers, P.E., performed a cursory review of the survey and its conclusions. Our comments from that review are presented below. Please note that we did not review the accuracy of the traffic counts and calculations in detail and are relying on the preparer for their accuracy.

- The report repeatedly mentioned the top speeds recorded in the spot speed study; however, the 85<sup>th</sup> percentile speeds (what is used to determine speed limits) were between 29 and 31 mph, depending on location and direction. We believe this would compare favorably to other residential roads in the area, and is certainly not unique to Pine Creek Ridge. While the report attempts to allude to a connection between speeding and the cut-through traffic, it never states there is a connection or how their proposed gate system would alleviate this.
- The study mentions the "...increased potential for vehicle-pedestrian conflicts" when describing the roads; however, we believe the road design is consistent with others in the area, and there was no safety analysis performed (likely since crash experience is quite low). Again, the report alludes (actually requires the reader to draw a conclusion) to some connection between the road design, safety, and the cut-through traffic, but there is no statement as to how gates would improve the safety within the development.
- A case of an over-representation occurs in Item #1 on page 4 of 6 in the report, when it discusses traffic entering and exiting Wyndham Lane at Brighton Lake. By definition, an intersection is a

transition zone, with various vehicle movements, but the conclusion of this statement is written for a roadway segment by stating "...53% of the Brighton Lake volume entered or exited at Wyndham Lane." To arrive at the 53%, the numerator was the combined movements to/from Brighton Lake and Wyndham for the four peak hours collected (EBL:150 + WBR:103 + SBL:119 + SBR:139 = 511); however, the denominator used for calculating the percentage was only the traffic on Brighton Lake Road (WB:460 + EB:505 = 965), but should have included the Wyndham approach volumes as well (you cannot properly use numbers in the numerator and not the denominator). When properly calculated, the percentage drops to closer to 38%.

- In the turning movement count sections, several times the report implies conclusions without actually stating them. Statements like Item #2 on page 4 of 6 in the report states "...means that 50% of all southbound Bauer traffic entered Pine Creek Ridge" while not acknowledging or discussing how this may be the best access point for residents. Again, it does not state anything outright, but relies on a conclusion by the reader.
- The Origin-Destination (O-D) study does not factor in how long it would take someone to travel through the development. Just because someone is seen travelling through the development (entering at one location and exiting another) does not mean that (A) they performed a stop along the way, either at their own residence or someone else's (this could especially be true of students heading towards Brighton High School in the morning); or (B) they are a resident but choose this as their travel route. Again, the study infers that all vehicles entering at one location and leaving another is non-resident pass-through traffic, but does not provide any support information for this. It would be helpful to know how long it would take to travel through the development, and how long these cut-through trips took to split out the users. It could be all are cut-through, but there is not enough data to determine this.
- Another item with the O-D study is that the charts focus on percentages, but not actual numbers. We did not take the time to verify/compare the O-D traffic numbers with the traffic counts, but in many instances the higher percentages correlated with lower volumes, which appear to be a bit of an over-representation. Color-coded figures indicating traffic routes, rather than overall percentages, would have provided a clearer representation of patterns within the development.
- We would not consider the ADT volumes collected on Wyndham Lane or Hidden Pine to be excessively or abnormally high, considering the number of residences within the development. We would also not consider the volumes higher than what the streets are designed to handle.
- The study only reviewed peak periods, and not the overall day, as far as movements at intersections and O-D studies. The Township should carefully consider this peak hour data as opposed to conditions throughout the day, along with emergency access and response. Additionally, in our opinion, only the O-D study provides any information on the

amount of cut-through traffic, and all other information collected requires a conclusion drawn by the reader.

It appears there are some issues to address in the study to present a more accurate picture of the traffic moving through the development and the impact this has on the development. The study also needs to provide supporting counts or calculations for a number of the statements presented. Given the assumption that the majority of the pass-through traffic originates to the south of the development, it may be prudent to study the impact of improvements to Bauer Road versus gating the community as a remedy for the perceived issue.

We will make ourselves available to discuss the findings in more detail should that be requested. Let us know if you have any questions or need anything further.

Sincerely,

A handwritten signature in black ink, appearing to read "Gary Markstrom", written in a cursive style.

Gary J. Markstrom, P.E.  
Unit Vice President

# Pine Creek Ridge Traffic Survey



Genoa Township,  
Livingston County, Michigan

April 2014

Beaubien Engineering





1685 Ross Drive  
Troy, MI 48084  
248.515.3628  
beaubienengineering.com

April 19, 2014

Dr. Ronald Paler  
President  
Pine Creek Ridge Homeowners Association  
5771 Lake Ridge Drive  
Brighton, Michigan 48116

Re: Traffic Engineering Services – Traffic Survey Summary Report

Dear Dr. Paler:

***Introduction***

To control traffic volumes, reduce speeding, and to increase public safety, the Pine Creek Ridge Homeowners Association is requesting approval from Genoa Township to convert streets in the subdivision from public ownership to private ownership. To gain an understanding of how these streets are currently being used, the Pine Creek Ridge Homeowners Association has retained Beaubien Engineering, Troy, Michigan, to gather important statistical information on traffic volumes, vehicular speeds, and direction and origin of vehicular traffic.

All the roads in Pine Creek Ridge are of similar design, with many hills and curves, and no sidewalks. The road width is only 25 feet, and there are no barrier curbs to prevent vehicles from leaving the roadway if a driver should lose control. Because there are no sidewalks, the streets in the area are used by residents and their children to get to parks, swimming pool, tennis courts, and the Lodge with its beach and boats. The streets are also used when walking to neighbors and friends, jogging, walking the dog, riding bicycles and tricycles. Speeding traffic and the increased traffic volume from cut-through traffic, combined with the roadway design and geometry have increased the potential for vehicle-pedestrian conflicts.

***Traffic Volume (Exhibit 1)***

***Synopsis***

We collected hourly traffic volume for a total of 89 hours over a four day weekday period at two locations during the week of December 2, 2013. The locations were:

- Wyndam Lane at Kingsley Court
- Hidden Pines Drive between Lake Forest and River Ridge

On Wyndam Lane we recorded weekday average volume of 1207. On Hidden Pines Drive we recorded weekday average volume of 715. At both locations the peak hour of travel was 7:00 am

to 8:00 am. During this one hour period we recorded an average of 155 vehicles on Wyndam Lane and 89 vehicles on Hidden Pines. The peak afternoon hours were between 2 pm and 4 pm. During this two hour period of time we recorded an average of 223 vehicles on Wyndam and 123 on Hidden Pines.

### ***Traffic Speeds (Exhibit 2)***

#### ***Synopsis***

We collected vehicle speeds during the week of December 2, 2013, by direction of travel for a total of 89 hours over a four day period at two locations: The locations were:

- Wyndam Lane at Kingsley Court
- Hidden Pines Drive between Lake Forest and River Ridge

More than 4,500 speed observations were recorded on Wyndam Lane. A plot of the distribution of these observed speeds (Exhibit 2) shows that a majority of the vehicles exceeded the 25 mph speed limit. The 85<sup>th</sup> percentile speed was 30 mph eastbound and 29 mph westbound. The 85<sup>th</sup> percentile speed is the speed at which 85% of the vehicles are traveling at or below. The top speed observed was 44 mph.

More than 2,600 speed observations were recorded on Hidden Pines. A plot of the distribution of these observed speeds (Exhibit 2) shows that a majority of the vehicles exceeded the 25 mph speed limit. The 85<sup>th</sup> percentile speed was 29 mph westbound and 31 mph eastbound. The top speed observed was 45 mph.

### ***Turning Movement Counts (Exhibit 3)***

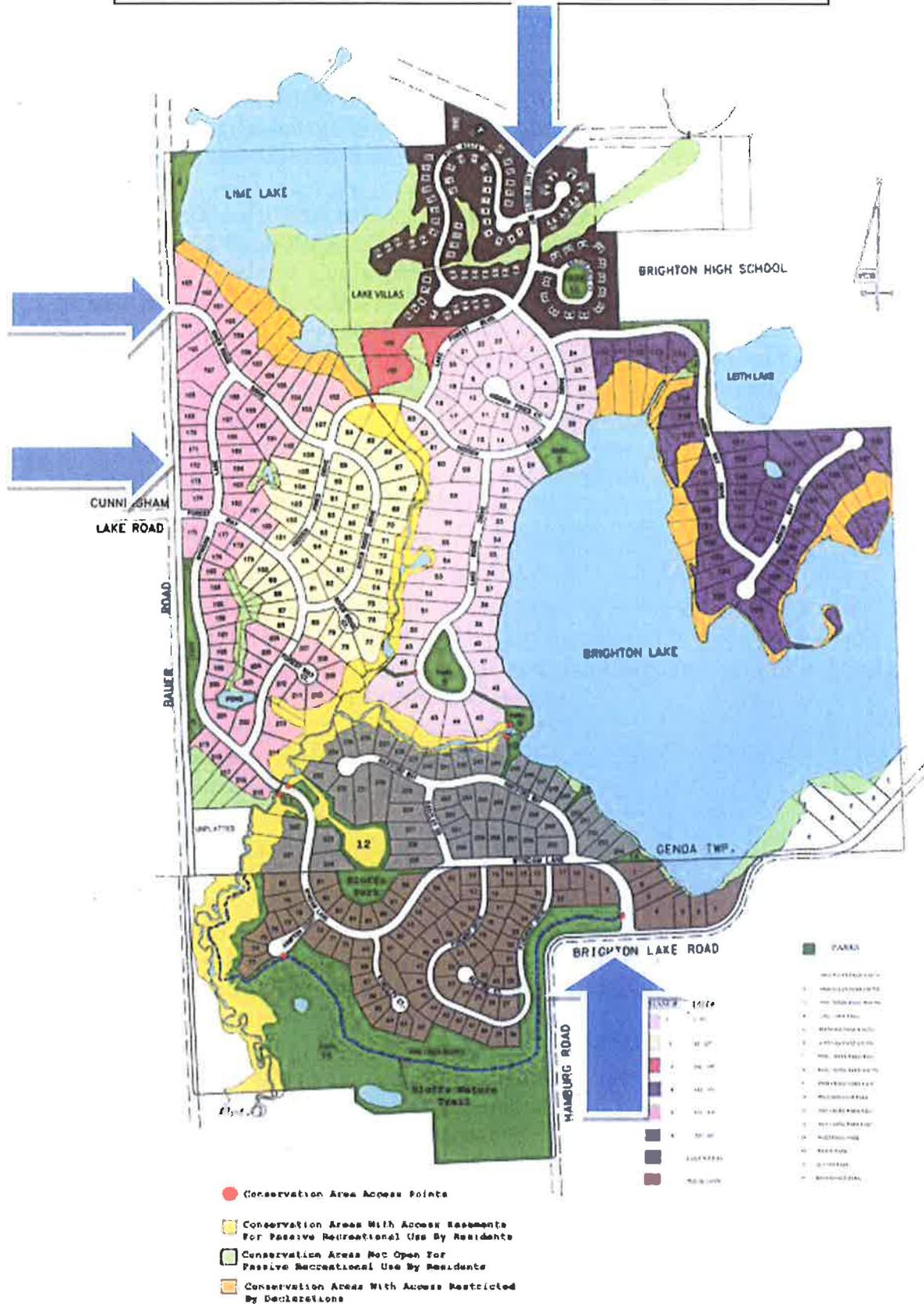
#### ***Synopsis***

Turning movement counts assist in documenting travel patterns and entering exiting volumes and are useful in determining where diverted trips might go if the subdivision entrances are no longer open for public travel.

During the week of December 2, 2013, we collected peak hour turning movement counts at all four entrances. The locations are shown in Figure A. They were:

- Brighton Lake Road /Wyndam Lane
- Forest Way/Cunningham Lake/Bauer
- River Ridge/Bauer
- Lake Forest Blvd. /Brighton Road

**Figure A – Traffic Control Points for Turning Movement Counts and Origin – Destination Surveys**



Peak traffic periods of 7:00 – 9:00 am and 4:00 – 6:00 pm time periods were selected because these were the highest volumes periods recorded by earlier LCRC studies.

1. Our studies found that during the 7:00 am to 8:00 am period, 88 vehicles entered Wyndam Lane from Brighton Lake Road. A review of the four (4) hour period of the turning movement counts at Brighton Lake/Wyndam showed that of the 965 vehicles on Brighton Lake and 511 turned into or out of Wyndam Lane. Therefore, 53 % of the Brighton Lake volume entered or exited at Wyndam Lane.
2. During the 7:00 am to 8:00 am time period there were 42 (58%) southbound left turns from Bauer into River Ridge. There are also 59 (98%) right turns out of River Ridge on to northbound Bauer. A similar pattern occurred during the 5:00 pm to 6:00 pm time period. For the combined four (4) hour period of the turning movement counts at Bauer/River Ridge there were 150 southbound turns into River Ridge out of a total of 300 southbound vehicles on Bauer. This means that 50% of all southbound Bauer traffic entered Pine Creek Ridge. The paved portion of Bauer Road ends south of River Ridge.
3. During the 7 am to 8 am time period, 104 northbound vehicles (94%) on Lake Forest turned right on to Brighton Road..
4. During the 7:00 am to 8:00 am period, of the 26 vehicles traveling east on Cunningham Lake, 16 vehicles crossed Bauer to enter at Forest Way.

#### ***Origin – Destination Surveys – Exhibit 4***

##### ***Synopsis***

On Wednesday, December 4, 2013, during the four (4) hour period from 7:00 am – 9:00 am and 4:00 pm – 6:00 pm, we collected peak hour license plate information for all entering and exiting vehicles at the control points at the following intersections:

- Lake Forest/Brighton Road
- Forest Way/Cunningham Lake/Bauer Road
- River Ridge/Bauer
- Wyndam Lane/Brighton Lake Road

To determine the volume of cut-through traffic, a portion of the license number was recorded (the last four digits) as a vehicle passed each station. The stations were established on the boundaries of the study area. Plate numbers and the time were recorded by five minute intervals for each of the peak hour traffic periods. For purposes of the study, the origin was the place where the vehicle was first observed, and the destination is where it was last observed. Matching entering license plates numbers against exiting license plate numbers provided the travel patterns of vehicles and identified those with neither an origin nor a destination within the subdivision. This showed the cut-through travel patterns and quantified the volume of traffic that would be diverted to other area streets in the regional network of roads if the subdivision streets became private.

The most frequent matches were found for travel between Brighton Lake/Wyndam Lane and Bauer/River Ridge. Between 7:00 am and 8:00 am, 38% of the vehicles entering at the Brighton Lake/Wyndam entrance exited at Bauer /River Ridge. Between 8:00 am and 9:00 am the proportion increased to 59%.

Between 7:00 am and 8:00 am, 67% of vehicles entering at Bauer/River Ridge exited to Brighton Lake/Wyndam. Between 8:00 am and 9:00 am this proportion was 54%. In the afternoon (5:00 pm to 6:00 pm) 26% of those exiting at Bauer and River Ridge originated from Brighton Lake/Wyndham. Of the 681 vehicles turning into the four (4) entrances during the test period, more than 38% (261) were determined to be cut-through traffic.

### ***Conclusions***

- Weekday average traffic volume was 1207 on Wyndam Lane and 715 on Hidden Pine. The highest traffic volume observed in the study area occurred between 7 am and 8 am.
- A majority of the speeds recorded exceeded the 25 mph speed limit. The top traffic speed observed was 45 mph.
- The traffic pattern observed in both the turning movement counts and the origin-destination surveys indicates that many motorists are using study area streets as a cut-through route.

Closing the Brighton Lake/ Wyndam Lane entrance would divert cut-through traffic to Third Street or to Grand River and W. Main Street, depending on the origin of the trip. Grand River and Main Street were designed to handle higher traffic volumes. Wyndam Lane and River Ridge, on the other hand, were designed as residential streets.

Very truly yours,

BEAUBIEN ENGINEERING, LLC.



Richard F. Beaubien, P.E.  
Professional Traffic Operations Engineer  
Managing Director

# Pine Creek Ridge Traffic Survey



Exhibit 1,  
Traffic Volumes

April 2014

Beaubien Engineering



Project: Pine Creek Traffic Study  
 Count Type: 72 Hour ATR Count  
 Weather: Mon/dry, Tues/Lt.Rain, Wed/ldly,Thrus/dry  
 Count By: M.Match Pav't: Asph 2Lanes

WYNDAMLN\_VOLUME  
 Wyndam Lane  
 (100' East of Kingsley Ct.)  
 Station ID: 2-Way Count  
 Site Code: Volume Ct.#2  
 Date Start: 02-Dec-13

**Traffic Study Conducted For:  
 Beaubien Engineering**

Start Time	02-Dec-13		03-Dec-13		04-Dec-13		05-Dec-13		06-Dec-13		07-Dec-13		08-Dec-13		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	3	0	2	3	2	4	2	2	*	*	*	*	*	*	2	2
01:00	0	1	0	0	0	0	1	0	*	*	*	*	*	*	0	1
02:00	0	1	1	1	0	1	1	1	*	*	*	*	*	*	0	1
03:00	0	2	1	0	0	0	0	0	*	*	*	*	*	*	0	2
04:00	1	1	1	0	0	2	1	1	*	*	*	*	*	*	0	0
05:00	0	0	2	0	6	2	4	2	*	*	*	*	*	*	1	1
06:00	14	14	16	11	15	14	10	17	*	*	*	*	*	*	2	4
07:00	<b>64</b>	<b>89</b>	<b>64</b>	<b>84</b>	<b>76</b>	<b>96</b>	<b>61</b>	<b>88</b>	*	*	*	*	*	*	<b>66</b>	<b>89</b>
08:00	42	48	42	49	51	51	46	43	*	*	*	*	*	*	45	48
09:00	40	36	21	21	33	26	23	35	*	*	*	*	*	*	29	30
10:00	27	29	32	15	31	20	30	16	*	*	*	*	*	*	30	20
11:00	24	23	17	23	33	27	19	22	*	*	*	*	*	*	23	24
12:00 PM	28	29	23	32	31	29	27	30	*	*	*	*	*	*	27	30
01:00	22	27	26	30	22	34	30	36	*	*	*	*	*	*	25	32
02:00	<b>59</b>	<b>35</b>	<b>65</b>	<b>51</b>	<b>63</b>	<b>44</b>	<b>54</b>	<b>44</b>	*	*	*	*	*	*	<b>60</b>	<b>44</b>
03:00	46	<b>72</b>	59	<b>67</b>	51	<b>63</b>	52	<b>65</b>	*	*	*	*	*	*	52	<b>67</b>
04:00	42	52	55	62	51	59	48	37	*	*	*	*	*	*	49	52
05:00	46	46	48	57	44	48	*	*	*	*	*	*	*	*	46	53
06:00	28	45	39	58	36	47	*	*	*	*	*	*	*	*	34	50
07:00	27	28	29	27	33	33	*	*	*	*	*	*	*	*	27	29
08:00	14	14	19	21	35	21	*	*	*	*	*	*	*	*	23	19
09:00	18	12	16	7	15	13	*	*	*	*	*	*	*	*	16	11
10:00	2	3	3	6	5	7	*	*	*	*	*	*	*	*	3	5
11:00	4	0	2	3	5	2	*	*	*	*	*	*	*	*	4	2
Total Day	551	614	583	636	629	645	407	444	0	0	0	0	0	0	578	629
AM Peak Vol.	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	-	-	-	-	-	-	07:00	07:00
PM Peak Vol.	14:00	15:00	14:00	15:00	14:00	15:00	14:00	15:00	-	-	-	-	-	-	14:00	15:00
Comb. Total ADT	1165	1219	1274	851	1274	851	0	0	0	0	0	0	0	1207	1207	



# Pine Creek Ridge Traffic Survey

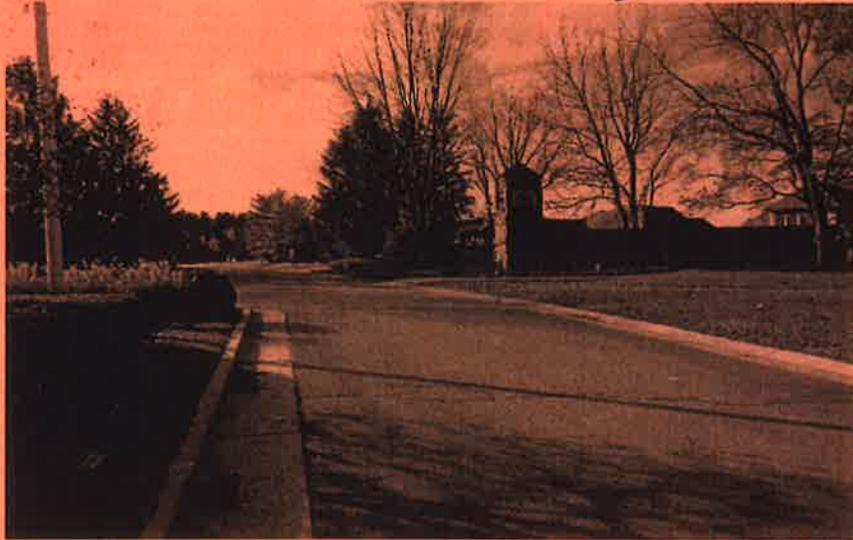
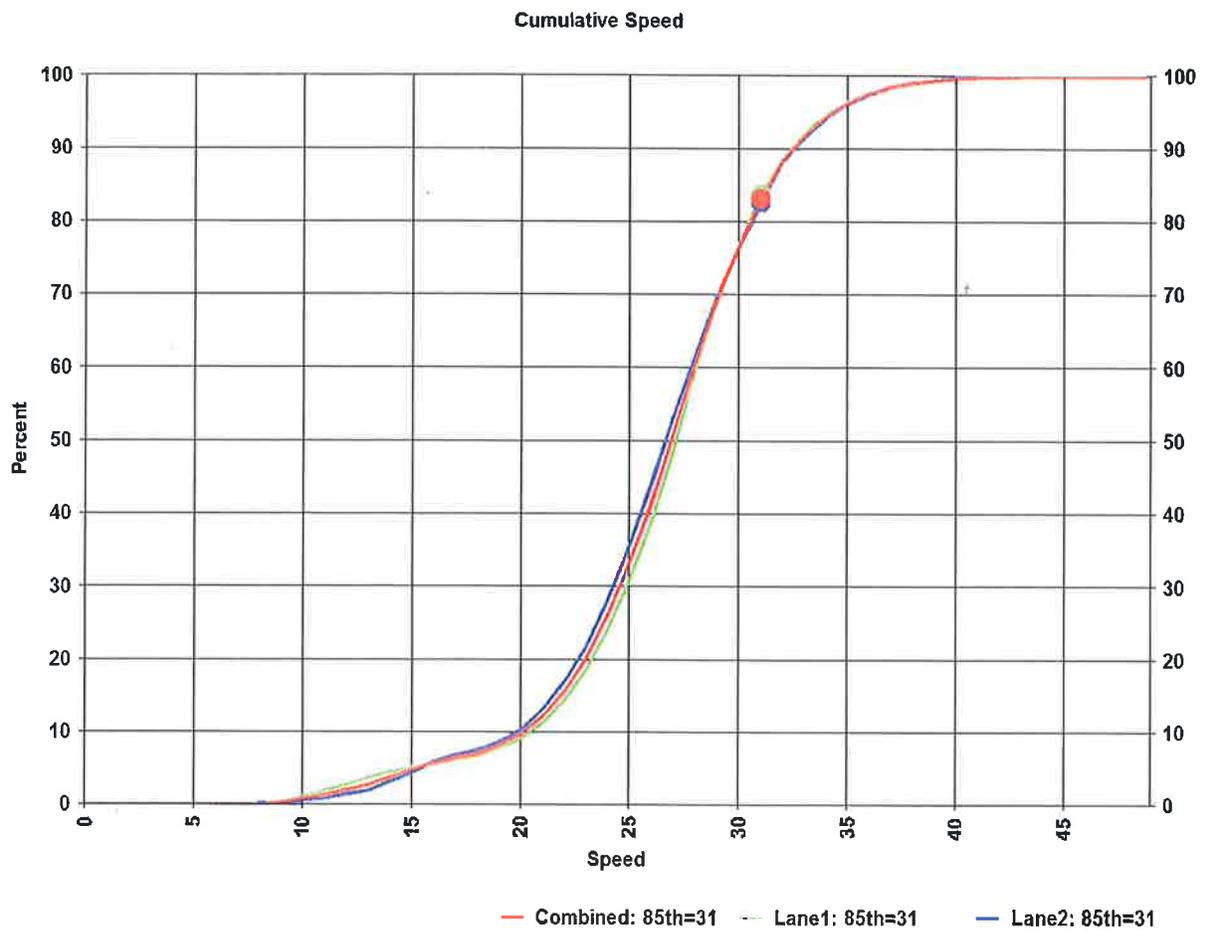


Exhibit 2,  
Traffic Speeds

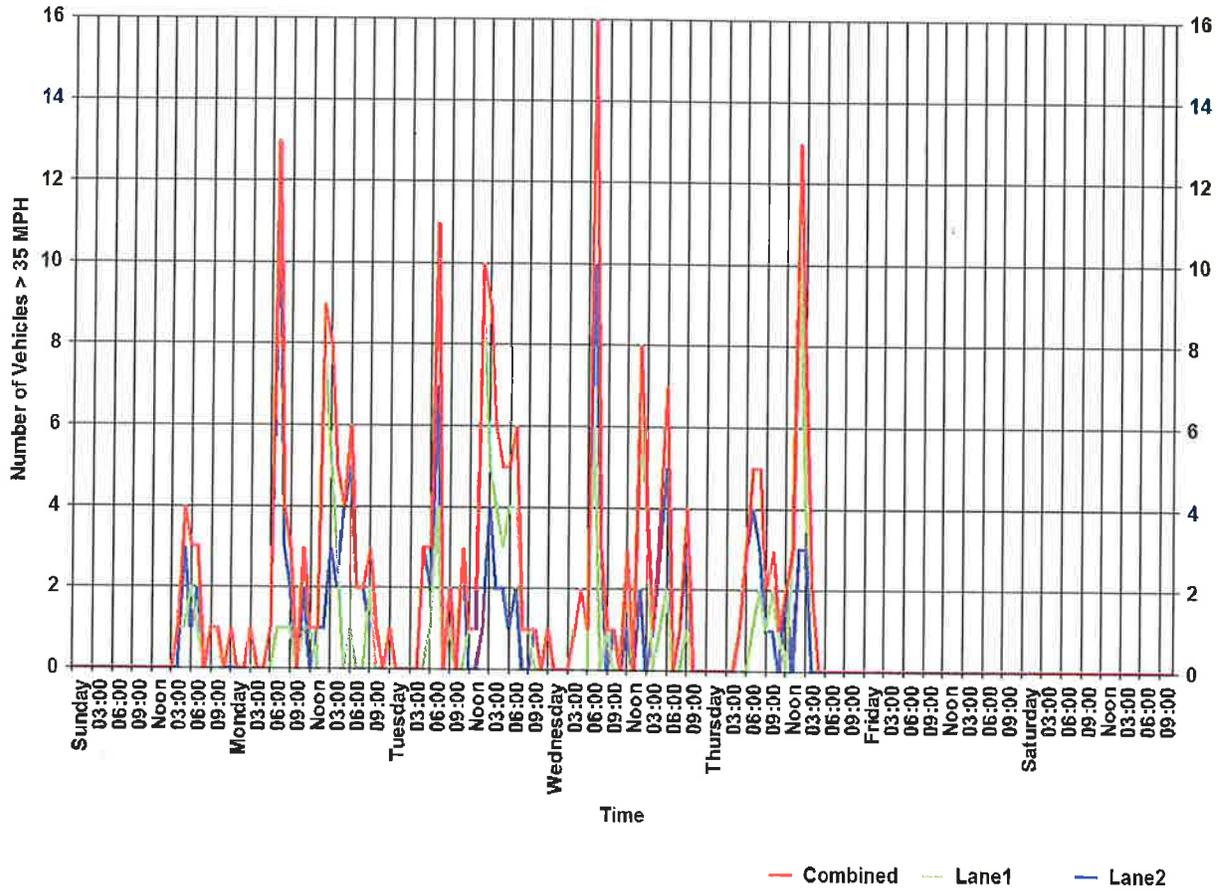
April 2014

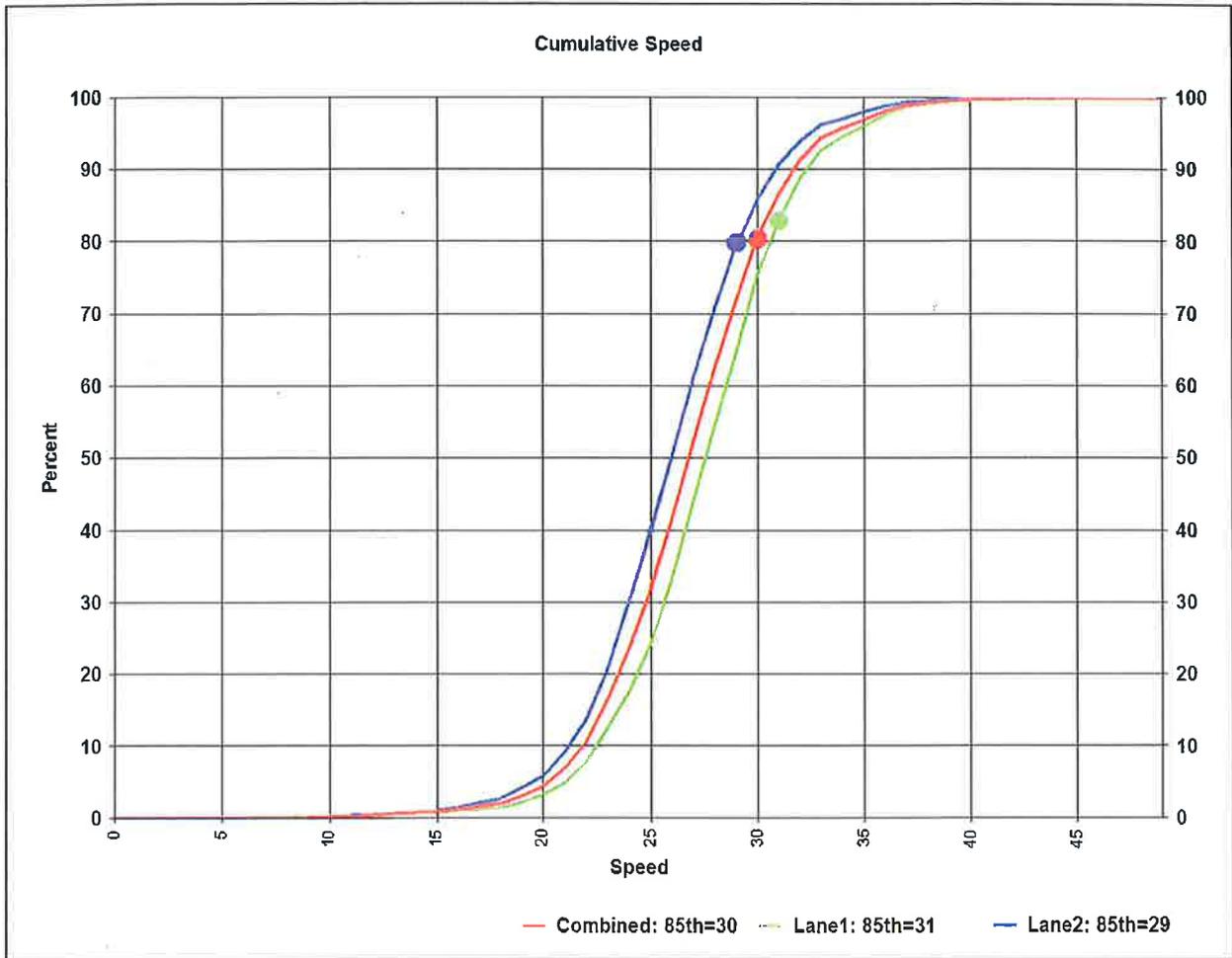
Beaubien Engineering



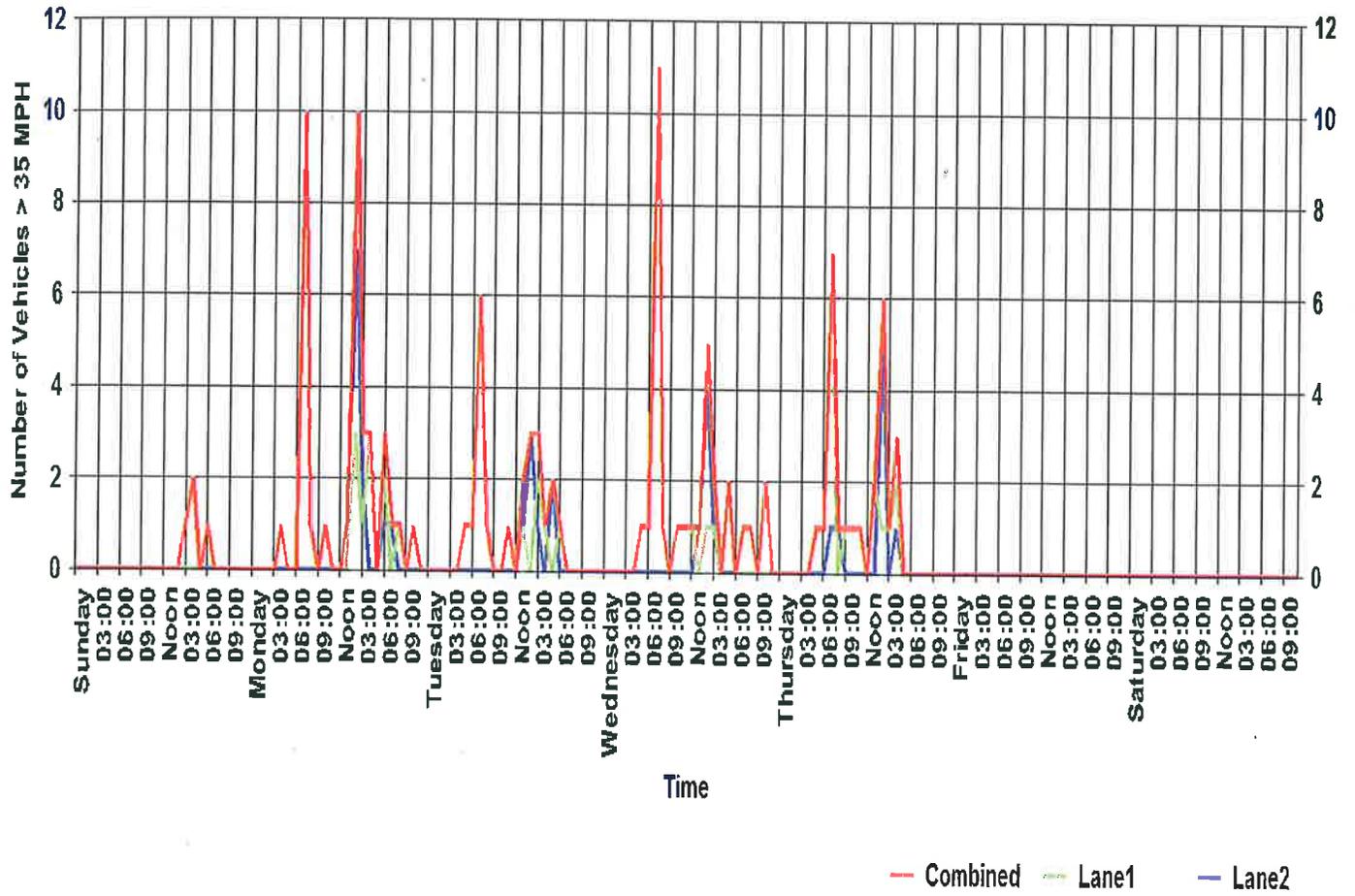


Speed as Total Volume





### Speed as Total Volume



# Pine Creek Ridge Traffic Survey



Exhibit 3,  
Turning Movement Counts

April 2014

Beaubien Engineering



**Traffic Data Collection, TDC**  
 7504 Sawgrass Drive, Washington, MI. 48094 Ph. (586) 786-5407



Traffic Study Performed For:

**Beaubien Engineering**

Project: Pine Creek Traffic Study  
 Location: Genoa Township  
 Weather: Cloudy, 30's  
 Count By: Miovision Video SCU 3DQ

File Name : TMC1\_RiverRidge&Bauer  
 Site Code : TMC 1  
 Start Date : 12/4/2013  
 Page No : 1

Groups Printed- Pass Cars - Single Units - Semi's - Ped

Start Time	Bauer Road Southbound				River Ridge Drive Westbound				Bauer Road Northbound				(No Approach) Eastbound				Int. Total
	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	
07:00 AM	0	7	7	14	7	0	0	7	1	13	0	14	0	0	0	0	35
07:15 AM	0	6	15	21	10	0	0	10	0	9	0	9	0	0	0	0	40
07:30 AM	0	7	10	17	22	0	0	22	0	12	0	12	0	0	0	0	51
07:45 AM	0	11	10	21	20	0	1	21	0	15	0	15	0	0	0	0	57
Total	0	31	42	73	59	0	1	60	1	49	0	50	0	0	0	0	183
08:00 AM	0	9	6	15	16	0	0	16	0	18	0	18	0	0	0	0	49
08:15 AM	0	16	6	22	14	0	0	14	1	20	0	21	0	0	0	0	57
08:30 AM	0	5	6	11	16	0	0	16	0	10	0	10	0	0	0	0	37
08:45 AM	0	8	9	17	9	0	0	9	0	12	0	12	0	0	0	0	38
Total	0	38	27	65	55	0	0	55	1	60	0	61	0	0	0	0	181
**** BREAK ****																	
04:00 PM	0	20	15	35	5	0	0	5	0	12	0	12	0	0	0	0	52
04:15 PM	0	5	7	12	7	0	1	8	1	7	0	8	0	0	0	0	28
04:30 PM	0	14	8	22	8	0	0	8	0	16	0	16	0	0	0	0	46
04:45 PM	0	9	9	18	11	0	0	11	0	8	0	8	0	0	0	0	37
Total	0	48	39	87	31	0	1	32	1	43	0	44	0	0	0	0	163
05:00 PM	0	7	10	17	5	0	1	6	1	10	0	11	0	0	0	0	34
05:15 PM	0	11	10	21	10	0	0	10	0	12	0	12	0	0	0	0	43
05:30 PM	0	8	16	24	11	0	0	11	0	8	0	8	0	0	0	0	43
05:45 PM	0	7	6	13	9	0	0	9	0	3	0	3	0	0	0	0	25
Total	0	33	42	75	35	0	1	36	1	33	0	34	0	0	0	0	145
Grand Total	0	150	150	300	180	0	3	183	4	185	0	189	0	0	0	0	672
Approach %	0	50	50		98.4	0	1.6		2.1	97.9	0		0	0	0		
Total %	0	22.3	22.3	44.6	26.8	0	0.4	27.2	0.6	27.5	0	28.1	0	0	0	0	
Pass Cars	0	143	147	290	178	0	3	181	4	170	0	174	0	0	0	0	645
% Pass Cars	0	95.3	98	96.7	98.9	0	100	98.9	100	91.9	0	92.1	0	0	0	0	96
Single Units	0	3	1	4	0	0	0	0	0	4	0	4	0	0	0	0	8
% Single Units	0	2	0.7	1.3	0	0	0	0	0	2.2	0	2.1	0	0	0	0	1.2
Buses-Semi's	0	4	2	6	2	0	0	2	0	11	0	11	0	0	0	0	19
% Buses-Semi's	0	2.7	1.3	2	1.1	0	0	1.1	0	5.9	0	5.8	0	0	0	0	2.8
Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments: Traffic Study Conducted During Typical Weekday (Wed.) 7:00-9:00AM Morning & 4:00-6:00 PM Afternoon Peak Hours. Non-Signalized intersection.

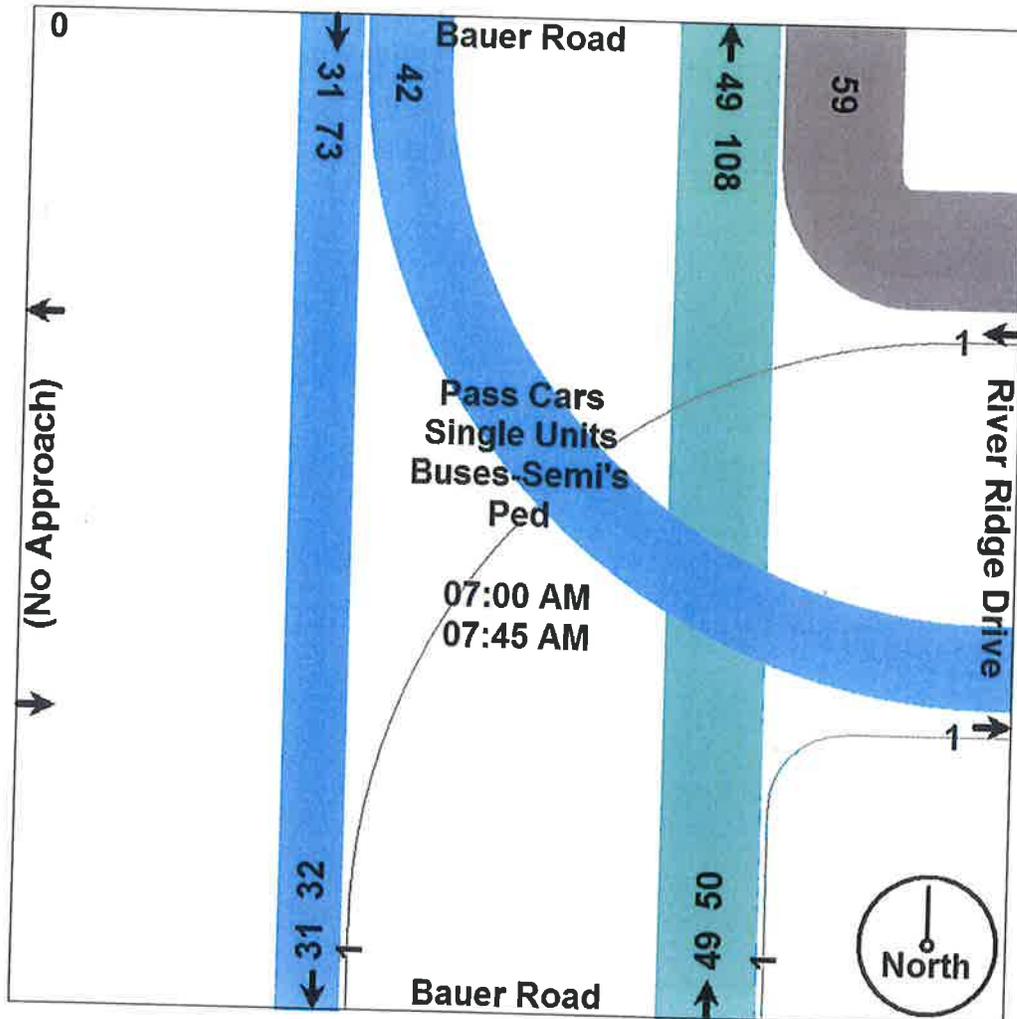
**Traffic Data Collection, TDC**  
 7504 Sawgrass Drive, Washington, MI, 48094 Ph. (586) 786-5407  
 Traffic Study Performed For:  
**Beaubien Engineering**



**Project:** Pine Creek Traffic Study  
**Location:** Genoa Township  
**Weather:** Cloudy, 30's  
**Count By:** Miovision Video SCU 3DQ

**File Name :** TMC1\_RiverRidge&Bauer  
**Site Code :** TMC 1  
**Start Date :** 12/4/2013  
**Page No :** 3

Start Time	Bauer Road Southbound				River Ridge Drive Westbound				Bauer Road Northbound				(No Approach) Eastbound				Int. Total
	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	7	7	14	7	0	0	7	1	13	0	14	0	0	0	0	35
07:15 AM	0	6	15	21	10	0	0	10	0	9	0	9	0	0	0	0	40
07:30 AM	0	7	10	17	22	0	0	22	0	12	0	12	0	0	0	0	51
07:45 AM	0	11	10	21	20	0	1	21	0	15	0	15	0	0	0	0	57
Total Volume	0	31	42	73	59	0	1	60	1	49	0	50	0	0	0	0	183
% App. Total	0	42.5	57.5		98.3	0	1.7		2	98	0		0	0	0	0	
PHF	.000	.705	.700	.869	.670	.000	.250	.682	.250	.817	.000	.833	.000	.000	.000	.000	
Pass Cars	0	29	40	69	59	0	1	60	1	47	0	48	0	0	0	0	177
% Pass Cars	0	93.5	95.2	94.5	100	0	100	100	100	95.9	0	96.0	0	0	0	0	96.7
Single Units	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
% Single Units	0	3.2	2.4	2.7	0	0	0	0	0	0	0	0	0	0	0	0	1.1
Buses-Semi's	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	4
% Buses-Semi's	0	3.2	2.4	2.7	0	0	0	0	0	4.1	0	4.0	0	0	0	0	2.2
Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



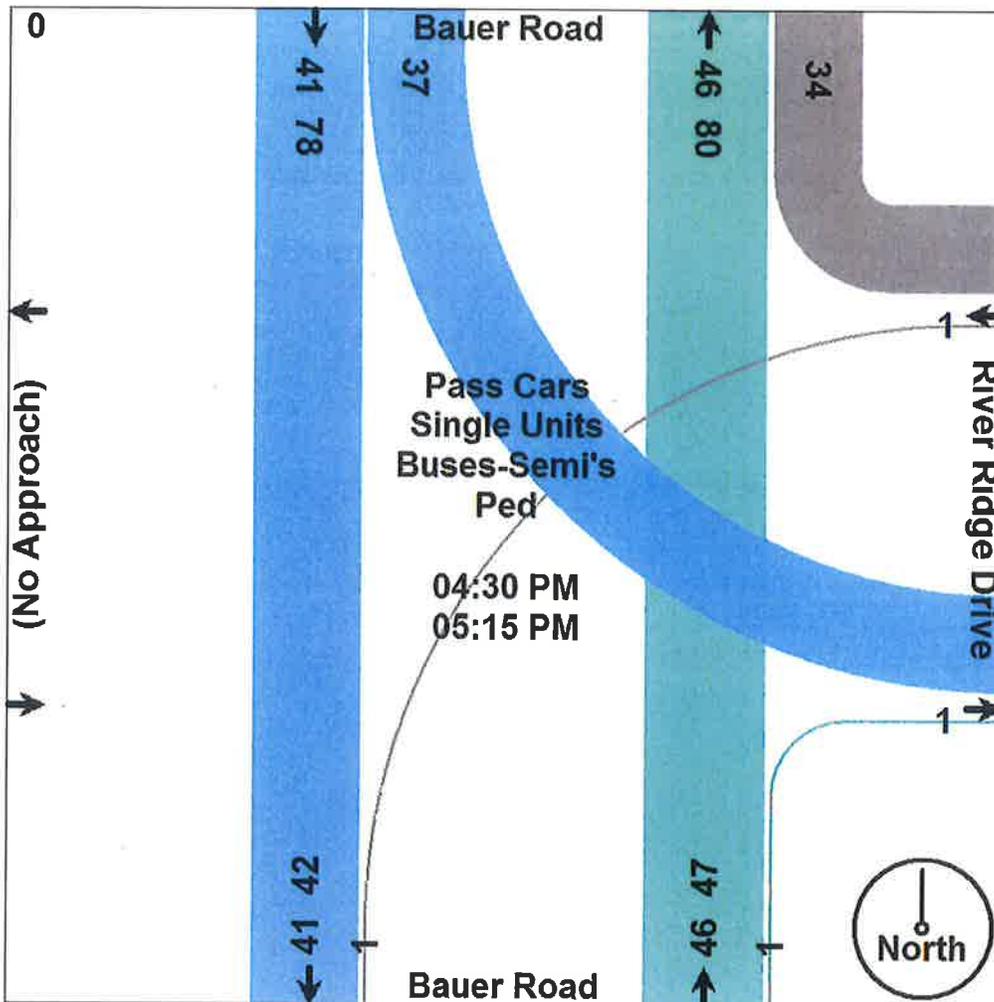
**Traffic Data Collection, TDC**  
 7504 Sawgrass Drive, Washington, MI. 48094 Ph. (586) 786-5407  
 Traffic Study Performed For:  
**Beaubien Engineering**



**Project:** Pine Creek Traffic Study  
**Location:** Genoa Township  
**Weather:** Cloudy, 30's  
**Count By:** Miovision Video SCU 3DQ

**File Name :** TMC1\_RiverRidge&Bauer  
**Site Code :** TMC 1  
**Start Date :** 12/4/2013  
**Page No :** 4

Start Time	Bauer Road Southbound				River Ridge Drive Westbound				Bauer Road Northbound				(No Approach) Eastbound				Int. Total
	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	14	8	22	8	0	0	8	0	16	0	16	0	0	0	0	46
04:45 PM	0	9	9	18	11	0	0	11	0	8	0	8	0	0	0	0	37
05:00 PM	0	7	10	17	5	0	1	6	1	10	0	11	0	0	0	0	34
05:15 PM	0	11	10	21	10	0	0	10	0	12	0	12	0	0	0	0	43
Total Volume	0	41	37	78	34	0	1	35	1	46	0	47	0	0	0	0	160
% App. Total	0	52.6	47.4		97.1	0	2.9		2.1	97.9	0		0	0	0		
PHF	.000	.732	.925	.886	.773	.000	.250	.795	.250	.719	.000	.734	.000	.000	.000	.000	.870
Pass Cars	0	41	37	78	34	0	1	35	1	42	0	43	0	0	0	0	156
% Pass Cars	0	100	100	100	100	0	100	100	100	91.3	0	91.5	0	0	0	0	97.5
Single Units	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
% Single Units	0	0	0	0	0	0	0	0	0	4.3	0	4.3	0	0	0	0	1.3
Buses-Semi's	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
% Buses-Semi's	0	0	0	0	0	0	0	0	0	4.3	0	4.3	0	0	0	0	1.3
Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



**Traffic Data Collection, TDC**  
 7504 Sawgrass Drive, Washington, MI, 48094 Ph. (586) 786-5407



Traffic Study Performed For:  
**Beaubien Engineering**

Project: Pine Creek Traffic Study  
 Location: Genoa Township  
 Weather: Cloudy, 30's  
 Count By: Miovision Video SCU I24

File Name : tmc2\_forestway&bauer  
 Site Code : TMC 2  
 Start Date : 12/4/2013  
 Page No : 1

Groups Printed- Pass Cars - Single Units - Semi's - Ped

Start Time	Bauer Road (Gravel) Southbound				Forest Way Drive Westbound				Bauer Road (Gravel) Northbound				Cunningham Lake (Gravel) Eastbound				Int. Total
	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	
07:00 AM	0	6	1	7	2	0	0	2	1	8	1	10	1	7	4	12	31
07:15 AM	1	4	0	5	1	0	0	1	0	8	0	8	1	6	0	7	21
07:30 AM	1	4	1	6	0	1	0	1	0	11	0	11	3	2	0	5	23
07:45 AM	0	4	2	6	2	2	0	4	0	13	2	15	0	1	1	2	27
Total	2	18	4	24	5	3	0	8	1	40	3	44	5	16	5	26	102
08:00 AM	0	8	2	10	0	0	0	0	1	16	1	18	0	2	2	4	32
08:15 AM	2	12	2	16	2	0	0	2	0	15	0	15	0	1	3	4	37
08:30 AM	1	2	1	4	2	0	0	2	0	7	0	7	0	0	1	1	14
08:45 AM	0	6	4	10	3	0	0	3	0	7	0	7	0	0	2	2	22
Total	3	28	9	40	7	0	0	7	1	45	1	47	0	3	8	11	105
**** BREAK ****																	
04:00 PM	3	16	3	22	4	4	0	8	0	7	2	9	0	0	1	1	40
04:15 PM	1	7	0	8	0	4	1	5	0	8	1	9	2	1	1	4	26
04:30 PM	2	9	2	13	2	1	0	3	0	11	0	11	2	1	4	7	34
04:45 PM	1	6	1	8	3	1	0	4	0	5	0	5	0	0	0	0	17
Total	7	38	6	51	9	10	1	20	0	31	3	34	4	2	6	12	117
05:00 PM	0	7	0	7	0	0	1	1	0	7	1	8	0	1	1	2	18
05:15 PM	1	9	1	11	1	3	0	4	0	10	1	11	0	1	1	2	28
05:30 PM	2	6	0	8	1	1	0	2	0	4	0	4	0	0	2	2	16
05:45 PM	1	7	0	8	0	1	0	1	0	3	1	4	1	0	0	1	14
Total	4	29	1	34	2	5	1	8	0	24	3	27	1	2	4	7	76
Grand Total	16	113	20	149	23	18	2	43	2	140	10	152	10	23	23	56	400
Apprch %	10.7	75.8	13.4		53.5	41.9	4.7		1.3	92.1	6.6		17.9	41.1	41.1		
Total %	4	28.2	5	37.2	5.8	4.5	0.5	10.8	0.5	35	2.5	38	2.5	5.8	5.8	14	
Pass Cars	16	108	17	141	19	18	2	39	2	133	10	145	10	22	19	51	376
% Pass Cars	100	95.6	85	94.6	82.6	100	100	90.7	100	95	100	95.4	100	95.7	82.6	91.1	94
Single Units	0	0	3	3	3	0	0	3	0	1	0	1	0	1	0	1	8
% Single Units	0	0	15	2	13	0	0	7	0	0.7	0	0.7	0	4.3	0	1.8	2
Buses-Semi's	0	5	0	5	1	0	0	1	0	6	0	6	0	0	4	4	16
% Buses-Semi's	0	4.4	0	3.4	4.3	0	0	2.3	0	4.3	0	3.9	0	0	17.4	7.1	4
Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments: Traffic Study Conducted During Weekday (Wed.) 7:00-9:00 AM Morning & 4:00-6:00 PM Afternoon Peak Hours. Non-Signalized Intersection.

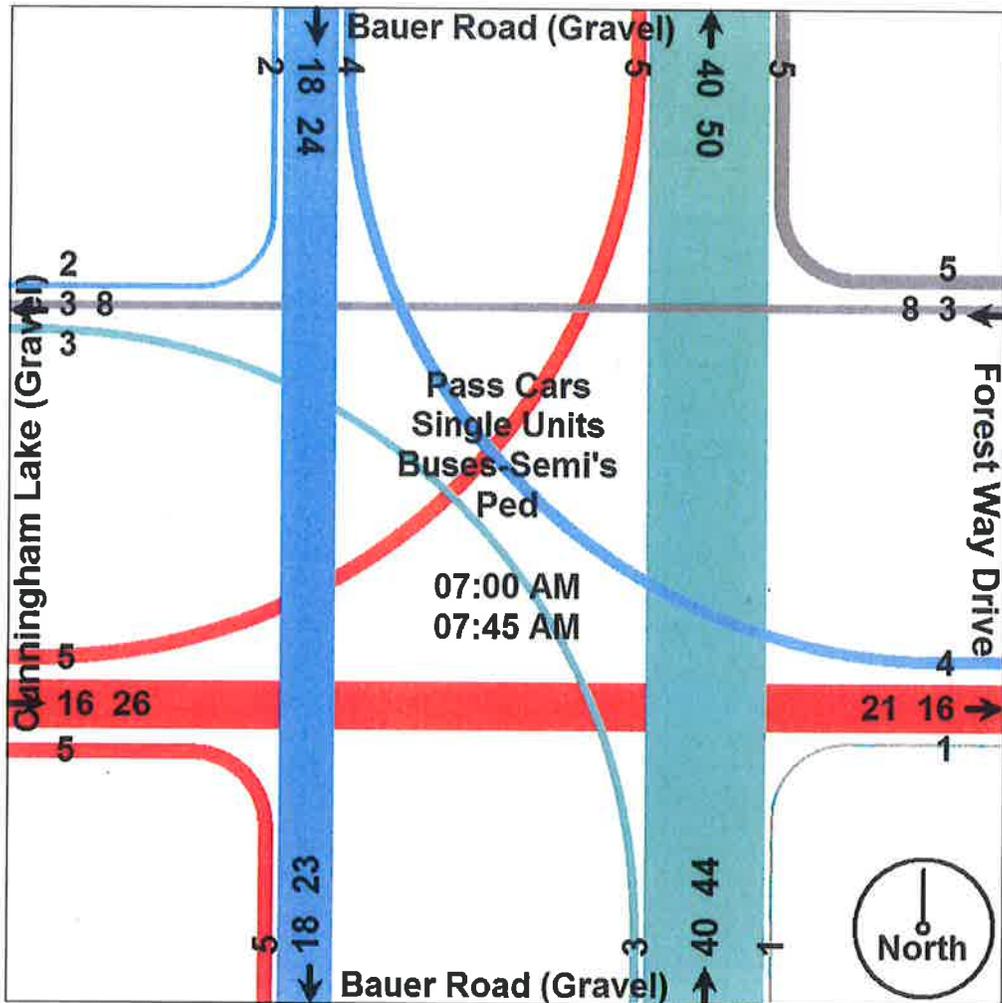
**Traffic Data Collection, TDC**  
 7504 Sawgrass Drive, Washington, MI. 48094 Ph. (586) 786-5407  
 Traffic Study Performed For:  
**Beaubien Engineering**



**Project:** Pine Creek Traffic Study  
**Location:** Genoa Township  
**Weather:** Cloudy, 30's  
**Count By:** Miovision Video SCU I24

**File Name :** tmc2\_forestway&bauer  
**Site Code :** TMC 2  
**Start Date :** 12/4/2013  
**Page No :** 2

Start Time	Bauer Road (Gravel) Southbound				Forest Way Drive Westbound				Bauer Road (Gravel) Northbound				Cunningham Lake (Gravel) Eastbound				Int. Total
	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	6	1	7	2	0	0	2	1	8	1	10	1	7	4	12	31
07:15 AM	1	4	0	5	1	0	0	1	0	8	0	8	1	6	0	7	21
07:30 AM	1	4	1	6	0	1	0	1	0	11	0	11	3	2	0	5	23
07:45 AM	0	4	2	6	2	2	0	4	0	13	2	15	0	1	1	2	27
Total Volume	2	18	4	24	5	3	0	8	1	40	3	44	5	16	5	26	102
% App. Total	8.3	75	16.7		62.5	37.5	0		2.3	90.9	6.8		19.2	61.5	19.2		
PHF	.500	.750	.500	.857	.625	.375	.000	.500	.250	.769	.375	.733	.417	.571	.313	.542	.823
Pass Cars	2	17	3	22	5	3	0	8	1	38	3	42	5	15	5	25	97
% Pass Cars	100	94.4	75.0	91.7	100	100	0	100	100	95.0	100	95.5	100	93.8	100	96.2	95.1
Single Units	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	2
% Single Units	0	0	25.0	4.2	0	0	0	0	0	0	0	0	0	6.3	0	3.8	2.0
Buses-Semi's	0	1	0	1	0	0	0	0	0	2	0	2	0	0	0	0	3
% Buses-Semi's	0	5.6	0	4.2	0	0	0	0	0	5.0	0	4.5	0	0	0	0	2.9
Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



**Traffic Data Collection, TDC**  
 7504 Sawgrass Drive, Washington, MI, 48094 Ph. (586) 786-5407  
 Traffic Study Performed For:  
**Beaubien Engineering**



Project: Pine Creek Traffic Study  
 Location: Genoa Township  
 Weather: Cloudy, 20's  
 Count By: Miovision Video SCU 3CC

File Name : TMC3\_Forestlake&Brighton  
 Site Code : TMC 3  
 Start Date : 12/4/2013  
 Page No : 1

Groups Printed- Pass Cars - Single Units - Semi's - Ped

Start Time	Church Driveway Southbound				Brighton Road Westbound				Forest Lake Blvd. Northbound				Brighton Road Eastbound				Int. Total
	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	
07:00 AM	0	0	0	0	0	32	5	37	40	0	0	40	1	226	0	227	304
07:15 AM	0	0	0	0	0	38	7	45	34	0	1	35	1	150	0	151	231
07:30 AM	0	0	0	0	0	54	3	57	13	0	4	17	2	119	0	121	195
07:45 AM	0	0	0	0	0	61	2	63	17	0	2	19	0	139	0	139	221
Total	0	0	0	0	0	185	17	202	104	0	7	111	4	634	0	638	951
08:00 AM	0	0	0	0	0	78	4	82	12	0	0	12	2	130	0	132	226
08:15 AM	0	0	0	0	0	73	4	77	14	0	2	16	0	196	0	196	289
08:30 AM	0	0	0	0	0	64	3	67	17	0	5	22	0	144	0	144	233
08:45 AM	0	0	0	0	0	57	13	70	19	0	2	21	4	172	0	176	267
Total	0	0	0	0	0	272	24	296	62	0	9	71	6	642	0	648	1015
**** BREAK ****																	
04:00 PM	0	0	0	0	0	145	22	167	9	0	0	9	1	133	0	134	310
04:15 PM	0	0	0	0	0	160	23	183	13	0	0	13	4	89	1	94	290
04:30 PM	0	0	1	1	0	165	19	184	12	0	0	12	0	103	0	103	300
04:45 PM	0	0	0	0	0	149	12	161	14	0	2	16	2	97	0	99	276
Total	0	0	1	1	0	619	76	695	48	0	2	50	7	422	1	430	1176
05:00 PM	0	0	0	0	0	176	17	193	18	0	3	21	5	85	0	90	304
05:15 PM	0	0	0	0	0	203	18	221	8	0	0	8	0	103	0	103	332
05:30 PM	0	0	0	0	0	152	17	169	7	0	0	7	4	106	0	110	286
05:45 PM	0	0	0	0	0	173	18	191	14	0	2	16	2	98	0	100	307
Total	0	0	0	0	0	704	70	774	47	0	5	52	11	392	0	403	1229
Grand Total	0	0	1	1	0	1780	187	1967	261	0	23	284	28	2090	1	2119	4371
Apprch %	0	0	100		0	90.5	9.5		91.9	0	8.1		1.3	98.6	0		
Total %	0	0	0	0	0	40.7	4.3	45	6	0	0.5	6.5	0.6	47.8	0	48.5	
Pass Cars	0	0	1	1	0	1746	184	1930	256	0	23	279	27	2040	1	2068	4278
% Pass Cars	0	0	100	100	0	98.1	98.4	98.1	98.1	0	100	98.2	96.4	97.6	100	97.6	97.9
Single Units	0	0	0	0	0	7	2	9	3	0	0	3	0	17	0	17	29
% Single Units	0	0	0	0	0	0.4	1.1	0.5	1.1	0	0	1.1	0	0.8	0	0.8	0.7
Buses-Semi's	0	0	0	0	0	27	1	28	2	0	0	2	1	33	0	34	64
% Buses-Semi's	0	0	0	0	0	1.5	0.5	1.4	0.8	0	0	0.7	3.6	1.6	0	1.6	1.5
Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments: Traffic Study Conducted During Typical Weekday (Wed.) 7:00-9:00AM Morning & 4:00-6:00 PM Afternoon Peak Hours While School Was In Session. Non-Signalized Intersection.

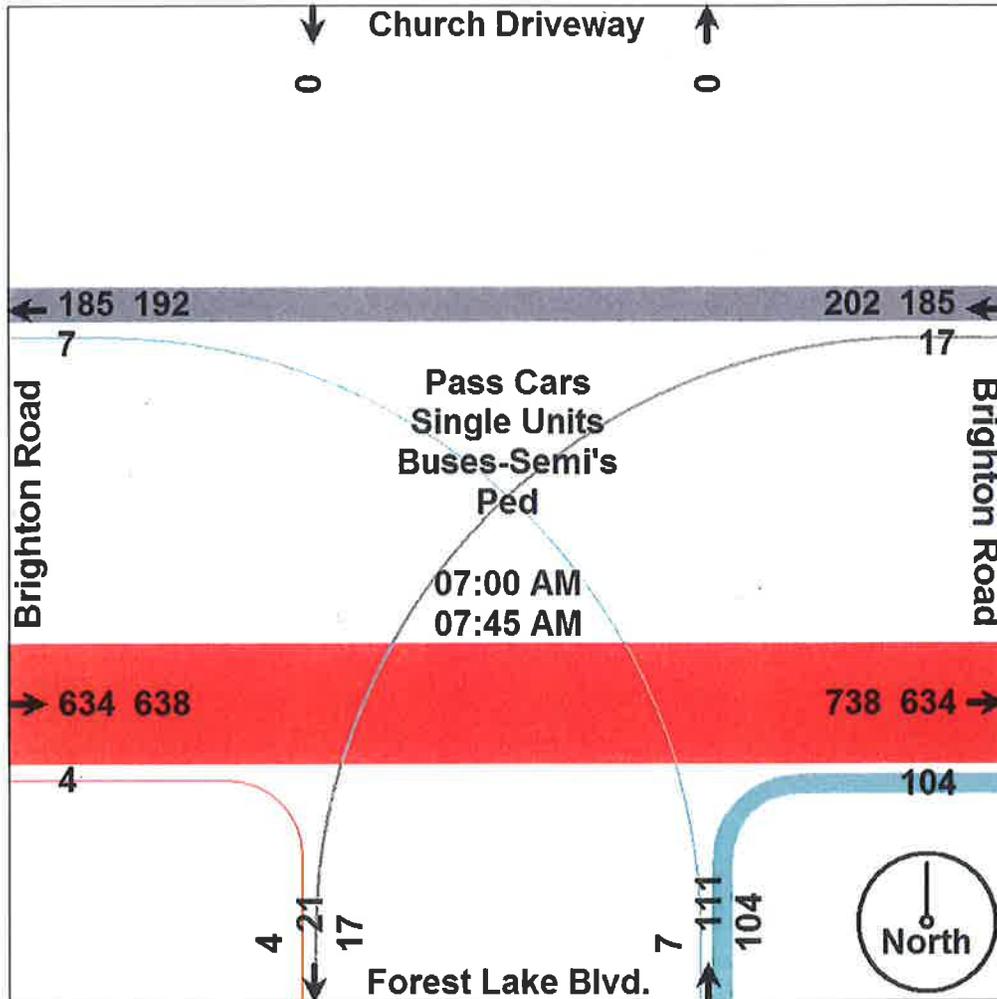
**Traffic Data Collection, TDC**  
 7504 Sawgrass Drive, Washington, MI. 48094 Ph. (586) 786-5407  
 Traffic Study Performed For:  
**Beaubien Engineering**



Project: Pine Creek Traffic Study  
 Location: Genoa Township  
 Weather: Cloudy, 20's  
 Count By: Miovision Video SCU 3CC

File Name : TMC3\_Forestlake&Brighton  
 Site Code : TMC 3  
 Start Date : 12/4/2013  
 Page No : 3

Start Time	Church Driveway Southbound				Brighton Road Westbound				Forest Lake Blvd. Northbound				Brighton Road Eastbound				Int. Total
	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	32	5	37	40	0	0	40	1	226	0	227	304
07:15 AM	0	0	0	0	0	38	7	45	34	0	1	35	1	150	0	151	231
07:30 AM	0	0	0	0	0	54	3	57	13	0	4	17	2	119	0	121	195
07:45 AM	0	0	0	0	0	61	2	63	17	0	2	19	0	139	0	139	221
Total Volume	0	0	0	0	0	185	17	202	104	0	7	111	4	634	0	638	951
% App. Total	0	0	0	0	0	91.6	8.4		93.7	0	6.3		0.6	99.4	0		
PHF	.000	.000	.000	.000	.000	.758	.607	.802	.650	.000	.438	.694	.500	.701	.000	.703	.782
Pass Cars	0	0	0	0	0	175	17	192	102	0	7	109	4	633	0	637	938
% Pass Cars	0	0	0	0	0	94.6	100	95.0	98.1	0	100	98.2	100	99.8	0	99.8	98.6
Single Units	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
% Single Units	0	0	0	0	0	0.5	0	0.5	1.0	0	0	0.9	0	0	0	0	0.2
Buses-Semi's	0	0	0	0	0	9	0	9	1	0	0	1	0	1	0	1	11
% Buses-Semi's	0	0	0	0	0	4.9	0	4.5	1.0	0	0	0.9	0	0.2	0	0.2	1.2
Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



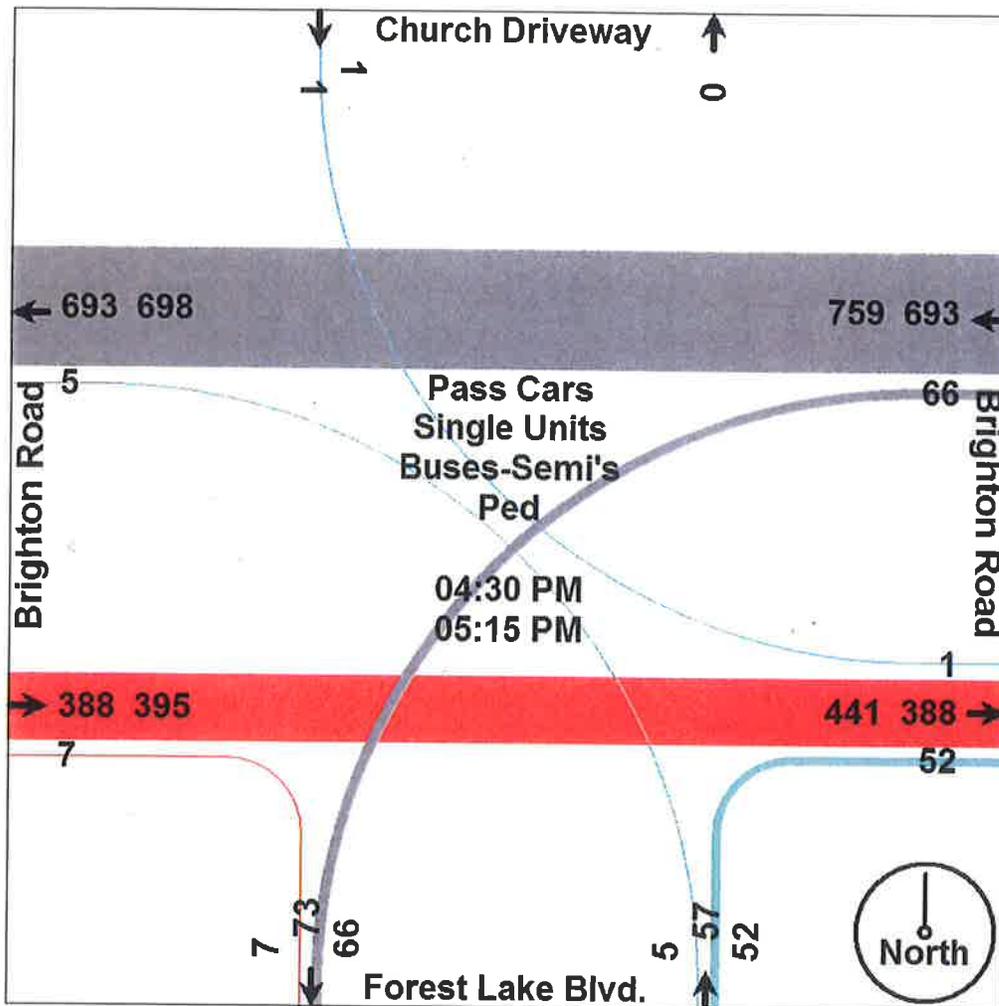
**Traffic Data Collection, TDC**  
 7504 Sawgrass Drive, Washington, MI. 48094 Ph. (586) 786-5407  
 Traffic Study Performed For:  
**Beaubien Engineering**



Subject: Pine Creek Traffic Study  
 Location: Genoa Township  
 Weather: Cloudy, 20's  
 Equipment: Miovision Video SCU 3CC

File Name : TMC3\_Forestlake&Brighton  
 Site Code : TMC 3  
 Start Date : 12/4/2013  
 Page No : 4

Start Time	Church Driveway Southbound				Brighton Road Westbound				Forest Lake Blvd. Northbound				Brighton Road Eastbound				Int. Total
	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	1	1	0	165	19	184	12	0	0	12	0	103	0	103	300
04:45 PM	0	0	0	0	0	149	12	161	14	0	2	16	2	97	0	99	276
05:00 PM	0	0	0	0	0	176	17	193	18	0	3	21	5	85	0	90	304
05:15 PM	0	0	0	0	0	203	18	221	8	0	0	8	0	103	0	103	332
Total Volume	0	0	1	1	0	693	66	759	52	0	5	57	7	388	0	395	1212
% App. Total	0	0	100	100	0	91.3	8.7		91.2	0	8.8		1.8	98.2	0		
PHF	.000	.000	.250	.250	.000	.853	.868	.859	.722	.000	.417	.679	.350	.942	.000	.959	.913
Pass Cars	0	0	1	1	0	692	66	758	51	0	5	56	7	379	0	386	1201
% Pass Cars	0	0	100	100	0	99.9	100	99.9	98.1	0	100	98.2	100	97.7	0	97.7	99.1
Single Units	0	0	0	0	0	1	0	1	0	0	0	0	0	4	0	4	5
% Single Units	0	0	0	0	0	0.1	0	0.1	0	0	0	0	0	1.0	0	1.0	0.4
Buses-Semi's	0	0	0	0	0	0	0	0	1	0	0	1	0	5	0	5	6
Buses-Semi's	0	0	0	0	0	0	0	0	1.9	0	0	1.8	0	1.3	0	1.3	0.5
Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



**Traffic Data Collection, TDC**  
 7504 Sawgrass Drive, Washington, MI, 48094 Ph. (586) 786-5407



Traffic Study Performed For:  
**Beaubien Engineering**

Project: Pine Creek Traffic Study  
 Location: Genoa Township  
 Weather: Cloudy, 30's  
 Count By: Miovision Video SCU 3EP

File Name : TMC4\_Wyndam&BrightonLk  
 Site Code : TMC 4  
 Start Date : 12/4/2013  
 Page No : 1

Groups Printed- Pass Cars - Single Units - Semi's - Ped

Start Time	Wyndam Lane Southbound				Brighton Lake Westbound				Edinborough Blvd. Northbound				Brighton Lake Eastbound				Int. Total
	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	Rgt	Thru	Left	App. Total	
07:00 AM	10	0	12	22	4	22	1	27	12	6	1	19	0	41	17	58	126
07:15 AM	19	1	5	25	3	28	0	31	6	1	3	10	1	17	5	23	89
07:30 AM	25	0	2	27	7	11	0	18	8	0	1	9	0	28	24	52	106
07:45 AM	7	0	8	15	9	5	1	15	7	0	0	7	1	38	19	58	95
Total	61	1	27	89	23	66	2	91	33	7	5	45	2	124	65	191	416
08:00 AM	7	0	5	12	3	9	0	12	4	0	2	6	0	12	11	23	53
08:15 AM	7	0	11	18	3	4	1	8	3	0	0	3	0	15	4	19	48
08:30 AM	7	0	9	16	1	9	0	10	1	0	1	2	0	22	14	36	64
08:45 AM	6	0	7	13	7	8	3	18	2	0	0	2	0	17	6	23	56
Total	27	0	32	59	14	30	4	48	10	0	3	13	0	66	35	101	221
*** BREAK ***																	
04:00 PM	10	0	9	19	11	25	5	41	2	0	0	2	1	10	6	17	79
04:15 PM	6	0	8	14	6	19	4	29	2	1	1	4	5	18	5	28	75
04:30 PM	9	1	10	20	8	27	8	43	4	1	1	6	3	17	4	24	93
04:45 PM	5	0	2	7	12	33	3	48	4	2	0	6	0	17	6	23	84
Total	30	1	29	60	37	104	20	161	12	4	2	18	9	62	21	92	331
05:00 PM	4	3	6	13	9	34	2	45	3	2	1	6	4	19	4	27	91
05:15 PM	6	3	16	25	7	30	8	45	2	1	0	3	2	20	7	29	102
05:30 PM	7	0	3	10	6	22	12	40	5	0	0	5	1	20	12	33	88
05:45 PM	4	1	6	11	7	16	7	30	4	0	2	6	1	25	6	32	79
Total	21	7	31	59	29	102	29	160	14	3	3	20	8	84	29	121	360
Grand Total	139	9	119	267	103	302	55	460	69	14	13	96	19	336	150	505	1328
Apprch %	52.1	3.4	44.6		22.4	65.7	12		71.9	14.6	13.5		3.8	66.5	29.7		
Total %	10.5	0.7	9	20.1	7.8	22.7	4.1	34.6	5.2	1.1	1	7.2	1.4	25.3	11.3	38	
Pass Cars	138	9	116	263	100	288	54	442	67	13	13	93	16	328	147	491	1289
% Pass Cars	99.3	100	97.5	98.5	97.1	95.4	98.2	96.1	97.1	92.9	100	96.9	84.2	97.6	98	97.2	97.1
Single Units	1	0	2	3	2	2	1	5	0	1	0	1	1	2	2	5	14
% Single Units	0.7	0	1.7	1.1	1.9	0.7	1.8	1.1	0	7.1	0	1	5.3	0.6	1.3	1	1.1
Buses-Semi's	0	0	1	1	1	12	0	13	2	0	0	2	2	6	1	9	25
% Buses-Semi's	0	0	0.8	0.4	1	4	0	2.8	2.9	0	0	2.1	10.5	1.8	0.7	1.8	1.9
Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Ped	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

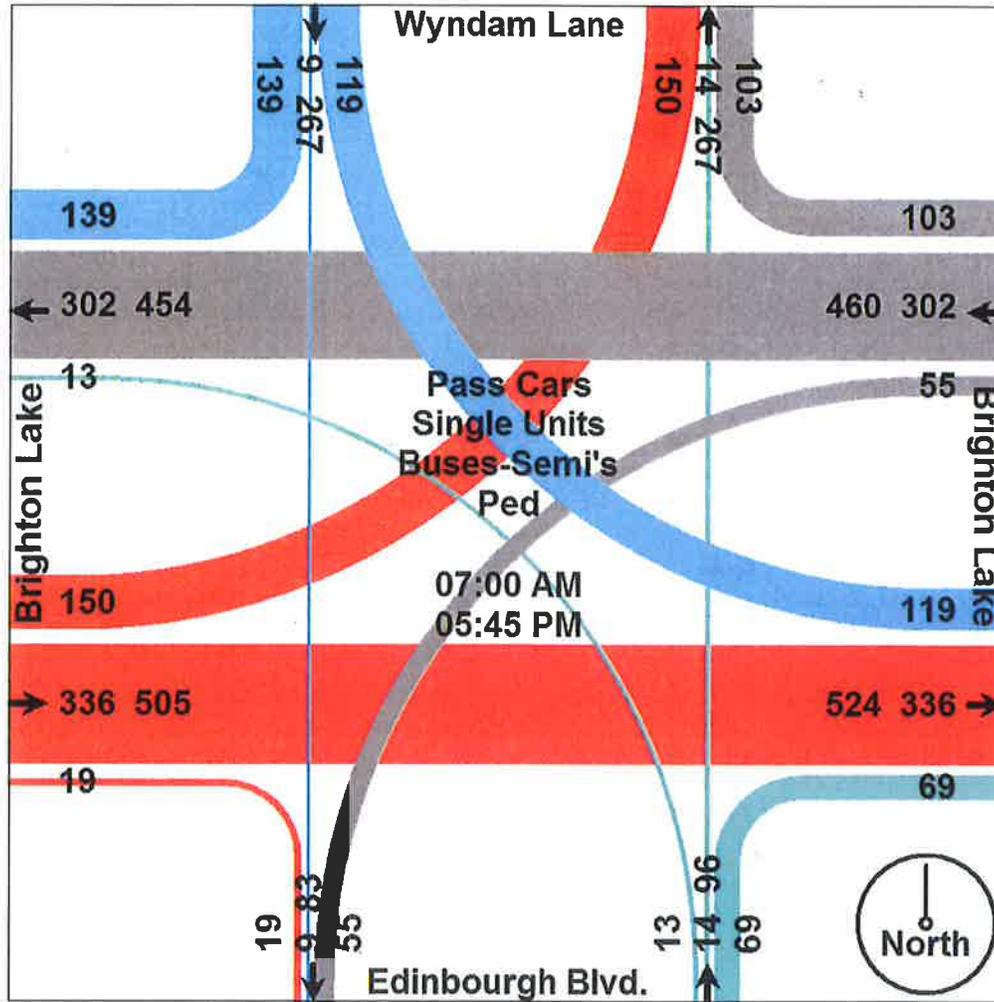
Comments: Traffic Study Conducted During Typical Weekday (Wed.) 7:00-9:00AM Morning & 4:00-6:00 PM Afternoon Peak Hours. Non- Signalized Intersection.

**Traffic Data Collection, TDC**  
 7504 Sawgrass Drive, Washington, MI. 48094 Ph. (586) 786-5407  
 Traffic Study Performed For:  
**Beaubien Engineering**



Project: Pine Creek Traffic Study  
 Location: Genoa Township  
 Weather: Cloudy, 30's  
 Count By: Miovision Video SCU 3EP

File Name : TMC4\_Wyndam&BrightonLk  
 Site Code : TMC 4  
 Start Date : 12/4/2013  
 Page No : 2



# Pine Creek Ridge Traffic Survey



Exhibit 4,  
Origin - Destination Surveys

April 2014

Beaubien Engineering



# License Plate Origin/Destination Study Data By Traffic Data Collection, TDC

Study Date: 12/4/13 (Wednesday)		Weather: Cloudy, 30's		Count By: M. Matich	
Wyndam Lane To Forest Way					
Time	No. of Vehicles using Short-Cut	Total No. of Vehicles-In	% Vehicles Using Short-Cut		
7:00 AM to 8:00 AM	4	95	4%		
8:00 AM to 9:00 AM	3	49	6%		
4:00 PM to 5:00 PM	8	62	13%		
5:00 PM to 6:00 PM	2	61	3%		
Wyndam Lane To River Ridge					
Time	No. of Vehicles using Short-Cut	Total No. of Vehicles-In	% Vehicles Using Short-Cut		
7:00 AM to 8:00 AM	36	95	38%		
8:00 AM to 9:00 AM	29	49	59%		
4:00 PM to 5:00 PM	13	62	21%		
5:00 PM to 6:00 PM	16	61	26%		
Wyndam Lane To Lake Forest Blvd.					
Time	No. of Vehicles using Short-Cut	Total No. of Vehicles-In	% Vehicles Using Short-Cut		
7:00 AM to 8:00 AM	19	95	20%		
8:00 AM to 9:00 AM	1	49	2%		
4:00 PM to 5:00 PM	6	62	10%		
5:00 PM to 6:00 PM	4	61	7%		
		<b>Total</b>		<b>Short-Cut %</b>	
				62%	67%
				44%	36%

**Forest Way To Wyndam Lane**

Time	No. of Vehicles using Short-Cut	Total No. of Vehicles-In	% Vehicles Using Short-Cut	Total
7:00 AM to 8:00 AM	0	21	0%	21
8:00 AM to 9:00 AM	0	13	0%	13
4:00 PM to 5:00 PM	4	8	50%	8
5:00 PM to 6:00 PM	2	3	67%	3

**Forest Way To River Ridge**

Time	No. of Vehicles using Short-Cut	Total No. of Vehicles-In	% Vehicles Using Short-Cut	Total
7:00 AM to 8:00 AM	1	21	5%	21
8:00 AM to 9:00 AM	0	13	0%	13
4:00 PM to 5:00 PM	1	8	13%	8
5:00 PM to 6:00 PM	0	3	0%	3

**Forest Way To Lake Forest Blvd.**

Time	No. of Vehicles using Short-Cut	Total No. of Vehicles-In	% Vehicles Using Short-Cut	Total
7:00 AM to 8:00 AM	3	21	14%	21
8:00 AM to 9:00 AM	3	13	23%	13
4:00 PM to 5:00 PM	1	8	13%	8
5:00 PM to 6:00 PM	0	3	0%	3

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**River Ridge To Wyndam Lane**

Time	No. of Vehicles using Short-Cut	Total No. of Vehicles-In	% Vehicles Using Short-Cut
7:00 AM to 8:00 AM	29	43	67%
8:00 AM to 9:00 AM	15	28	54%
4:00 PM to 5:00 PM	15	40	38%
5:00 PM to 6:00 PM	14	43	33%

**River Ridge To Forest Way**

Time	No. of Vehicles using Short-Cut	Total No. of Vehicles-In	% Vehicles Using Short-Cut
7:00 AM to 8:00 AM	0	43	0%
8:00 AM to 9:00 AM	0	28	0%
4:00 PM to 5:00 PM	0	40	0%
5:00 PM to 6:00 PM	0	43	0%

**River Ridge To Lake Forest Blvd.**

Time	No. of Vehicles using Short-Cut	Total No. of Vehicles-In	% Vehicles Using Short-Cut
7:00 AM to 8:00 AM	2	43	5%
8:00 AM to 9:00 AM	1	28	4%
4:00 PM to 5:00 PM	2	40	5%
5:00 PM to 6:00 PM	1	43	2%

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Lake Forest Blvd. To Wyndam Lane

Time	No. of Vehicles using Short-Cut	Total No. of Vehicles-In	% Vehicles Using Short-Cut	Total
7:00 AM to 8:00 AM	4	21	19%	Total Short-Cut %
8:00 AM to 9:00 AM	1	30	3%	
4:00 PM to 5:00 PM	3	83	4%	
5:00 PM to 6:00 PM	4	81	5%	
<b>Lake Forest Blvd. To Forest Way</b>				
Time	No. of Vehicles using Short-Cut	Total No. of Vehicles-In	% Vehicles Using Short-Cut	Total
7:00 AM to 8:00 AM	0	21	0%	Total Short-Cut %
8:00 AM to 9:00 AM	0	30	0%	
4:00 PM to 5:00 PM	2	83	2%	
5:00 PM to 6:00 PM	0	81	0%	
<b>Lake Forest Blvd. To River Ridge</b>				
Time	No. of Vehicles using Short-Cut	Total No. of Vehicles-In	% Vehicles Using Short-Cut	Total
7:00 AM to 8:00 AM	1	21	5%	Total Short-Cut %
8:00 AM to 9:00 AM	5	30	17%	
4:00 PM to 5:00 PM	3	83	4%	
5:00 PM to 6:00 PM	3	81	4%	