

**MINUTES
PLANNING COMMISSION
NOVEMBER 1, 2018
LAKEWOOD CITY HALL
7:00 P.M.
AUDITORIUM**

The meeting was called to order at 7:00 p.m.

1. Roll Call

Members Present

Kyle Baker
Glenn Coyne, Vice Chairman
William Gaydos, Chairman
Lou McMahan
Monica Rossiter

Others Present

Katelyn Milius, City Planner, Secretary
Bryce Sylvester, Director of Planning and Development
Jennifer Swallow, Chief Assistant Law Director
Mark Papke, City Engineer

2. Approve the Minutes of the October 4, 2018 Meeting

A motion was made by Ms. Rossiter, seconded by Mr. Baker to **APPROVE** the minutes of the October 4, 2018 meeting. Mr. Baker, Mr. Gaydos, Mr. McMahan, and Ms. Rossiter voting yea, and Mr. Coyne abstaining, the motion passed.

3. Opening Remarks

Ms. Milius read the opening remarks.

OLD BUSINESS

Docket items 09-25-18, 09-26-18, and 09-27-18 were called together.

CONDITIONAL USE

4. **Docket No. 09-25-18
14115 Detroit Avenue
Raising Cane's Chicken Fingers**

Drew Gatliff, RCO Limited, applicant requests the review and approval for drive-through service at the location of a new 3,340 square foot restaurant, pursuant to section 1129.02 - principal and conditional permitted uses and section 1161.03(y) – drive-through facility. The property is located in a C3, General Business district. This item was deferred from the September and October meetings. (Page 4)

CONDITIONAL USE

5. **Docket No. 09-26-18
14115 Detroit Avenue
Raising Cane's Chicken Fingers**

Drew Gatliff, RCO Limited, applicant requests the review and approval for outdoor dining at the location of a new 3,340 square foot restaurant, pursuant to section 1129.02 – principal and conditional permitted uses and section 1161.03(t) – outdoor/seasonal dining facility. The property is located in a C3, General Business district. This item was deferred from the September and October meetings. (Page 6)

PARKING PLAN REVIEW

6. **Docket No. 09-27-18**
14115 Detroit Avenue
Raising Cane's Chicken Fingers

Drew Gatliff, RCO Limited, applicant requests the review and approval of a parking plan at the location of a new 3,340 square foot restaurant, pursuant to section 1143.09 - parking plan review. The property is located in a C3, General Business district. This item was deferred from the September and October meetings. (Page 8)

The Chairman announced that the requests for drive-through service and the parking plan would be taken together, followed by the outdoor dining request.

Drew Gatliff, RCO Limited, applicant and Jake Crocker were present to explain the requests.

The members asked if the revised location of the building would restrict circulation of the drive-through traffic. The members asked about specifics of the retention area. Discussion continued with the volume of drive-through vehicles per hour as stated in the traffic report, and its impact of vehicles exiting onto Detroit and Parkhaven Row Avenues. Questions were raised about the impact for dine-in patrons' parked cars and opening day(s) of the restaurant, peak hours at other restaurants, and the percentage of inside dining versus drive through patrons. Extensive discussion continued about the traffic study results.

Administrative staff stated that further exploration was needed about traffic flow in conjunction with that of GetGo traffic, the number of on-site parking spaces, and the number of outdoor dining spaces.

The concerns continued to be discussed among the members, applicants, and administrative staff including other topics such as the number of stacked cars, storm water retention, pedestrian traffic, bike lanes and parking, CT Consultant's review (made part of record), and etcetera.

Public comment was taken. Administrative staff provided information about letters received from the public (made part of record).

The members said that concerns remained regarding the number of on-site parking spaces and the number of stacked cars exiting the site. The members stated that resolutions were needed to the issues prior to approving the project.

A motion was made by Mr. Gaydos, seconded by Mr. McMahon to **DEFER** Docket No. 09-25-18, Docket No. 09-26-18, and Docket No. 09-27-18 until the December 6, 2018 meeting. All of the members voting yea, the motion passed.

PLANNED DEVELOPMENT

7. **Docket No. 09-28-18**
14519 Detroit Avenue
One Lakewood Place

George Papandreas, Carnegie Management and Development Corp., applicant requests the review and approval of a mixed-use development consisting of approximately 180,000 square feet of commercial space, 200 multifamily units, .5 acres of public space and a structured parking solution providing at least 710 parking spaces, pursuant to section 1156 – planned development. The property is located in a C1, Office district. This item was deferred from the September and October meetings. (Page 10)

Mr. Sylvester had announced previously that Docket No. 09-28-18, 14519 Detroit Avenue was being deferred until the December 6, 2018 meeting. A mid-November meeting would take place with the neighbors and stakeholders to discuss the project.

A motion was made by Ms. Rossiter, seconded by Mr. Baker to **DEFER** the request until the December 6, 2018 meeting. All of the members voting yea, the motion passed.

NEW BUSINESS

PARKING PLAN REVIEW

8. **Docket No. 11-30-18**
13500 Detroit Avenue
St. Edward High School

Mykie Hrusovski, AIA, DLR Group, applicant requests the review and approval of a parking plan for an 11,900 square foot addition, pursuant to section 1143.09 – parking plan review. The property is located in a C3, General Business District. (Page 12)

Mykie Hrusovski, AIA, DLR Group, applicant, Mary Anne Crampton, St. Edward High School representative, and John Goers, St. Edward High School were present to explain the request.

The members noted there would that even though there was a loss of 37 parking spots, there remained a net of 25 parking spaces due to a parking lot expansion in 2017.

Administrative staff summarized the codes and their application to the proposed project. Mr. Goers elaborated on the parking agreement with Ascension Church. The members asked about the number and location of bike racks.

Public comment was closed. Administrative staff did not receive any comments, calls or letters from the public. Administration staff supported the application and asked the applicant to assist the city in addressing items 6 and 7 within code 1143.09 – Parking Plan Review; (6) - alternative forms of transportation and (7) - implementation of bicycle facilities. The members and staff discussed the approval process and suggested the plan was not finalized as yet.

A motion was made by Ms. Rossiter, seconded by Mr. Baker to **DEFER** the request until the December 6, 2018 meeting. All of the members voting yea, the motion passed.

COMMUNICATION

9. **Docket No. 11-31-18**
Outdoor Dining During Light Up Lakewood 2018 as Presented by Planning and Development

The City of Lakewood requests an exception to the Outdoor Dining Regulations in order to permit establishments with outdoor dining facilities within the event footprint to be open during Light Up Lakewood on December 1, 2018:

Chapter 1161.03 (t) (14) An Outdoor/Seasonal Dining Facility shall operate only between the hours of 11:00 a.m. and 10:00 p.m. Sunday through Thursday, 11:00 a.m. Friday to 1:00 a.m. Saturday and 11:00 a.m. Saturday to 1:00 a.m. Sunday, only between the months of April through and inclusive of October. The limitations set forth herein, and any additional limitations placed on hours of operation as may be determined by the Planning Commission, are designed to assure adequate peace, quiet and serenity in the evening and morning hours during which residents of the City are entitled to enjoy a period of rest and

relaxation without intrusion from the possibilities of excessive noise and activity in adjacent areas. (Page 21)

Ian Andrews, LakewoodAlive was present to explain the request. Administrative staff supported the request. Public comment was closed.

A motion was made by Mr. Baker, seconded by Mr. Coyne to **APPROVE** the request. All of the members voting yea, the motion passed.

10. **Docket No. 11-32-18**
Application to Cuyahoga County Supplemental Grant Program for Warren Road Beautification Phase 2

LakewoodAlive will present a communication about the Warren Road Beautification Phase 2 project. LakewoodAlive is applying for the Cuyahoga County Supplemental Grant Program to help cover the project costs. (Page 22)

Ian Andrews, LakewoodAlive and Rob Donaldson, Chairman of LakewoodAlive Design Committee were present to explain the communication.

The members said it was a fantastic project. Administrative staff stated that a letter of support from the commission members was welcome. Public comment was closed.

A motion was made by Mr. McMahon, seconded by Mr. Baker to **RECEIVE AND FILE** the application for a grant. All of the members voting yea, the motion passed.

A motion was made by Mr. Gaydos, seconded by Mr. McMahon to **send a letter of support from the Chairman on behalf of the Planning Commission**. Mr. Baker, Mr. Gaydos, Mr. McMahon, and Ms. Rossiter voting yea, and Mr. Coyne abstaining, the motion passed.

11. **Docket No. 11-33-18**
Application to Cuyahoga County Supplemental Grant Program for Wagar Park Redesign

The City will present a communication about the Wagar Park redesign that will take place in 2019. The City is applying for the Cuyahoga County Supplemental Grant Program to help cover up to \$50,000 of the project costs, which are estimated to be over \$1,000,000. (Page 23)

Ms. Milius explained the communication.

The members inquired if Rosewood Avenue would be vacated and where would the money be spent, timeline for the installation of the playground equipment be installed, and grading of the northeast area. They said the update of the park was needed.

Public comment was taken. Administrative staff had no further comments.

A motion was made by Mr. Gaydos, seconded by Mr. McMahon to **RECEIVE AND FILE** the communication. All of the members voting yea, the motion passed.

A motion was made by Mr. Gaydos, seconded by Mr. Baker to **ADJOURN** the meeting at 9:15 P.M. All of the members voting yea, the motion passed.

Katelyn Milins
Signature
on behalf of the chair

12/6/2018
Date

000



Oath

(You need not give an oath if you object. If you object to giving an oath, please notify the hearing officer or secretary before signing below.)

I, the undersigned, hereby solemnly swear that the testimony I give at this proceeding will be the truth, the whole truth and nothing but the truth:

PRINT NAME:

SIGN NAME:

- 1. Drew Gatliff
- 2. Jake Crocker
- 3. Kevin Westbrookes
- 4. Ion Andrews
- 5. MYKIE HERSORSKI
- 6. Mary Anne Campbell
- 7. John Coers
- 8. _____
- 9. _____
- 10. _____
- 11. _____

- [Signature]
- [Signature]
- Kevin Westbrookes
- [Signature]
- [Signature]
- [Signature]
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Prepared by: The City of Lakewood Law Department, 12650 Detroit Ave., Lakewood, Ohio 44107

FOR CITY USE ONLY

Lakewood Administrative Procedure: ABR/BBS Citizens Advisory Civil Svc. Dangerous Dog Income Tax Appeals Loan Approval Nuisance Abatement Appeals Parking Planning Zoning Appeals Other:

Date of Proceeding: Thursday, November 1, 2018

Schwarz, Johanna

From: Autumn Mauer <amauer17@yahoo.com>
Sent: Thursday, September 6, 2018 5:55 PM
To: Planning Dept
Subject: Against Raising Cane's
Attachments: Bob Evans.docx

Hello,

As home owners directly next to Getgo I have attached some of our reasoning against this proposal. It would severally impact our quality of life in a negative way and it is our hopes this would be taken into consideration. We want our city prosperous of course, however we do not believe this is a good fit that would be encroaching on our residential street.

We purchased our home prior to Getgo moving in and it has been nothing but problems with loud noise issues, loiters, and garbage continually into our yard. We as our neighbors do, fear that adding another late night fast food restaurant will double the similar negative impacts of Getgo's effects. We have had to deal with Bob Evans employees sitting on our front lawn, not the tree lawn, to take their smoke breaks which we continually explained to Bob Evans this is not acceptable.

Thank you so much for taking our concerns into consideration.

Warm regards,

Autumn Lam
216 970 0013

Autumn & Alan Lam

1427 Parkhaven Row

Lakewood, OH 44107

216 970 0013

Amauer17@Yahoo.com

Restaurants within a half mile Radius including but not limited to:

- Get Go
- Goergios Pizza
- Mad Macs
- Winking Lizard
- China Express
- Szechwan Garden

Chaotic traffic due to:

- Get Go
- Formally Bob Evans
- Giant Eagle
- Winking Lizard
- Huge blind spot due to construction cars, city trucks, and construction trucks continually parking in front of Bob Evans building on Detroit making Parkhaven row a huge risk when attempting to exit the street
- Loud noises from blasting music and loiters at Getgo and what would be arguably another busy late night fast food chain adding to this issue
 - By the time the police arrive typically people are leaving or they are not stopped
 - Trash continually thrown or blown into yard
 - People continually turn around in our driveway at a high rate of speed with no caution or regard or speed down the street because they do not pay attention to signage
 - Loud noise all hours of the day and night which is particularly frustrating for me as I work from home
- Another fast food option would be better suited for W117th versus a residential area crossed with an already congested main street

It would be nicer to have a local business or sit-down restaurant with hours that are not late and offering a healthy addition to our city.

Thank you for reading as this would severely impact our quality of life as tax paying home owners and small business operators of Lakewood.

September 21, 2018

Lakewood Planning Commission
Lakewood City Hall
12650 Detroit Avenue
Lakewood, OH

Members of the Planning Commission,

My name is Adam Stier, and I live at 1430 Bunts Road (the house immediately adjacent to GetGo). I spoke about Raising Cane's proposed drive-through during public comment at the Planning Commission meeting on September 6, and I'd like to follow up those comments with a few specifics in writing.

I mentioned during the meeting that the left turn from Parkhaven onto Detroit is a difficult one to make. I hope that the Traffic Study addresses this as a possible point of back-up, and as a potential safety issue for both drivers and pedestrians. In my experience, the turn is a challenging one because the driver has to take so much into account: vehicles coming through the major intersection at Bunts & Detroit; vehicles exiting and entering the Giant Eagle and Winking Lizard lots just across the street; pedestrians and bikers; and the fact that, because Detroit widens to five lanes as it approaches the Bunts intersection, vehicles often attempt to pass each other here—sometimes at speeds that would seem well above the stated limit. The left-turning driver needs to cross two lanes of oncoming traffic and a middle turn lane—and, as if all that isn't enough, the visibility looking down either direction of Detroit tends to be poor, due to parked cars (and sometimes parked garbage trucks alongside GetGo), building angles, etc. It can be quite chaotic, and at times feels dangerous. I would urge Planning Commission members to pick a weekday evening and try that turn for themselves; it's a real point of concern, even before drive-through traffic gets added into the mix.

If drivers exiting the drive-through decide that waiting to make a turn onto Detroit is not worth their time, it's likely many of them will choose to jet through the GetGo parking lot to get to Bunts. If this happens, the GetGo parking lot, which is already hectic at times, will become even more so, as vehicles use the lot as a cut-through. And it will likely make traffic on Bunts all the more difficult to deal with for those of us living there, as cars leaving the drive-through effectively turn to Bunts, a residential road, for their quicker exit.

To be clear, I'm not opposed to Raising Cane's as a business or as a part of the Lakewood community. I am generally opposed, though, to drive-throughs on Detroit and Madison, for reasons I state below. And I'm specifically opposed to the drive-through plan submitted by Raising Cane's, which does not seem to have taken stock of the character of the neighborhood or potential impacts on traffic and safety.

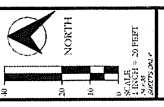
When our family moved to Lakewood, in 2013, we were excited at the prospect of living near the Bunts-Detroit intersection, which is essentially the geographic center of Lakewood. The intersection arguably serves as the unofficial entry point into "Downtown Lakewood." (Current signage at the intersection implies this, and, if I'm not mistaken, the city once had a plan to create a more purposeful "Welcome-to-Downtown-Lakewood" effect at Bunts & Detroit.) So I think it's worth pausing to consider what a drive-through, with its attendant

traffic, will communicate to people about the character and values of "Downtown Lakewood" upon their arrival. Drive-throughs are at odds with Lakewood's Community Vision because they undermine the walkability, pedestrian safety, and support of environmentally-friendly transit which make our city so special and which draw so many young families to this area. Speaking for my own young family, we consider ourselves incredibly lucky to live in a city with such a compelling vision as Lakewood has to offer. City leaders past and present are to be applauded for creating and maintaining that vision. But of course a vision is only so good as our leaders' and citizens' commitment to live up to it. In considering Raising Cane's proposed drive-through, I urge you to apply the Code with that in mind.

Thank you for your time and attention,

A handwritten signature in black ink, appearing to read "Adam Stier". The signature is fluid and cursive, with a prominent initial "A" and "S".

Adam Stier
1430 Bunts Road



SITE LAYOUT PLAN
 RAISING CANE'S CHICKEN FINGERS
 CITY OF LAKEWOOD, COUNTY OF CUYAHOGA, STATE OF OHIO

NEFF ASSOCIATES
 14100 055-C
 SHEET NO. C5.0

ZONING INFORMATION

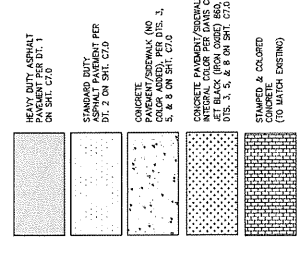
CURRENT ZONING - COMMERCIAL-GENERAL DISTRICT "C3"

| CODE SECTION | SUBJECT | REQUIRED BY ZONING CODE | PROVIDED |
|--------------|----------------------------|------------------------------|-------------------------|
| 1129.07 | MAX. HT. OF BLDG. | 120 FT. | TBD |
| 1129.05 | MIN. LOT SIZE | 10,000 S.F. | 30,344 S.F. (0.6932 AC) |
| 1129.05 | MIN. LOT FRONTAGE | 80 FT. | 150 FT. |
| 1129.06 | FRONT YARD SETBACK - BLDG. | 5 FT. MIN. | 11.8 FT.* |
| 1129.06 | SIDE SETBACK - BLDG. | 5 FT. | 18.9 FT. |
| 1129.06 | REAR SETBACK - BLDG. | 1/2 BLDG. HEIGHT; 5 FT. MIN. | 149.8 FT. |
| 1129.06 | MIN. DRIVEWAY TO DRIVEWAY | 5 FT. MIN. | 5 FT. |
| 1129.06 | MINIMUM PARKING SPACES | MIN. 10 SPACES PER LINE | 15 SPACES** |
| 1143.05 | MINIMUM # OF SPACES | SEE PARKING TABLE BELOW | SEE PARKING TABLE BELOW |

**1143.05 Front Setback Variance needed for 6.8 ft. front setback to 11.8 ft. minimum setback to 11.8 ft.
 ***1143.05 Minimum Number of Stacking Spaces for a Drive-Thru Variance needed for 2.5 stacking spaces, from required 10 per line to 7.5 spaces per line.

KEY NOTES

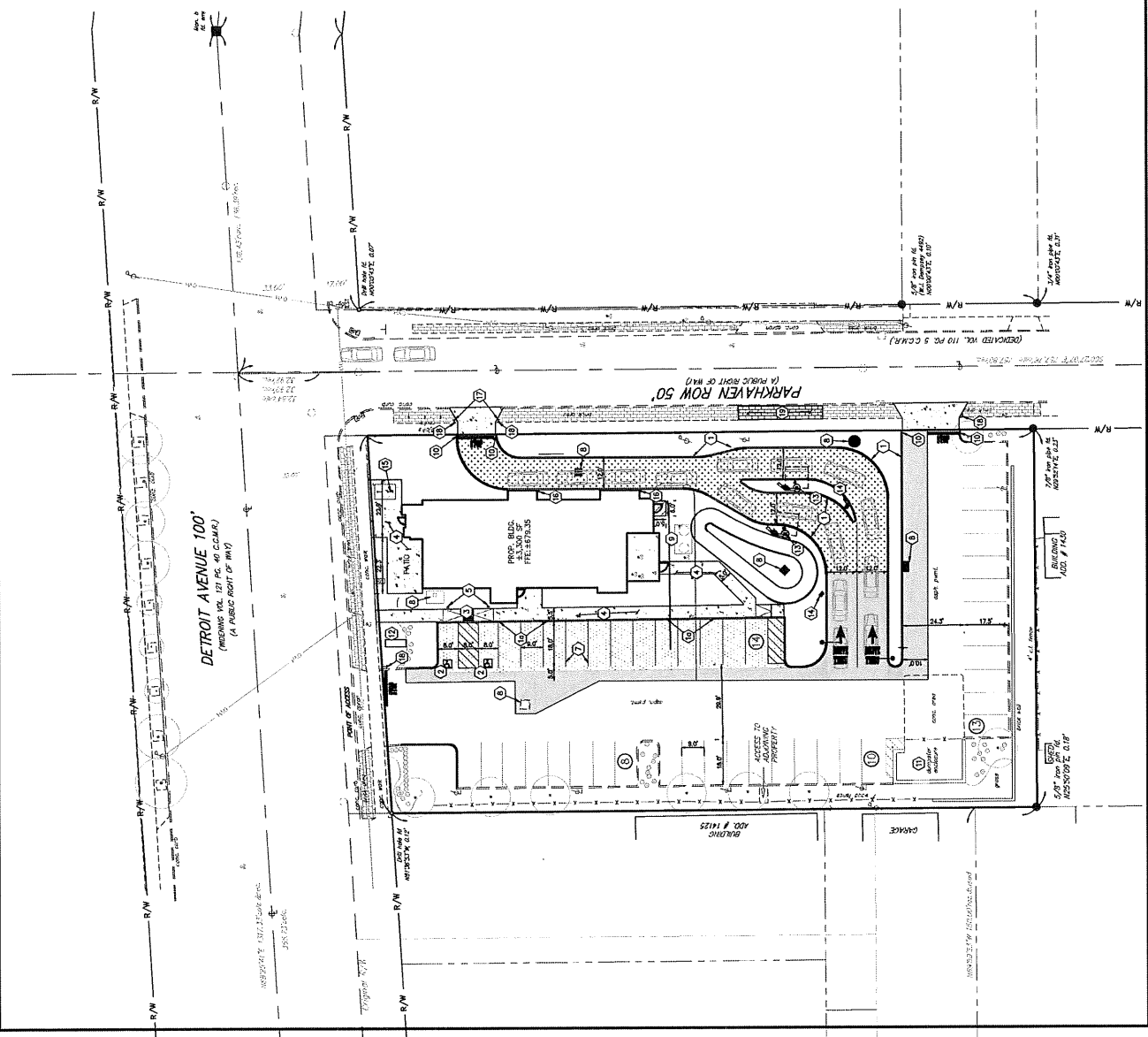
- 1 VERTICAL CONCRETE CURB PER DT. 9 ON SHT. C7.0
- 2 FEDERAL CURB AND WALK PER DT. 8 ON SHT. C7.0
- 3 ADA ACCESSIBLE PARKING SYMBOL PER DT. 11 ON SHT. C7.0
- 4 ADA ACCESSIBLE RAMP
- 5 CONCRETE SIDEWALK PER DT. 5 ON SHT. C7.0
- 6 ACCESSIBLE PARKING SIGN PER DT. 7 ON SHT. C7.0
- 7 LOT TRAFFIC FLOW ARROW (SOLID) PER DT. 11 ON SHT. C7.0
- 8 PARKING STRIPE (1) P.W. SOLID WHITE
- 9 UTILITY STRUCTURE (SEE UTILITY PLAN, SHT. C4.0)
- 10 ASPHALT INTERLOCK (SEE UTILITY PLAN, SHT. C4.0)
- 11 FLANGE CONCRETE CURB TO EDGE OF SIDEWALK PER DT. X ON SHT. C7.0
- 12 IMPASSIBLE LOCATION
- 13 GROUND SIGN
- 14 ORDER BOARD (SEE ARCH. DRAWINGS)
- 15 PREVIEW BOARD (SEE ARCH. DRAWINGS)
- 16 BIKE RACK PER DT. 10 ON SHT. C7.0
- 17 BOLLARD PER DT. 6 ON SHT. C7.0
- 18 TO NOT ENRICH SIGN
- 19 STOP SIGN
- 20 STAMPED & COLORED CONCRETE (TO MATCH EXISTING)



PARKING INFORMATION

| RESTAURANTS | MIN. 10,000 SF GFA | MIN. 10,000 SF GFA | MIN. 10,000 SF GFA |
|---------------------|-----------------------|-----------------------|-----------------------|
| RAISING CANE'S | MIN. 10,000 SF GFA | MIN. 10,000 SF GFA | MIN. 10,000 SF GFA |
| MINIMUM # OF SPACES | 45 SPACES PROVIDED*** | 45 SPACES PROVIDED*** | 45 SPACES PROVIDED*** |
| MINIMUM # OF SPACES | 45 SPACES PROVIDED*** | 45 SPACES PROVIDED*** | 45 SPACES PROVIDED*** |

***1143.05 Front Setback Variance needed for 6.8 ft. front setback to 11.8 ft. minimum setback to 11.8 ft.
 ****1143.05 Minimum Number of Stacking Spaces for a Drive-Thru Variance needed for 2.5 stacking spaces, from required 10 per line to 7.5 spaces per line.



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TRAFFIC IMPACT STUDY

**Proposed Raising Cane's Chicken Fingers
Detroit Avenue / Parkhaven Row**

City of Lakewood, Cuyahoga County, Ohio



Prepared For:

Neff & Associates
6405 York Road
Parma Heights, OH 44130

Prepared By:

GPD Group
520 South Main Street
Suite 2531
Akron, OH 44311

October 2018

TRAFFIC IMPACT STUDY
Proposed Raising Cane's Chicken Fingers
Detroit Avenue / Parkhaven Row

City of Lakewood, Cuyahoga County, Ohio

Prepared For:



Neff & Associates
6405 York Road
Parma Heights, Ohio 44130

October 2018

Engineer's Seal

Prepared
Under The Responsible
Charge of:

Prepared By:

Kevin P. Westbrook, P.E., PTOE
Registration No. 65607
Certification No. 844

Michael A. Hobbs, P.E., PTOE
Registration No. 68713
Certification No. 1346

Date



GPD GROUP
Civil, P.E., Science, Survey & Engineering, Inc.

520 South Main Street, Suite 2531, Akron, Ohio 44311
330-572-2100 Fax 330-572-2101

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Figure 2: Aerial Photograph

Figure 3: Preliminary Site Plan

Figure 4: Opening Year 2019 ‘No-Build’ Peak Hour Traffic Volumes

Figure 5: Design Year 2039 ‘No-Build’ Peak Hour Traffic Volumes

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Figure 7: Design Year 2039 ‘Build’ Peak Hour Traffic Volumes

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Appendix A: Turning Movement Traffic Counts

Appendix B: ITE Trip Generation Calculations

Appendix C: Growth Rate Calculations

Appendix D: Site Trip Distribution and Assignment

Appendix E: Intersection Capacity Analysis

I. Purpose:

This Traffic Impact Study is being prepared in association with the proposed construction of a Raising Came’s Chicken Fingers to be located on the southwest corner of Detroit Avenue and Parkhaven Row in the City of Lakewood, Ohio. The purpose of this particular Traffic Impact Study is to analyze the vehicular operating conditions in the vicinity of the proposed development; both before and after the proposed construction to determine what, if any, impact the proposed development will have on the surrounding roadway network.

II. Project Setting:

Study Area

The subject property currently exists as the site of a Bob Evans Restaurant and is located along the south side of Detroit Avenue and the west side of Parkhaven Row. The development in the vicinity of the study area is a mixture of both commercial and residential uses. See **Figure 1** for a project location map and **Figure 2** for an aerial photograph of the project area.

Area Roadway System

Detroit Avenue exists as a four (4) lane asphalt roadway with a center two-way left turn lane. The current posted speed limit on Detroit Avenue is 25 miles per hour. According to information obtained from the Ohio Department of Transportation’s (ODOT) Transportation Information Mapping System (TIMS), Detroit Avenue is classified as an urban minor arterial.

Blossom Park Avenue currently exists as a two (2) lane asphalt roadway. The current speed limit on Blossom Park Avenue is 25 miles per hour. According to information obtained from the Ohio Department of Transportation’s (ODOT) Transportation Information Mapping System (TIMS), Blossom Park Avenue is classified as a local road.

Robinwood Avenue currently exists as a two (2) lane asphalt roadway. The current speed limit on Robinwood Avenue is 25 miles per hour. According to information obtained from the Ohio Department of Transportation’s (ODOT) Transportation Information Mapping System (TIMS), Robinwood Avenue is classified as a local road.

Parkhaven Row exists as a dead-end, two (2) lane asphalt roadway. The current speed limit on Parkhaven Row is 25 miles per hour. According to information obtained from the Ohio Department of Transportation’s (ODOT) Transportation Information Mapping System (TIMS), Parkhaven Row is classified as a local road.

Bunts Road currently exists as a two (2) lane asphalt roadway. The current speed limit on Bunts Road is 25 miles per hour. According to information obtained from the Ohio Department of Transportation’s (ODOT) Transportation Information Mapping System (TIMS), Bunts Road is classified as an urban major collector.



There is one (1) existing signalized intersection within the study area. This is the intersection of Detroit Avenue / Bunts Road.

This intersection is currently signalized utilizing a mast arm configuration with signal poles located on each corner of the intersection. The intersection consist of four (4) approaches with the following lane configurations: NB Bunts Road – two (2) lanes (left, thru-right), SB Bunts Road – two (2) lanes (left, thru-right), EB Detroit Avenue – three (3) lanes (left, thru, right), and WB Detroit Avenue – three (3) lanes (left, thru, right).

Existing Traffic Volumes

For this traffic study, Cummins Consulting Services conducted turning movement traffic counts on Tuesday, September 18th, 2018 between the hours of 7:00 AM and 7:00 PM. The counts were performed at the following locations:

- Detroit Avenue / Blossom Park Avenue / Manor Park Avenue
- Detroit Avenue / Robinwood Avenue
- Detroit Avenue / Giant Eagle Drive
- Detroit Avenue / Parkhaven Row
- Detroit Avenue / Bunts Road

Due to the nature of the proposed business, the midday and PM peak hours have been studied. The midday peak hour of the study area was determined to be from 11:45 AM to 12:45 PM, while the PM peak hour was found to occur from 5:15 PM to 6:15 PM. See Appendix A for printouts of the turning movement counts.

III. Proposed Action:

The proposed development will be constructed along the south side of Detroit Avenue and the west side of Parkhaven Row. See Figure 3 for a preliminary site plan.

The site plan for the proposed Raising Cane’s Chicken Fingers currently provides three (3) access points to serve the site. The drives are planned to have the following configurations: one (1) full-movement driveway along the south side of Detroit Avenue, referred to as Drive #1; one (1) exit only driveway to serve the drive-thru customers along the west side of Parkhaven Row, referred to as Drive #2; and one (1) full-movement driveway along Parkhaven Row to the south of Drive #2, referred to as Drive #3. The current site plan also provides for two (2) drive-thru order lanes, with storage capacity for approximately fifteen (15) vehicles, which merge into each other and will exit onto Parkhaven Row via Drive #2.

IV. Trip Generation:

Trip Generation Calculations

The trip generation calculations were performed for the proposed development utilizing the

Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. This manual includes data from numerous trip generation studies of different land uses that have been performed by public agencies, developers, consulting firms and associations and submitted to ITE. It serves as a tool for estimating the number of vehicle trips generated by a proposed development. For this study, the trip generation calculations will evaluate the Midday and PM peak periods.

According to information contained in the ITE Trip Generation Manual, 10th Edition, the proposed development is expected to generate the following trip ends once constructed:

LAND USE 934 – Fast-Food Restaurant with Drive-Through Window

- i. Weekday PM Peak Hour (used for the midday rush hour):
= 170 trip ends (87 enter and 83 exit)
- ii. Weekday Peak Hour of Adjacent Street Traffic between 4:00 and 6:00 PM (i.e. evening rush hour):
= 108 trip ends (56 enter and 52 exit)

Note that the variable utilized in the trip generation calculations was ‘1,000 square feet of gross floor area,’ which in this particular case is 3,300 square feet. See Appendix B for the detailed trip generation calculations for the development.

Since manual turning movement count data was not collected for the Bob Evans driveways, trip generation calculations were also performed for the existing site so that the proposed site traffic can be compared with the existing site traffic. According to information contained in the ITE Trip Generation Manual, 10th Edition, the existing Bob Evans Restaurant was assumed to generate the following trip ends:

LAND USE 932 – High Turnover (Sit-Down) Restaurant

- iii. Weekday AM Peak Hour (i.e. morning rush hour):
= 52 trip ends (29 enter and 23 exit)
- iv. Weekday PM Peak Hour (i.e. evening rush hour):
= 51 trip ends (32 enter and 19 exit)

Note that the variable utilized in the trip generation calculations was ‘1,000 square feet of gross floor area,’ which was determined to be approximately 5,200 square feet. See Appendix B for the detailed trip generation calculations for the existing site.

Over the course of an average weekday, the Bob Evans Restaurant is assumed to generate a total of 584 trip ends, whereas the Raising Cane’s is expected to generate a total of 1,555 trip ends. Based on the numbers above, replacing the Bob Evans with a Raising Cane’s would expectedly generate 971 more trips during an average weekday; an increase of approximately 166%.



V. Projected Traffic Volumes:

Historical Growth Trends

Historical traffic volumes on Detroit Avenue near the Detroit Avenue / Bunts Road intersection were obtained from ODOT’s website. Based on the available traffic volume data from 1984 – 2013 and the growth rate calculations contained in **Appendix C**, it has been determined that the traffic volumes have been increasing (linearly) in the study area by approximately 0.16% per year. For the purpose of providing a conservative analysis, a growth rate has been rounded up to 0.2% per year to be used in the development of future traffic projections.

‘No-Build’ Traffic Volumes

For the purposes of this study, the construction of the proposed development is anticipated to be completed in 2019 which will serve as the Opening Year for the study, resulting in a Design Year of 2039. The Design Year 2039 ‘No-Build’ traffic volumes were developed by applying the 0.2% annual growth rate to the existing year 2018 traffic volumes. **Figure 4** displays the Opening Year 2019 ‘No-Build’ peak hour traffic volumes while **Figure 5** displays the Design Year 2039 ‘No-Build’ peak hour traffic volumes.

Site Trip Distribution & Assignment

The new trips discussed in the Trip Generation section were distributed and assigned to the roadway network based on existing travel volumes/patterns near the site, the surrounding land uses and roadway network, the proposed access plan, and engineering judgment. It was estimated that 35% of the projected site trips will travel to/from the west on Detroit Avenue, and the remaining 65% will travel to/from the east on Detroit Avenue. Based on consultation with the R.C. representative, it was also determined that approximately 60% of the traffic entering the restaurant site will be utilizing the drive-thru while the remaining 40% will dine-in or carry out. With that in mind, 60% of the traffic exiting from the site is shown exiting via Drive # 2 (the drive-thru exit), and the other 40% are expected to exit via Drive #1 at the north of the site. Since Parkhaven Row dead-ends to the south of the site and since there will be numerous vehicles exiting Drive #2, it is expected that the amount of traffic utilizing Drive #3 as a means of egress from the site will be negligible. The peak hour distribution and assignment of new site trips are included in **Appendix D**.

‘Build’ Traffic Volumes

In order to create the ‘Build’ traffic volumes, the site trips discussed in the previous section were added to the Opening Year 2019 and Design Year 2039 ‘No-Build’ peak hour traffic volumes. The ‘Build’ traffic volumes will allow a direct comparison between the projected traffic conditions without the development and those following the completion of the proposed development. **Figure 6** displays the Opening Year 2019 ‘Build’ peak hour traffic volumes, while **Figure 7** displays the Design Year 2039 ‘Build’ peak hour traffic volumes. Based upon a review of the build volumes and engineering judgment, traffic signal warrants were not conducted for the unsignalized intersections as a part of this study as the volumes at these intersections were determined to be too low to warrant a signal.



VI. Traffic Analysis:

Intersection Capacity Analysis

Intersection Capacity analyses were performed for the Opening Year 2019 and Design Year 2039 ‘No-Build’ and ‘Build’ conditions in order to determine the operating conditions that would be expected to be experienced at each intersection. The quality of the operating conditions experienced by an intersection is measured in terms of Level-of-Service (LOS). Levels-of-Service can range from LOS A to LOS F. Level-of-Service ratings of A, B, and C are considered to be in the acceptable range. LOS D is typically considered acceptable in urban and suburban areas (which the site and study area utilized for this report have been determined to be within). Levels-of-Service E and F are considered below average with significant levels of delay experienced by vehicles. The Level-of-Service thresholds vary for signalized and unsignalized intersections. The thresholds related to average control delay for both signalized and unsignalized intersections are as follows:

| Level-of-Service | Delay Threshold – Signalized (Sec) | Delay Threshold – Unsignalized (Sec) |
|------------------|------------------------------------|--------------------------------------|
| A | < 10 | < 10 |
| B | > 10 - 20 | > 10 – 15 |
| C | > 20 - 35 | > 15 – 25 |
| D | > 35 - 55 | > 25 - 35 |
| E | > 55 - 80 | > 35 - 50 |
| F | > 80 | > 50 |

The analysis was performed utilizing the computer program HCS7 which is developed by McTrans Corporation and based on the 2010 Highway Capacity Manual and the 2009 Manual of Uniform Traffic Control Devices (MUTCD). Based on criteria established by ODOT, the Highway Capacity Software (HCS) is used to determine the required number of lanes and the lane assignments at intersections (i.e. the needed capacity).

Table 1 on the following page summarizes the Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Opening Year 2019 ‘No-Build’ vs. ‘Build’ traffic conditions for the intersections within the study area. See **Appendix E** for the HCS analysis printouts.



Table 1: Intersection Capacity Analysis Summary – Opening Year 2019 ‘No-Build’ vs. ‘Build’ Conditions

| Intersection / Movement | ‘No-Build’ Conditions | | | ‘Build’ Conditions | | |
|---|-----------------------|---------------------|-------------|--------------------|---------------------|-------------|
| | Midday Peak LOS | PM Peak Delay (sec) | PM Peak LOS | Midday Peak LOS | PM Peak Delay (sec) | PM Peak LOS |
| Detroit Avenue / Blossom Park Avenue / Manor Park Avenue | | | | | | |
| Eastbound Left | A | 8.3 | A | A | 8.4 | A |
| Eastbound Approach | A | 0.5 | A | A | 0.4 | A |
| Westbound Left | A | 8.2 | A | A | 8.1 | A |
| Westbound Approach | A | 0.1 | A | A | 0.3 | A |
| Northbound Left-Thru-Right | C | 15.7 | C | 16.1 | C | 16.6 |
| Northbound Approach | C | 15.7 | C | 16.1 | C | 16.6 |
| Southbound Left-Thru-Right | C | 15.2 | C | 17.0 | C | 18.2 |
| Southbound Approach | C | 15.2 | C | 17.0 | C | 18.2 |
| Detroit Avenue / Robinwood Avenue | | | | | | |
| Westbound Left | A | 8.2 | A | A | 8.2 | A |
| Westbound Approach | A | 0.2 | A | A | 0.2 | A |
| Northbound Left-Thru-Right | B | 12.3 | B | 12.0 | B | 12.7 |
| Northbound Approach | B | 12.3 | B | 12.0 | B | 12.7 |
| Detroit Avenue / Giant Eagle Drive / Drive #1 | | | | | | |
| Eastbound Left | A | 8.3 | A | A | 8.5 | A |
| Eastbound Approach | A | 0.1 | A | A | 0.1 | A |
| Westbound Left | A | 8.5 | A | A | 8.3 | A |
| Westbound Approach | A | 0.1 | A | A | 0.1 | A |
| Northbound Left-Right | B | 11.9 | B | B | 11.9 | B |
| Northbound Approach | B | 11.9 | B | B | 11.9 | B |
| Southbound Left-Right | B | 10.5 | B | B | 10.7 | B |
| Southbound Approach | B | 10.5 | B | B | 10.7 | B |
| Detroit Avenue / Parkhaven Row | | | | | | |
| Westbound Left | A | 8.3 | A | A | 8.2 | A |
| Westbound Approach | A | 0.0 | A | A | 0.1 | A |
| Northbound Left-Right | B | 11.9 | B | B | 11.7 | B |
| Northbound Approach | B | 11.9 | B | B | 11.7 | B |

Note: Orange highlighted cells indicate a Level-of-Service E. Red highlighted cells indicate a Level-of-Service F.

Table 1: Intersection Capacity Analysis Summary – Opening Year 2019 ‘No-Build’ vs. ‘Build’ Conditions (Cont’d.)

| Intersection / Movement | ‘No-Build’ Conditions | | | ‘Build’ Conditions | | |
|-------------------------------------|-----------------------|---------------------|-------------|--------------------|---------------------|-------------|
| | Midday Peak LOS | PM Peak Delay (sec) | PM Peak LOS | Midday Peak LOS | PM Peak Delay (sec) | PM Peak LOS |
| Detroit Avenue / Buntis Road | | | | | | |
| Eastbound Left | C | 23.5 | B | C | 24.7 | B |
| Eastbound Thru | B | 19.0 | B | B | 19.3 | B |
| Eastbound Right | B | 17.2 | B | B | 17.4 | B |
| Eastbound Approach | B | 19.2 | B | B | 19.7 | B |
| Westbound Left | C | 24.0 | B | C | 24.9 | C |
| Westbound Thru | B | 19.2 | B | B | 19.6 | B |
| Westbound Right | B | 16.8 | B | B | 16.8 | B |
| Westbound Approach | C | 20.1 | B | C | 20.5 | B |
| Northbound Left | C | 21.1 | C | C | 21.9 | C |
| Northbound Thru-Right | B | 18.2 | C | B | 18.2 | C |
| Northbound Approach | B | 19.1 | C | B | 19.6 | C |
| Southbound Left | C | 20.7 | C | C | 20.7 | C |
| Southbound Thru-Right | B | 18.0 | C | B | 18.2 | C |
| Southbound Approach | B | 18.5 | C | B | 18.6 | C |
| Intersection Total | B | 19.4 | B | 19.7 | B | 19.9 |
| Parkhaven Row / Drive #2 | | | | | | |
| Eastbound Left-Right | | | | A | 9.0 | A |
| Eastbound Approach | | | | A | 9.0 | A |
| Parkhaven Row / Drive #3 | | | | | | |
| Northbound Left-Thru | | | | A | 7.3 | A |
| Southbound Approach | | | | A | 0.0 | A |

Note: Orange highlighted cells indicate a Level-of-Service E. Red highlighted cells indicate a Level-of-Service F.

As shown in Table 1, all movements and approaches within the study area are anticipated to operate at an acceptable Level-of-Service C or better under both the Midday peak hour and the PM peak hour for the Opening Year 2019 ‘No-Build’ and ‘Build’ conditions. It should also be noted that despite minor increases in delay times between the ‘No-Build’ and ‘Build’ conditions, the overall LOS does not decrease between the two conditions. Since there is no significant decrease to the level of service, and since all movements of all approaches operate within the acceptable range of LOS, the proposed Raising Cane’s restaurant is not projected to negatively impact the surrounding roadway network under the Opening Year 2019 conditions.

Table 2 on the following page summarizes the Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Design Year 2039 ‘No-Build’ vs.

‘Build’ traffic conditions for the intersections within the study area. See Appendix F for the analysis printouts.

| Table 2: Intersection Capacity Analysis Summary – Design Year 2039 ‘No-Build’ vs. ‘Build’ Conditions | | | | | | | | | | |
|--|-----------------------|---------------------|-------------|--------------------|---------------------|-------------|--|--|--|--|
| Intersection / Movement | ‘No-Build’ Conditions | | | ‘Build’ Conditions | | | | | | |
| | Midday Peak LOS | PM Peak Delay (sec) | PM Peak LOS | Midday Peak LOS | PM Peak Delay (sec) | PM Peak LOS | | | | |
| Detroit Avenue / Blossom Park Avenue / Manor Park Avenue | | | | | | | | | | |
| Eastbound Approach | A | 8.3 | A | 8.5 | A | 8.4 | | | | |
| Westbound Left | A | 0.5 | A | 0.5 | A | 0.4 | | | | |
| Westbound Approach | A | 8.2 | A | 8.2 | A | 8.2 | | | | |
| Northbound Left-Thru-Right | C | 0.1 | A | 0.3 | A | 0.3 | | | | |
| Northbound Approach | C | 16.3 | C | 16.8 | C | 17.3 | | | | |
| Southbound Left-Thru-Right | C | 15.6 | C | 18.1 | C | 19.4 | | | | |
| Southbound Approach | C | 15.6 | C | 18.1 | C | 19.4 | | | | |
| Detroit Avenue / Robinwood Avenue | | | | | | | | | | |
| Westbound Left | A | 8.2 | A | 8.2 | A | 8.3 | | | | |
| Westbound Approach | A | 0.2 | A | 0.2 | A | 0.3 | | | | |
| Northbound Left-Thru-Right | B | 12.5 | B | 12.3 | B | 13.0 | | | | |
| Northbound Approach | B | 12.5 | B | 12.3 | B | 13.0 | | | | |
| Detroit Avenue / Giant Eagle Drive / Drive #1 | | | | | | | | | | |
| Eastbound Left | A | 8.3 | A | 8.5 | A | 8.4 | | | | |
| Eastbound Approach | A | 0.1 | A | 0.1 | A | 0.1 | | | | |
| Westbound Left | A | 8.6 | A | 8.4 | A | 8.4 | | | | |
| Westbound Approach | A | 0.8 | A | 0.8 | A | 0.5 | | | | |
| Northbound Left-Right | B | 12.1 | B | 11.5 | B | 11.5 | | | | |
| Northbound Approach | B | 12.1 | B | 11.5 | B | 11.5 | | | | |
| Southbound Left-Right | B | 10.6 | B | 10.8 | B | 11.4 | | | | |
| Southbound Approach | B | 10.6 | B | 10.8 | B | 11.4 | | | | |
| Detroit Avenue / Parkhaven Row | | | | | | | | | | |
| Westbound Left | A | 8.3 | A | 8.3 | A | 8.4 | | | | |
| Westbound Approach | A | 0.0 | A | 0.1 | A | 0.2 | | | | |
| Northbound Left-Right | B | 12.1 | B | 11.9 | B | 12.2 | | | | |
| Northbound Approach | B | 12.1 | B | 11.9 | B | 12.2 | | | | |

Note: Orange highlighted cells indicate a Level-of-Service E. Red highlighted cells indicate a Level-of-Service F.

Table 2: Intersection Capacity Analysis Summary – Design Year 2039 ‘No-Build’ vs. ‘Build’ Conditions (Cont’d.)

| Intersection / Movement | ‘No-Build’ Conditions | | | ‘Build’ Conditions | | |
|------------------------------------|-----------------------|---------------------|-------------|--------------------|---------------------|-------------|
| | Midday Peak LOS | PM Peak Delay (sec) | PM Peak LOS | Midday Peak LOS | PM Peak Delay (sec) | PM Peak LOS |
| Detroit Avenue / Bunis Road | | | | | | |
| Eastbound Left | C | 23.9 | B | 19.7 | C | 25.2 |
| Eastbound Thru | B | 19.1 | B | 14.6 | B | 19.5 |
| Eastbound Right | B | 17.2 | B | 13.1 | B | 17.4 |
| Eastbound Approach | B | 19.4 | B | 15.1 | B | 19.9 |
| Westbound Left | C | 24.4 | C | 20.3 | C | 25.4 |
| Westbound Thru | B | 19.4 | B | 15.3 | B | 19.7 |
| Westbound Right | B | 16.8 | B | 13.0 | B | 16.8 |
| Westbound Approach | C | 20.3 | B | 16.6 | C | 20.7 |
| Northbound Left | C | 21.4 | C | 30.7 | C | 22.2 |
| Northbound Thru-Right | B | 18.3 | C | 23.1 | B | 18.3 |
| Northbound Approach | B | 19.3 | C | 25.1 | B | 19.7 |
| Southbound Left | C | 20.9 | C | 30.7 | C | 20.9 |
| Southbound Thru-Right | B | 18.1 | C | 22.0 | B | 18.2 |
| Southbound Approach | B | 18.6 | C | 23.4 | B | 18.7 |
| Intersection Total | B | 19.5 | C | 20.0 | B | 19.9 |
| Parkhaven Row / Drive #2 | | | | | | |
| Eastbound Left-Right | | | | | A | 9.0 |
| Eastbound Approach | | | | | A | 9.0 |
| Parkhaven Row / Drive #3 | | | | | | |
| Northbound Left-Thru | | | | | A | 7.3 |
| Northbound Approach | | | | | A | 0.0 |

Note: Orange highlighted cells indicate a Level-of-Service E. Red highlighted cells indicate a Level-of-Service F.

As shown in Table 2, similar to Opening Year 2019, all movements and approaches within the study area are projected to operate at an acceptable Level-of-Service C or better under the Midday peak hour and the PM peak hour for the Design Year 2038 ‘No-Build’ and ‘Build’ conditions. Also similar to Opening Year 2019, no significant decrease to the level of service is expected between the ‘No-Build’ and ‘Build’ conditions for all movements. All movements are anticipated to operate within the acceptable range of LOS and there is no expected decrease in LOS between ‘No-Build’ and ‘Build’ conditions. **The proposed Raising Cane’s restaurant is not projected to negatively impact the surrounding roadway network under the Design Year 2039 conditions.**

VII. Site Related Issues:

Parkhaven Row Wait Times

Particularly because the drive-thru (Drive #2) exits to Parkhaven Row, but also because Drive # 3 exits there as well, the waiting time for vehicles attempting to turn onto Detroit Avenue from Parkhaven Row was investigated, both pre-development (No-Build) and post-development (Build). The results of the capacity analysis are shown in Table 3 below.

Table 3: Wait Times for NB Traffic on Parkhaven Row at Detroit Avenue

| Period | Average Delay / Vehicle (seconds) | | Change |
|------------------|-----------------------------------|--------------------|--------|
| | 'No-Build' Conditions | 'Build' Conditions | |
| 2039 Design Year | | | |
| Midday Peak | 12.1 | 12.5 | +0.4 |
| PM Peak | 11.9 | 12.2 | +0.3 |

As shown in Table 3, the highest increase in delay experienced by the northbound movement at this intersection occurs during the mid-day peak hour, during which time vehicles are expected to experience an additional 0.4 seconds of delay, which is considered negligible in this instance.

Drive-Thru Blocking

Queue backup for the northbound movement at the Detroit Avenue / Parkhaven Row intersection was investigated to determine if the queue would block the exit to the drive-thru. During the mid-day peak hour of the Design Year 2039 'Build' condition, 49 vehicles are expected to exit from the drive-thru while 30 vehicles will come from the south on Parkhaven Row, for a total of 79 vehicles in the hour. Based on the information previously presented, each of these vehicles are expected to wait 12.5 seconds on average to exit Parkhaven Row onto Detroit Avenue.

The 30 vehicles from the south on Parkhaven Row will arrive one every 120 seconds on average. The 49 vehicles exiting the drive-thru will arrive one every 73 seconds on average. Combined, this will result in one vehicle arriving every 46 seconds. As previously stated, the intersection has the ability to release a vehicle every 12.5 seconds, which is significantly faster than the average arrival time. Therefore, it is not anticipated that a queue will develop for the northbound approach.

To verify the drive-thru time, GPD consulted with the Raising Cane's representative who indicated that the absolute best processing time is one vehicle every 30 seconds during peak production. Again, the average release time at the intersection of 12.5 seconds is significantly faster than the drive-thru processing time, resulting in a lack of vehicle queues at the Parkhaven Row / Detroit Avenue intersection.



Pedestrian Conflicts

The potential for pedestrians to conflict with vehicular traffic exiting from Parkhaven Row onto Detroit Road was investigated. Any vehicle wishing to enter or exit this location would have to yield to pedestrians, as the pedestrians would have the right of way. As previously presented, vehicle queuing and excessive delay are not expected at this location. The traffic counts found that the heaviest volume of pedestrian traffic crossing the south leg of the Detroit Avenue / Parkhaven Row intersection was only 38 pedestrians during the PM peak hour. This means that a pedestrian could be expected every 95 seconds on average, or 0.63 pedestrians per minute. Being that a little more than one vehicle per minute and less than one pedestrian per minute are expected, it is unlikely that the vehicular traffic will be of any hindrance to the pedestrians and vice versa.

Site Deliveries

As with any site, supply deliveries can be an issue if they are not properly accounted for either through separation from vehicular traffic or proper scheduling. Due to the size of this site, trucks will not be able to be physically separated from vehicular traffic and will be using the parking lot for deliveries. Through discussions with the Raising Cane's representative, it was found that deliveries are scheduled during non-operating hours. Unlike other restaurants, including the former Bob Evans on this site, Raising Cane's is not open during the morning hours. Typical opening time is 10:00 am and all deliveries are concluded well before this opening time.

Due to the site layout, it is expected that deliveries will either enter the site from Drive #1 on Detroit Avenue and exit to Parkhaven Row through Drive # 3, or the reverse. It is not anticipated that the vehicles will turn around on the site.

GetGo Access

It was requested by the City of Lakewood for the report to address how traffic will be deterred from cutting through the adjacent GetGo parking lot to access Bunts Road. The best deterrent for cut-through traffic is to provide a more convenient route on the public roadways. Based on the data previously presented, low delay times for vehicles exiting the site drives and Parkhaven Row should encourage drivers from seeking a 'faster' way out. Without long queues of vehicles, drivers will tend to use the intended access locations, as this will be the most convenient route. Additionally, the peak periods for the Raising Cane's will likely correspond with the peak periods for the GetGo. Maneuvering through a busy GetGo parking lot which currently contains speed humps is not going to provide a 'faster' way out.

As a precautionary measure, it is recommended that 'Left Turn Only' signs be posted at the exits of the Drive-Thru (Drive # 2) and Drive # 3 onto Parkhaven Row. While these signs would be difficult to enforce, they should serve as a deterrent from using the GetGo to access Bunts Road.



VIII. Summary and Recommendations:

This Traffic Impact Study is being prepared in association with the proposed construction of a Raising Cane’s Chicken Fingers to be located on the southwest corner of Detroit Avenue and Parkhaven Row in the City of Lakewood, Ohio. The purpose of this particular Traffic Impact Study is to analyze the vehicular operating conditions in the vicinity of the proposed development, both before and after the proposed construction to determine what, if any, impact the proposed development will have on the surrounding roadway network.

In Summary,

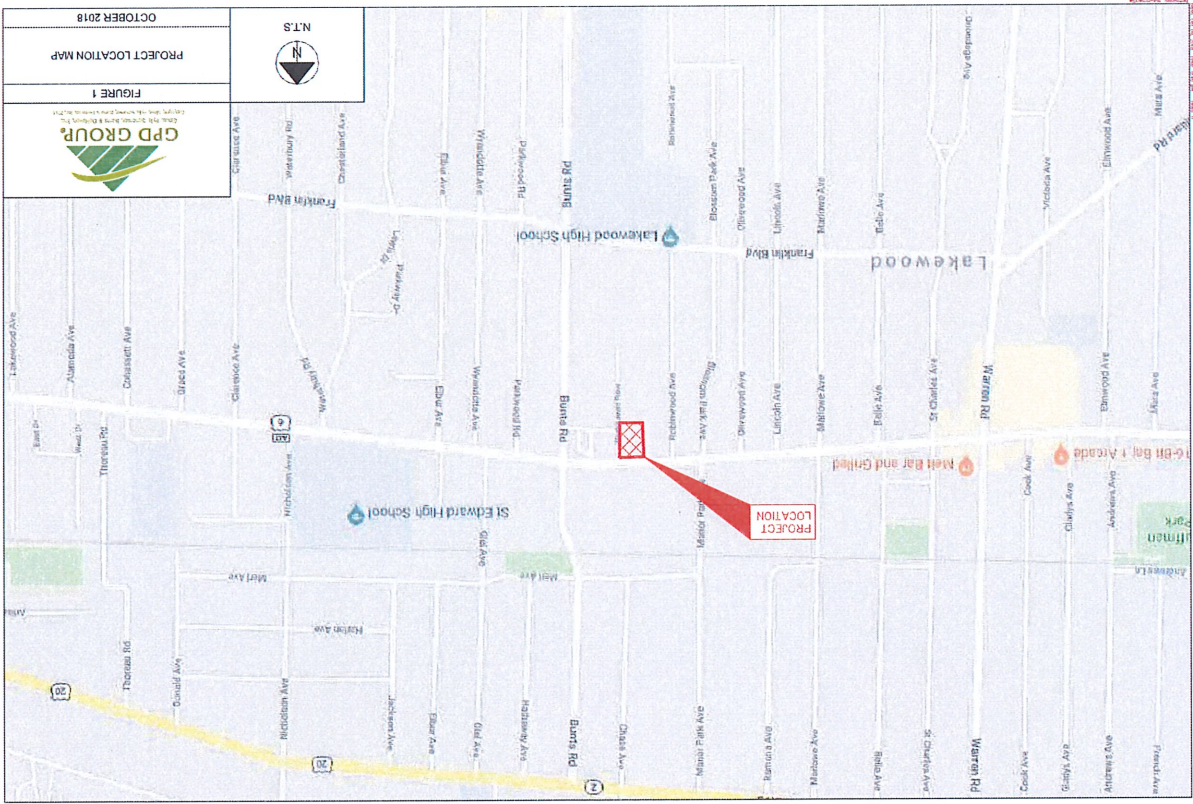
1. The site plan for the proposed Raising Cane’s Chicken Fingers development currently provides three (3) access points. One (1) full movement drive along Detroit Avenue, one (1) full movement drive along Parkhaven Row, and one (1) exit only drive to serve the exiting drive-thru traffic along Parkhaven Row.
2. According to information contained in the ITE Trip Generation Manual, 10th Edition, the proposed development is expected to generate the following trip ends once constructed:
LAND USE 934 – Fast-Food Restaurant with Drive-Through Window
 - v. Weekday PM Peak Hour (used for the midday rush hour):
= 170 trip ends (87 enter and 83 exit)
 - vi. Weekday Peak Hour of Adjacent Street Traffic between 4:00 and 6:00 PM (i.e. evening rush hour):
= 108 trip ends (56 enter and 52 exit)
3. A growth rate of 0.2% per year was used in the development of future traffic projections.
4. The capacity analysis found that all movements and approaches for each of the intersections within the study area are expected to operate with an acceptable LOS of C or better during both the Mid-day and PM peak hours for both the Opening Year 2019 and the Design Year 2039 under the ‘No-Build’ and ‘Build’ conditions.

Based on the information and analyses in this study, GPD Group recommends the following:

1. The proposed development should be constructed as planned utilizing the three (3) access points as depicted in the preliminary site plan.
2. Based on the analysis contained in this study, the proposed development is not anticipated to have an adverse impact on the surrounding roadway network and will provide adequate accessibility to and from the site under the projected traffic conditions.

FIGURES

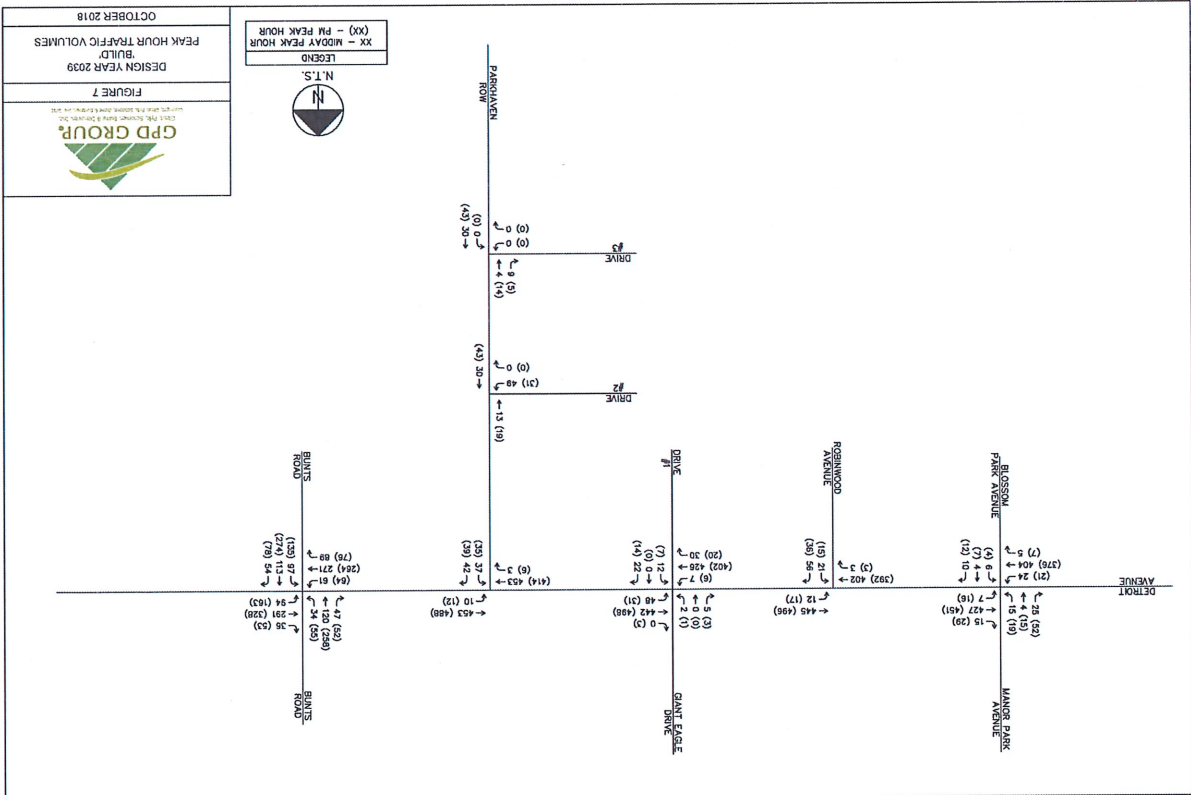




OCTOBER 2018
 AERIAL PHOTOGRAPH
 FIGURE 2
 GPD GROUP
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OCTOBER 2018
 PROJECT LOCATION MAP
 FIGURE 1
 GPD GROUP
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APPENDIX A TURNING MOVEMENT TRAFFIC COUNTS

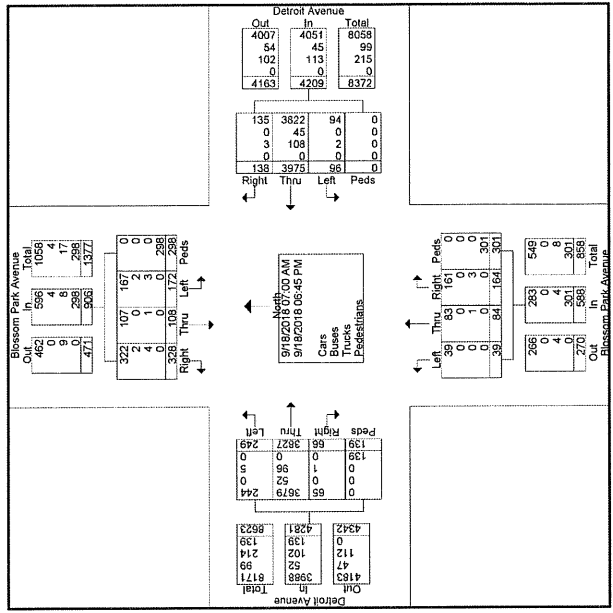


File Name : Detroit_Avenue_at_Blossom_Park_Avenue_565782_09-18-2018
 Site Code : Site 1 - Tues
 Start Date : 9/18/2018
 Page No : 2

| Start Time | Blossom Park Avenue From North | | | | Blossom Park Avenue From East | | | | Blossom Park Avenue From South | | | | Detroit Avenue From West | | | | In Total | | | | |
|----------------------|--------------------------------|-------------|-------------|-------------|-------------------------------|------------|-------------|------------|--------------------------------|-------------|------------|------------|--------------------------|------------|------------|------------|-------------|------------|------------|-------------|-------------|
| | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | | | | | |
| 05:00 PM | 0 | 4 | 11 | 9 | 24 | 1 | 117 | 2 | 0 | 120 | 2 | 3 | 18 | 26 | 6 | 88 | 1 | 4 | 98 | 269 | |
| 05:15 PM | 3 | 4 | 11 | 7 | 25 | 4 | 101 | 4 | 0 | 109 | 1 | 3 | 8 | 15 | 6 | 76 | 4 | 0 | 86 | 235 | |
| 05:30 PM | 8 | 3 | 11 | 9 | 31 | 5 | 108 | 6 | 0 | 119 | 2 | 0 | 3 | 8 | 13 | 5 | 98 | 1 | 9 | 113 | 276 |
| 05:45 PM | 1 | 7 | 16 | 5 | 29 | 3 | 106 | 4 | 0 | 113 | 1 | 2 | 10 | 15 | 4 | 89 | 1 | 4 | 98 | 255 | |
| Total | 12 | 18 | 49 | 30 | 109 | 13 | 432 | 16 | 0 | 461 | 6 | 8 | 11 | 44 | 21 | 331 | 7 | 17 | 396 | 1035 | |
| 06:00 PM | 3 | 0 | 12 | 12 | 27 | 3 | 106 | 11 | 0 | 120 | 0 | 2 | 4 | 12 | 18 | 8 | 85 | 1 | 2 | 93 | 258 |
| 06:15 PM | 4 | 3 | 7 | 14 | 28 | 0 | 97 | 4 | 0 | 101 | 0 | 2 | 4 | 14 | 8 | 59 | 0 | 5 | 72 | 215 | |
| 06:30 PM | 3 | 1 | 7 | 16 | 17 | 1 | 91 | 4 | 0 | 96 | 0 | 1 | 3 | 9 | 13 | 4 | 74 | 1 | 3 | 82 | 208 |
| 06:45 PM | 6 | 5 | 4 | 6 | 21 | 0 | 86 | 3 | 0 | 89 | 1 | 2 | 4 | 8 | 15 | 4 | 73 | 2 | 1 | 80 | 205 |
| Total | 16 | 9 | 30 | 38 | 93 | 4 | 380 | 22 | 0 | 405 | 1 | 7 | 15 | 37 | 60 | 21 | 291 | 4 | 11 | 327 | 885 |
| Grand Total | 172 | 108 | 328 | 298 | 906 | 96 | 3975 | 138 | 0 | 4209 | 39 | 84 | 164 | 301 | 588 | 249 | 3827 | 66 | 139 | 4281 | 9984 |
| Approch % | 19 | 11.9 | 36.2 | 32.9 | 9.1 | 2.3 | 94.4 | 3.3 | 0 | 42.2 | 0.4 | 0.8 | 1.6 | 3 | 5.9 | 2.5 | 88.3 | 0.7 | 1.4 | 42.9 | |
| % Cars | 167 | 107 | 322 | 0 | 586 | 94 | 3822 | 135 | 0 | 4051 | 39 | 83 | 161 | 0 | 283 | 244 | 3679 | 65 | 0 | 3988 | 8918 |
| % Trucks | 12 | 0 | 0 | 0 | 4 | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 | 101 |
| % Buses | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Pedestrians | 17 | 0 | 0 | 0 | 0 | 2 | 27 | 22 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 25 | 15 | 0 | 74 |
| % Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 139 | 439 |

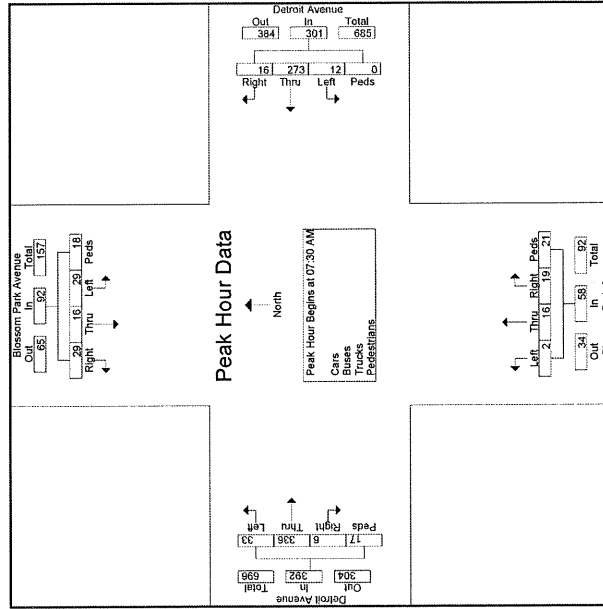
File Name : Detroit_Avenue_at_Blossom_Park_Avenue_565782_09-18-2018
 Site Code : Site 1 - Tues
 Start Date : 9/18/2018
 Page No : 1

| Start Time | Blossom Park Avenue From North | | | | Blossom Park Avenue From East | | | | Blossom Park Avenue From South | | | | Detroit Avenue From West | | | | In Total | | | | |
|--------------|--------------------------------|-----------|-----------|------------|-------------------------------|------------|------------|------------|--------------------------------|------------|-----------|------------|--------------------------|-----------|------------|------------|------------|------------|------------|------------|-------------|
| | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | | | | | |
| 09:00 AM | 3 | 4 | 5 | 17 | 2 | 6 | 7 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 AM | 3 | 2 | 5 | 13 | 0 | 5 | 3 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:30 AM | 3 | 2 | 4 | 5 | 13 | 1 | 7 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 AM | 3 | 1 | 4 | 5 | 13 | 1 | 7 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 10 | 8 | 20 | 60 | 3 | 283 | 9 | 295 | 1 | 3 | 11 | 13 | 28 | 17 | 226 | 6 | 5 | 254 | 637 | | |
| 10:00 AM | 0 | 0 | 4 | 1 | 5 | 1 | 62 | 0 | 63 | 3 | 1 | 3 | 11 | 3 | 50 | 0 | 1 | 54 | 130 | | |
| 10:15 AM | 3 | 1 | 4 | 2 | 3 | 9 | 4 | 5 | 0 | 70 | 1 | 0 | 2 | 8 | 11 | 69 | 3 | 2 | 75 | 165 | |
| 10:30 AM | 2 | 0 | 3 | 4 | 11 | 1 | 70 | 2 | 0 | 73 | 1 | 3 | 2 | 3 | 9 | 4 | 81 | 1 | 1 | 87 | 180 |
| 10:45 AM | 2 | 0 | 3 | 4 | 11 | 1 | 70 | 2 | 0 | 73 | 1 | 3 | 2 | 3 | 9 | 4 | 81 | 1 | 1 | 87 | 180 |
| Total | 7 | 3 | 14 | 9 | 33 | 8 | 267 | 4 | 0 | 279 | 6 | 4 | 7 | 20 | 37 | 10 | 289 | 5 | 8 | 312 | 661 |
| 11:00 AM | 2 | 4 | 7 | 15 | 2 | 75 | 1 | 0 | 78 | 0 | 0 | 2 | 7 | 9 | 2 | 68 | 2 | 0 | 72 | 174 | |
| 11:15 AM | 4 | 0 | 6 | 17 | 3 | 75 | 1 | 0 | 83 | 1 | 2 | 7 | 14 | 4 | 82 | 3 | 0 | 106 | 215 | | |
| 11:30 AM | 4 | 0 | 6 | 11 | 0 | 88 | 3 | 0 | 95 | 3 | 1 | 14 | 19 | 2 | 95 | 0 | 3 | 100 | 202 | | |
| 11:45 AM | 4 | 0 | 6 | 11 | 0 | 88 | 3 | 0 | 95 | 3 | 1 | 14 | 19 | 2 | 95 | 0 | 3 | 100 | 202 | | |
| Total | 11 | 4 | 20 | 19 | 54 | 6 | 323 | 8 | 0 | 337 | 8 | 33 | 48 | 12 | 352 | 5 | 6 | 375 | 814 | | |
| 12:00 PM | 4 | 1 | 6 | 14 | 25 | 3 | 112 | 5 | 0 | 120 | 2 | 4 | 4 | 11 | 8 | 86 | 0 | 6 | 100 | 256 | |
| 12:15 PM | 5 | 2 | 6 | 8 | 21 | 1 | 93 | 2 | 0 | 96 | 1 | 3 | 2 | 7 | 5 | 97 | 4 | 4 | 110 | 234 | |
| 12:30 PM | 1 | 1 | 6 | 4 | 12 | 2 | 97 | 0 | 100 | 0 | 1 | 2 | 4 | 7 | 8 | 89 | 1 | 1 | 99 | 218 | |
| 12:45 PM | 4 | 1 | 6 | 5 | 16 | 2 | 81 | 1 | 0 | 84 | 0 | 3 | 2 | 8 | 6 | 94 | 1 | 0 | 101 | 209 | |
| Total | 14 | 5 | 24 | 31 | 74 | 8 | 383 | 9 | 0 | 400 | 3 | 6 | 11 | 13 | 27 | 366 | 6 | 11 | 410 | 917 | |
| 01:00 PM | 2 | 2 | 7 | 11 | 22 | 0 | 82 | 4 | 0 | 86 | 1 | 1 | 3 | 6 | 11 | 9 | 77 | 1 | 7 | 94 | 213 |
| 01:15 PM | 1 | 1 | 3 | 10 | 15 | 3 | 78 | 2 | 0 | 83 | 0 | 2 | 6 | 7 | 15 | 5 | 84 | 0 | 4 | 93 | 206 |
| 01:30 PM | 2 | 2 | 4 | 9 | 17 | 1 | 90 | 4 | 0 | 95 | 1 | 1 | 4 | 8 | 14 | 7 | 78 | 2 | 3 | 90 | 216 |
| 01:45 PM | 2 | 2 | 6 | 8 | 18 | 2 | 75 | 3 | 0 | 81 | 0 | 0 | 7 | 11 | 5 | 72 | 3 | 5 | 88 | 196 | |
| Total | 7 | 7 | 20 | 38 | 72 | 6 | 326 | 13 | 0 | 345 | 2 | 4 | 20 | 25 | 51 | 26 | 311 | 6 | 22 | 365 | 853 |
| 02:00 PM | 2 | 1 | 6 | 15 | 3 | 68 | 3 | 0 | 74 | 0 | 1 | 2 | 6 | 9 | 5 | 80 | 1 | 3 | 88 | 187 | |
| 02:15 PM | 3 | 1 | 4 | 8 | 16 | 2 | 80 | 2 | 0 | 84 | 0 | 1 | 4 | 6 | 11 | 4 | 84 | 2 | 2 | 92 | 203 |
| 02:30 PM | 2 | 3 | 6 | 3 | 14 | 1 | 90 | 4 | 0 | 96 | 3 | 3 | 3 | 5 | 14 | 6 | 76 | 0 | 2 | 84 | 208 |
| 02:45 PM | 4 | 6 | 9 | 4 | 23 | 3 | 94 | 0 | 0 | 97 | 0 | 4 | 5 | 9 | 4 | 101 | 4 | 5 | 114 | 243 | |
| Total | 11 | 11 | 25 | 21 | 68 | 9 | 332 | 10 | 0 | 351 | 3 | 5 | 13 | 22 | 43 | 19 | 341 | 7 | 12 | 375 | 841 |
| 03:00 PM | 5 | 4 | 6 | 11 | 26 | 3 | 130 | 4 | 0 | 137 | 4 | 6 | 9 | 8 | 27 | 5 | 108 | 2 | 8 | 123 | 313 |
| 03:15 PM | 6 | 1 | 13 | 10 | 30 | 4 | 101 | 2 | 0 | 107 | 1 | 0 | 5 | 17 | 23 | 2 | 94 | 2 | 5 | 103 | 263 |
| 03:30 PM | 3 | 1 | 6 | 4 | 14 | 2 | 96 | 5 | 0 | 103 | 1 | 4 | 2 | 8 | 3 | 89 | 2 | 0 | 94 | 219 | |
| 03:45 PM | 3 | 1 | 11 | 7 | 22 | 2 | 90 | 6 | 0 | 88 | 1 | 2 | 4 | 4 | 11 | 8 | 91 | 1 | 3 | 103 | 224 |
| Total | 17 | 7 | 36 | 32 | 92 | 11 | 407 | 17 | 0 | 435 | 7 | 9 | 22 | 31 | 69 | 18 | 382 | 7 | 16 | 423 | 1019 |
| 04:00 PM | 5 | 3 | 6 | 15 | 5 | 86 | 3 | 0 | 94 | 1 | 0 | 2 | 3 | 6 | 3 | 98 | 3 | 1 | 105 | 220 | |
| 04:15 PM | 2 | 0 | 10 | 6 | 18 | 2 | 82 | 2 | 0 | 86 | 0 | 0 | 2 | 5 | 6 | 82 | 2 | 1 | 75 | 197 | |
| 04:30 PM | 5 | 5 | 10 | 6 | 27 | 1 | 103 | 2 | 0 | 107 | 0 | 0 | 2 | 5 | 7 | 5 | 88 | 0 | 3 | 90 | 231 |
| 04:45 PM | 7 | 3 | 6 | 6 | 22 | 2 | 105 | 2 | 0 | 108 | 1 | 3 | 7 | 9 | 20 | 9 | 82 | 1 | 5 | 97 | 248 |
| Total | 23 | 13 | 32 | 20 | 88 | 10 | 382 | 10 | 0 | 402 | 2 | 3 | 12 | 22 | 39 | 21 | 330 | 6 | 10 | 367 | 896 |



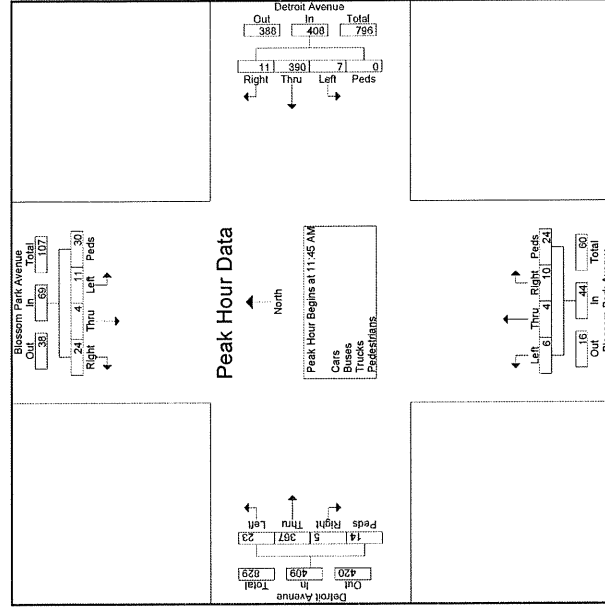
File Name : Detroit_Avenue_at_Blossom_Park_Avenue_565782_09-18-2018
 Site Code : Site 1 - Tues
 Start Date : 9/18/2018
 Page No : 3

| Start Time | Blossom Park Avenue From North | | | | | Blossom Park Avenue From South | | | | | Detroit Avenue From East | | | | | Detroit Avenue From West | | | | | |
|--|--------------------------------|------|-------|------|------------|--------------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|------|
| | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | |
| Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | | | | | | | | | | | | | | | | | | | | | |
| 07:30 AM | 12 | 7 | 3 | 7 | 29 | 4 | 6 | 7 | 18 | 37 | 1 | 4 | 6 | 7 | 18 | 6 | 110 | 1 | 5 | 122 | 242 |
| 07:45 AM | 8 | 5 | 11 | 4 | 28 | 4 | 7 | 7 | 19 | 11 | 112 | 3 | 6 | 132 | 275 | | | | | | |
| 08:00 AM | 6 | 2 | 10 | 2 | 20 | 1 | 6 | 5 | 0 | 7 | 53 | 0 | 3 | 63 | 163 | | | | | | |
| 08:15 AM | 3 | 2 | 5 | 5 | 15 | 3 | 5 | 5 | 12 | 9 | 61 | 2 | 3 | 75 | 163 | | | | | | |
| Total Volume | 29 | 16 | 29 | 18 | 92 | 12 | 27 | 16 | 30 | 2 | 16 | 19 | 21 | 58 | 33 | 336 | 6 | 17 | 392 | 843 | |
| % App. Total | 31.5 | 17.4 | 31.5 | 19.6 | 79.1 | 3.4 | 27.6 | 32.8 | 36.2 | 8.4 | 85.7 | 1.5 | 4.3 | 7.0 | 7.0 | 750 | 750 | 300 | 708 | 1742 | 766 |
| PHF | .604 | .571 | .659 | .643 | .789 | .750 | .784 | .800 | .900 | .784 | .500 | 1.00 | .979 | .750 | .783 | .750 | .750 | .500 | .708 | .742 | .766 |



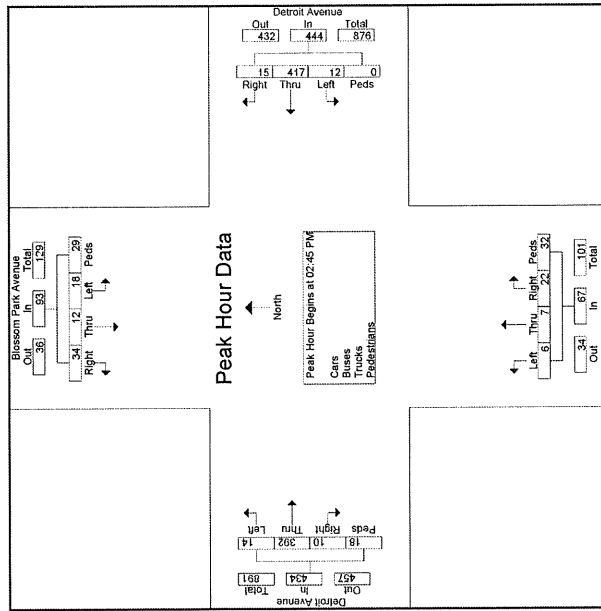
File Name : Detroit_Avenue_at_Blossom_Park_Avenue_565782_09-18-2018
 Site Code : Site 1 - Tues
 Start Date : 9/18/2018
 Page No : 4

| Start Time | Blossom Park Avenue From North | | | | | Blossom Park Avenue From South | | | | | Detroit Avenue From East | | | | | Detroit Avenue From West | | | | | |
|--|--------------------------------|------|-------|------|------------|--------------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|--------------------------|------|-------|------|------------|------|
| | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | Left | Thru | Right | Peds | App. Total | |
| Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 11:45 AM | | | | | | | | | | | | | | | | | | | | | |
| 11:45 AM | 1 | 0 | 6 | 4 | 11 | 1 | 11 | 1 | 88 | 3 | 0 | 92 | 3 | 1 | 14 | 19 | 2 | 95 | 0 | 3 | 100 |
| 12:00 PM | 4 | 1 | 6 | 14 | 25 | 3 | 12 | 5 | 0 | 120 | 2 | 1 | 4 | 2 | 7 | 8 | 8 | 95 | 0 | 4 | 100 |
| 12:15 PM | 3 | 2 | 6 | 4 | 15 | 2 | 9 | 1 | 0 | 106 | 0 | 1 | 3 | 2 | 4 | 7 | 5 | 89 | 1 | 4 | 99 |
| 12:30 PM | 5 | 2 | 6 | 4 | 17 | 2 | 9 | 1 | 0 | 108 | 0 | 1 | 3 | 2 | 4 | 7 | 8 | 89 | 1 | 4 | 99 |
| Total Volume | 11 | 4 | 24 | 30 | 69 | 7 | 39 | 11 | 0 | 408 | 6 | 4 | 10 | 24 | 44 | 23 | 367 | 5 | 14 | 409 | 530 |
| % App. Total | 15.9 | 5.8 | 34.8 | 43.5 | 61.7 | 1.7 | 95.6 | 2.7 | 0 | 13.6 | 9.1 | 22.7 | 54.5 | 5.8 | 89.7 | 1.2 | 3.4 | 3.4 | 3.4 | 3.4 | 908 |
| PHF | .550 | .500 | 1.00 | .535 | .680 | .693 | .671 | .550 | .000 | .850 | 1.00 | .625 | .429 | .579 | .719 | .546 | .313 | .553 | .950 | .950 | .908 |



File Name : Detroit_Avenue_at_Blossom_Park_Avenue_565782_09-18-2018
 Site Code : Site 1 - Tues
 Start Date : 9/18/2018
 Page No : 5

| Start Time | Blossom Park Avenue From North | | | Detroit Avenue From East | | | Blossom Park Avenue From South | | | Detroit Avenue From West | | | Int. Total | | | | | |
|------------|--------------------------------|------|------------|--------------------------|------|------|--------------------------------|------|------------|--------------------------|-------|------|------------|------|------|------|------|------|
| | Thru | U | App. Total | Thru | Rig | Peds | Thru | U | App. Total | Thru | Right | Peds | | | | | | |
| 02:45 PM | 4 | 6 | 9 | 3 | 90 | 4 | 0 | 0 | 4 | 5 | 9 | 4 | 101 | 4 | 5 | 114 | 243 | |
| 03:00 PM | 5 | 4 | 6 | 11 | 26 | 3 | 130 | 4 | 6 | 9 | 27 | 5 | 106 | 2 | 6 | 123 | 213 | |
| 03:15 PM | 6 | 1 | 13 | 10 | 30 | 4 | 101 | 2 | 0 | 107 | 1 | 4 | 17 | 23 | 3 | 123 | 213 | |
| 03:30 PM | 13 | 6 | 29 | 93 | 12 | 417 | 15 | 0 | 444 | 6 | 7 | 22 | 32 | 67 | 14 | 392 | 10 | 434 |
| Total | 19.4 | 12.5 | 38.6 | 31.2 | 27 | 83.9 | 3.4 | 0 | 10.4 | 32.8 | 47.8 | 3.2 | 30.3 | 2.3 | 4.1 | 85.2 | 829 | |
| % App. PHE | 75.0 | 50.0 | 65.9 | 77.5 | 75.0 | 80.2 | 75.0 | 0.00 | 81.0 | 37.5 | 29.2 | 61.1 | 47.1 | 62.0 | 70.0 | 50.7 | 65.5 | 82.9 |



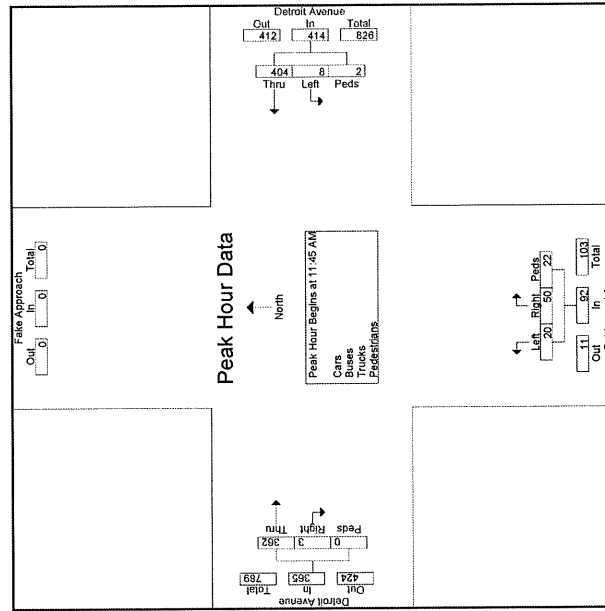
File Name : Detroit_Avenue_at_Robinwood_Avenue_565783_09-18-2018
 Site Code : Site 2 - Tues
 Start Date : 9/18/2018
 Page No : 1

Partly Sunny - 80 Degrees
 Schools in Session

| Start Time | Detroit Avenue From East | | | Robinson Avenue From South | | | Detroit Avenue From West | | | Int. Total | |
|------------|--------------------------|-----|------------|----------------------------|-------|------|--------------------------|-------|------|------------|-----|
| | Thru | U | App. Total | Thru | Right | Peds | Thru | Right | Peds | | |
| 07:00 AM | 0 | 19 | 0 | 0 | 8 | 4 | 12 | 43 | 4 | 47 | 78 |
| 07:15 AM | 2 | 35 | 1 | 7 | 2 | 0 | 10 | 70 | 2 | 72 | 120 |
| 07:30 AM | 11 | 73 | 0 | 3 | 13 | 5 | 21 | 110 | 19 | 0 | 234 |
| 07:45 AM | 19 | 91 | 0 | 110 | 9 | 15 | 30 | 94 | 27 | 0 | 261 |
| Total | 32 | 218 | 1 | 13 | 43 | 17 | 73 | 317 | 52 | 0 | 693 |
| 08:00 AM | 2 | 71 | 0 | 3 | 8 | 1 | 12 | 60 | 3 | 0 | 148 |
| 08:15 AM | 2 | 59 | 0 | 6 | 6 | 4 | 10 | 70 | 0 | 0 | 141 |
| 08:30 AM | 4 | 71 | 0 | 12 | 5 | 18 | 59 | 4 | 0 | 0 | 156 |
| 08:45 AM | 2 | 73 | 0 | 4 | 4 | 4 | 12 | 90 | 0 | 0 | 150 |
| Total | 10 | 274 | 0 | 284 | 8 | 30 | 14 | 52 | 7 | 0 | 622 |
| 09:00 AM | 1 | 89 | 0 | 90 | 1 | 6 | 3 | 10 | 55 | 1 | 156 |
| 09:15 AM | 2 | 67 | 0 | 69 | 6 | 2 | 14 | 53 | 1 | 0 | 137 |
| 09:30 AM | 3 | 56 | 0 | 61 | 4 | 12 | 6 | 11 | 63 | 1 | 166 |
| 09:45 AM | 6 | 80 | 0 | 308 | 7 | 6 | 11 | 83 | 1 | 0 | 562 |
| Total | 12 | 294 | 0 | 308 | 12 | 31 | 13 | 56 | 227 | 4 | 232 |
| 10:00 AM | 4 | 67 | 0 | 71 | 0 | 9 | 3 | 12 | 42 | 4 | 129 |
| 10:15 AM | 4 | 66 | 0 | 70 | 5 | 9 | 3 | 19 | 71 | 2 | 162 |
| 10:30 AM | 3 | 70 | 0 | 73 | 3 | 7 | 4 | 14 | 74 | 4 | 165 |
| 10:45 AM | 6 | 73 | 0 | 79 | 4 | 11 | 5 | 20 | 86 | 5 | 190 |
| Total | 17 | 276 | 0 | 293 | 12 | 36 | 17 | 65 | 273 | 15 | 646 |
| 11:00 AM | 0 | 80 | 0 | 80 | 3 | 5 | 8 | 16 | 67 | 0 | 163 |
| 11:15 AM | 4 | 79 | 0 | 83 | 5 | 10 | 6 | 21 | 103 | 0 | 207 |
| 11:30 AM | 2 | 89 | 0 | 91 | 5 | 7 | 6 | 18 | 88 | 1 | 198 |
| 11:45 AM | 3 | 87 | 0 | 90 | 6 | 11 | 9 | 26 | 92 | 0 | 208 |
| Total | 9 | 335 | 0 | 344 | 19 | 33 | 29 | 81 | 350 | 1 | 776 |
| 12:00 PM | 1 | 114 | 2 | 117 | 8 | 16 | 5 | 29 | 85 | 1 | 232 |
| 12:15 PM | 1 | 103 | 0 | 104 | 4 | 16 | 3 | 23 | 97 | 0 | 224 |
| 12:30 PM | 3 | 100 | 0 | 103 | 2 | 7 | 5 | 14 | 88 | 2 | 207 |
| 12:45 PM | 3 | 90 | 0 | 93 | 2 | 9 | 5 | 12 | 88 | 0 | 207 |
| Total | 8 | 407 | 2 | 417 | 15 | 48 | 15 | 78 | 386 | 4 | 865 |
| 01:00 PM | 5 | 86 | 0 | 91 | 4 | 4 | 5 | 13 | 73 | 2 | 176 |
| 01:15 PM | 1 | 82 | 0 | 83 | 4 | 12 | 7 | 23 | 94 | 0 | 200 |
| 01:30 PM | 1 | 94 | 0 | 95 | 7 | 9 | 5 | 21 | 75 | 2 | 193 |
| 01:45 PM | 4 | 78 | 0 | 82 | 4 | 12 | 3 | 19 | 75 | 1 | 178 |
| Total | 11 | 341 | 0 | 352 | 19 | 37 | 20 | 76 | 317 | 5 | 751 |
| 02:00 PM | 3 | 68 | 0 | 71 | 6 | 7 | 7 | 20 | 78 | 3 | 172 |
| 02:15 PM | 2 | 82 | 0 | 84 | 6 | 11 | 3 | 20 | 82 | 0 | 186 |
| 02:30 PM | 2 | 95 | 0 | 97 | 4 | 8 | 2 | 14 | 74 | 2 | 187 |
| 02:45 PM | 3 | 87 | 0 | 90 | 10 | 7 | 4 | 21 | 100 | 8 | 220 |
| Total | 10 | 332 | 0 | 342 | 26 | 33 | 16 | 75 | 334 | 13 | 765 |
| 03:00 PM | 17 | 129 | 0 | 146 | 11 | 17 | 9 | 37 | 103 | 8 | 294 |
| 03:15 PM | 4 | 110 | 0 | 114 | 6 | 7 | 11 | 24 | 101 | 1 | 240 |
| 03:30 PM | 6 | 103 | 0 | 109 | 5 | 12 | 3 | 20 | 95 | 2 | 226 |
| 03:45 PM | 2 | 85 | 0 | 87 | 5 | 9 | 4 | 18 | 93 | 2 | 200 |
| Total | 29 | 427 | 0 | 456 | 27 | 45 | 27 | 99 | 392 | 13 | 960 |
| 04:00 PM | 6 | 91 | 1 | 98 | 2 | 12 | 4 | 18 | 95 | 2 | 213 |
| 04:15 PM | 3 | 85 | 0 | 88 | 1 | 6 | 2 | 16 | 85 | 1 | 191 |
| 04:30 PM | 5 | 105 | 0 | 110 | 4 | 8 | 2 | 20 | 90 | 3 | 226 |
| 04:45 PM | 15 | 399 | 1 | 415 | 7 | 37 | 23 | 67 | 345 | 6 | 833 |

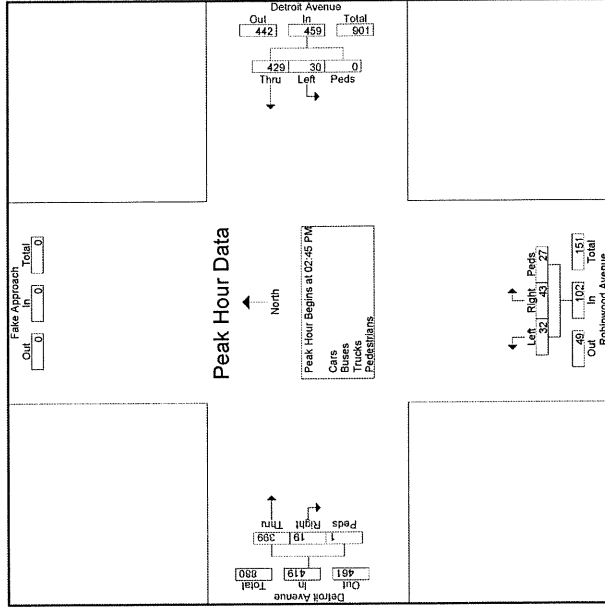
File Name : Detroit_Avenue_at_Robinwood_Avenue_565783_09-18-2018
 Site Code : Site 2 - Tues
 Start Date : 9/18/2018
 Page No : 4

| Start Time | Detroit Avenue From East | | | Robinwood Avenue From South | | | Detroit Avenue From West | | | Int. Total | |
|--|--------------------------|------|------|-----------------------------|-------|------|--------------------------|-------|------|------------|------|
| | Left | Thru | Peds | Left | Right | Peds | Thru | Right | Peds | | |
| Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1 | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 11:45 AM | | | | | | | | | | | |
| 11:45 AM | 3 | 87 | 0 | 90 | 6 | 11 | 9 | 26 | 0 | 0 | 208 |
| 12:00 PM | 1 | 114 | 2 | 117 | 8 | 16 | 5 | 29 | 1 | 0 | 232 |
| 12:15 PM | 1 | 103 | 0 | 104 | 4 | 16 | 3 | 23 | 0 | 0 | 224 |
| 12:30 PM | 3 | 100 | 0 | 103 | 2 | 7 | 5 | 14 | 0 | 0 | 207 |
| Total Volume | 8 | 404 | 2 | 414 | 20 | 50 | 22 | 92 | 3 | 0 | 365 |
| % App. Total | 1.9 | 97.6 | 0.5 | 21.7 | 54.3 | 23.9 | 92.2 | 0.8 | 0.8 | 0.0 | 941 |
| PHF | .657 | .886 | .250 | .865 | .625 | .781 | .611 | .793 | .375 | .000 | .939 |



File Name : Detroit_Avenue_at_Robinwood_Avenue_565783_09-18-2018
 Site Code : Site 2 - Tues
 Start Date : 9/18/2018
 Page No : 5

| Start Time | Detroit Avenue From East | | | Robinwood Avenue From South | | | Detroit Avenue From West | | | Int. Total | |
|--|--------------------------|------|------|-----------------------------|-------|------|--------------------------|-------|------|------------|------|
| | Left | Thru | Peds | Left | Right | Peds | Thru | Right | Peds | | |
| Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1 | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 02:45 PM | | | | | | | | | | | |
| 02:45 PM | 3 | 87 | 0 | 90 | 10 | 7 | 4 | 21 | 100 | 8 | 220 |
| 03:00 PM | 17 | 129 | 0 | 146 | 11 | 17 | 9 | 37 | 103 | 8 | 294 |
| 03:15 PM | 4 | 110 | 0 | 114 | 6 | 7 | 11 | 24 | 101 | 1 | 240 |
| 03:30 PM | 6 | 103 | 0 | 109 | 5 | 12 | 3 | 20 | 95 | 2 | 226 |
| Total Volume | 30 | 429 | 0 | 459 | 32 | 42 | 26 | 102 | 369 | 12 | 960 |
| % App. Total | 0.3 | 42.9 | 0.0 | 31.4 | 42.2 | 26.5 | 92.2 | 4.5 | 0.2 | 4.5 | 944 |
| PHF | .441 | .831 | .000 | .786 | .727 | .632 | .614 | .689 | .868 | .594 | .833 |

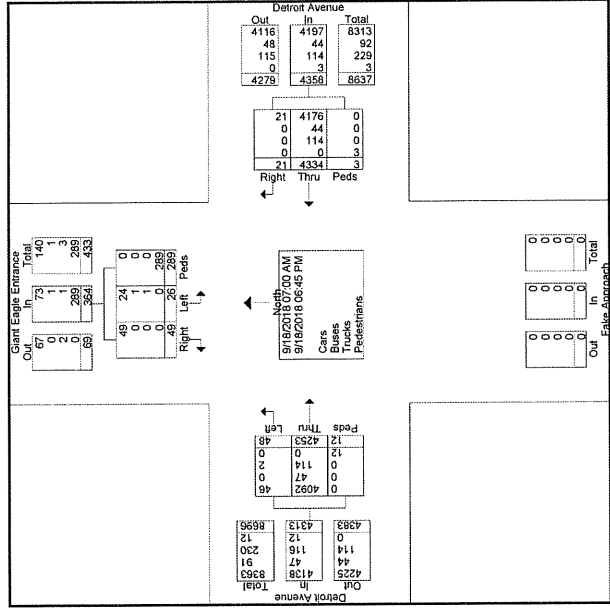


File Name : Detroit_Avenue_at_Giant_Eagle_565788_09-18-2018
 Site Code : Site 3 - Tues
 Start Date : 9/18/2018
 Page No : 2

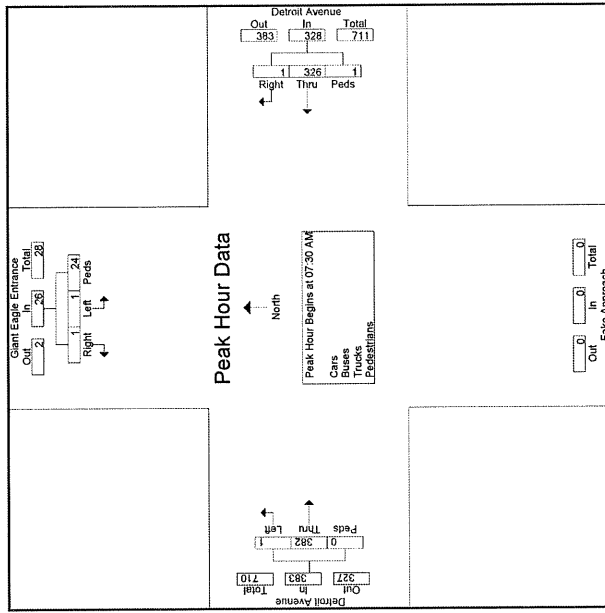
| Start Time | Giant Eagle Entrance | | | | | Detroit Avenue | | | | | Int. Total |
|---------------|----------------------|------------|------|------|------------|----------------|-----------|------|------|------------|------------|
| | From North | From South | Thru | Peds | App. Total | From East | From West | Thru | Peds | App. Total | |
| 05:00 PM | 1 | 1 | 130 | 3 | 131 | 1 | 1 | 91 | 0 | 92 | 226 |
| 05:15 PM | 0 | 1 | 13 | 14 | 114 | 1 | 0 | 115 | 1 | 84 | 214 |
| 05:30 PM | 0 | 1 | 12 | 115 | 1 | 0 | 116 | 1 | 105 | 0 | 234 |
| 05:45 PM | 1 | 1 | 9 | 117 | 0 | 0 | 117 | 1 | 98 | 0 | 227 |
| Total | 2 | 4 | 34 | 40 | 476 | 3 | 0 | 479 | 4 | 378 | 901 |
| 06:00 PM | 0 | 0 | 6 | 122 | 1 | 0 | 123 | 3 | 100 | 0 | 232 |
| 06:15 PM | 2 | 3 | 12 | 17 | 102 | 0 | 0 | 102 | 1 | 76 | 279 |
| 06:30 PM | 1 | 1 | 8 | 7 | 86 | 0 | 0 | 86 | 0 | 82 | 175 |
| 06:45 PM | 0 | 3 | 7 | 30 | 423 | 1 | 0 | 424 | 5 | 329 | 798 |
| Total | 3 | 7 | 30 | 40 | 423 | 1 | 0 | 424 | 5 | 329 | 9035 |
| Grand Total | 26 | 49 | 289 | 364 | 4334 | 21 | 3 | 4358 | 48 | 4253 | 12 |
| Approach % | 7.1 | 13.5 | 79.4 | 0.5 | 0.1 | 98.6 | 1.1 | 98.6 | 0.3 | 0.1 | 47.7 |
| % Cars | 24 | 49 | 73 | 4176 | 21 | 0 | 48.2 | 0.5 | 47.1 | 0.1 | 4133 |
| % Buses | 92.3 | 100 | 20.1 | 96.4 | 100 | 0 | 96.3 | 95.8 | 96.2 | 0 | 95.9 |
| % Trucks | 3.8 | 0 | 0 | 0.3 | 1 | 0 | 0 | 4.4 | 0 | 4.7 | 92 |
| % Pedestrians | 3.8 | 0 | 0 | 0.3 | 2.6 | 0 | 0 | 2.6 | 4.2 | 2.7 | 2.6 |
| % Pedestrians | 0 | 0 | 289 | 289 | 0 | 0 | 3 | 3 | 0 | 12 | 304 |
| % Pedestrians | 0 | 0 | 100 | 79.4 | 0 | 0 | 100 | 0 | 100 | 0 | 0.3 |

File Name : Detroit_Avenue_at_Giant_Eagle_565788_09-18-2018
 Site Code : Site 3 - Tues
 Start Date : 9/18/2018
 Page No : 1

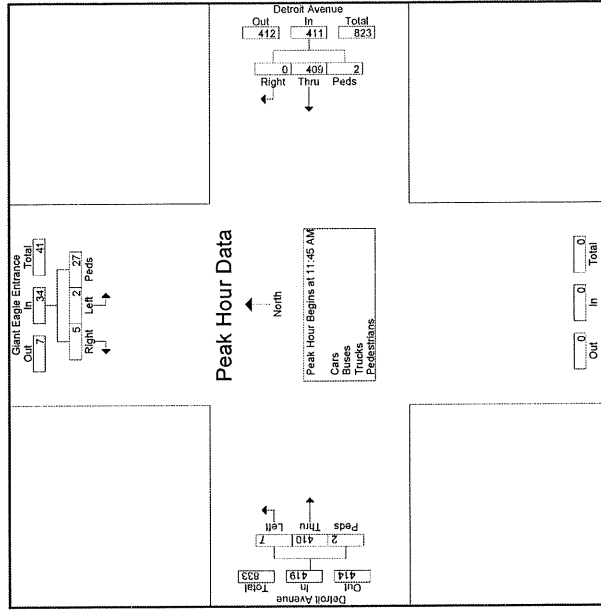
| Start Time | Giant Eagle Entrance | | | | | Detroit Avenue | | | | | Int. Total |
|------------|----------------------|------------|------|------|------------|----------------|-----------|------|------|------------|------------|
| | From North | From South | Thru | Peds | App. Total | From East | From West | Thru | Peds | App. Total | |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 4 | 37 | 27 | 1 | 1 | 74 | 0 | 75 | 116 |
| 07:30 AM | 0 | 0 | 15 | 83 | 84 | 1 | 1 | 126 | 0 | 127 | 226 |
| 07:45 AM | 1 | 1 | 6 | 109 | 0 | 0 | 113 | 0 | 113 | 0 | 228 |
| Total | 1 | 1 | 29 | 31 | 250 | 3 | 363 | 0 | 366 | 0 | 647 |
| 08:00 AM | 0 | 0 | 3 | 74 | 0 | 0 | 74 | 0 | 68 | 0 | 145 |
| 08:15 AM | 0 | 0 | 2 | 60 | 0 | 1 | 61 | 0 | 75 | 0 | 138 |
| 08:30 AM | 1 | 1 | 4 | 6 | 74 | 1 | 0 | 69 | 0 | 69 | 150 |
| 08:45 AM | 1 | 1 | 7 | 9 | 75 | 1 | 0 | 76 | 2 | 94 | 179 |
| Total | 2 | 2 | 16 | 20 | 286 | 2 | 304 | 0 | 306 | 0 | 612 |
| 09:00 AM | 0 | 0 | 7 | 90 | 0 | 0 | 90 | 0 | 57 | 2 | 156 |
| 09:15 AM | 0 | 1 | 4 | 5 | 69 | 0 | 68 | 0 | 68 | 0 | 142 |
| 09:30 AM | 0 | 0 | 3 | 61 | 0 | 0 | 61 | 1 | 68 | 0 | 133 |
| 09:45 AM | 0 | 2 | 6 | 8 | 86 | 0 | 86 | 3 | 67 | 0 | 164 |
| Total | 0 | 3 | 20 | 23 | 306 | 4 | 260 | 2 | 266 | 0 | 595 |
| 10:00 AM | 2 | 0 | 4 | 72 | 1 | 0 | 73 | 0 | 51 | 0 | 129 |
| 10:15 AM | 0 | 0 | 4 | 71 | 0 | 0 | 71 | 0 | 82 | 2 | 159 |
| 10:30 AM | 0 | 0 | 5 | 75 | 0 | 0 | 75 | 0 | 83 | 0 | 163 |
| 10:45 AM | 0 | 0 | 7 | 90 | 0 | 0 | 90 | 0 | 90 | 0 | 168 |
| Total | 2 | 0 | 12 | 14 | 295 | 1 | 296 | 0 | 304 | 2 | 616 |
| 11:00 AM | 0 | 0 | 2 | 79 | 0 | 0 | 79 | 0 | 75 | 0 | 156 |
| 11:15 AM | 0 | 2 | 10 | 12 | 83 | 0 | 83 | 2 | 112 | 2 | 211 |
| 11:30 AM | 1 | 2 | 6 | 9 | 89 | 0 | 89 | 0 | 93 | 0 | 191 |
| 11:45 AM | 1 | 2 | 5 | 8 | 88 | 0 | 88 | 0 | 102 | 2 | 203 |
| Total | 2 | 6 | 23 | 31 | 339 | 0 | 340 | 4 | 382 | 4 | 761 |
| 12:00 PM | 0 | 1 | 15 | 16 | 114 | 0 | 115 | 1 | 101 | 0 | 233 |
| 12:15 PM | 1 | 1 | 4 | 6 | 104 | 0 | 104 | 2 | 112 | 0 | 224 |
| 12:30 PM | 0 | 1 | 3 | 4 | 103 | 0 | 103 | 2 | 95 | 0 | 204 |
| 12:45 PM | 1 | 1 | 8 | 10 | 92 | 1 | 93 | 3 | 97 | 0 | 203 |
| Total | 2 | 4 | 30 | 36 | 413 | 1 | 415 | 8 | 405 | 0 | 864 |
| 01:00 PM | 0 | 1 | 4 | 5 | 87 | 0 | 87 | 2 | 78 | 0 | 172 |
| 01:15 PM | 0 | 1 | 10 | 11 | 83 | 0 | 83 | 0 | 101 | 0 | 195 |
| 01:30 PM | 0 | 2 | 7 | 9 | 93 | 0 | 93 | 0 | 80 | 0 | 173 |
| 01:45 PM | 0 | 2 | 2 | 2 | 85 | 0 | 85 | 0 | 85 | 0 | 172 |
| Total | 0 | 4 | 23 | 27 | 348 | 0 | 348 | 3 | 394 | 0 | 732 |
| 02:00 PM | 0 | 2 | 9 | 11 | 71 | 1 | 72 | 0 | 85 | 1 | 169 |
| 02:15 PM | 2 | 0 | 5 | 6 | 83 | 1 | 84 | 1 | 93 | 0 | 184 |
| 02:30 PM | 0 | 1 | 4 | 5 | 97 | 1 | 98 | 1 | 80 | 0 | 184 |
| 02:45 PM | 0 | 1 | 4 | 6 | 91 | 1 | 92 | 0 | 113 | 0 | 211 |
| Total | 3 | 3 | 23 | 29 | 342 | 3 | 345 | 2 | 371 | 1 | 748 |
| 03:00 PM | 2 | 2 | 6 | 10 | 144 | 0 | 144 | 1 | 116 | 1 | 272 |
| 03:15 PM | 1 | 1 | 9 | 11 | 112 | 1 | 113 | 1 | 110 | 0 | 235 |
| 03:30 PM | 3 | 4 | 5 | 12 | 107 | 0 | 107 | 3 | 102 | 1 | 225 |
| 03:45 PM | 2 | 1 | 7 | 10 | 89 | 1 | 90 | 0 | 100 | 1 | 201 |
| Total | 8 | 8 | 27 | 43 | 452 | 2 | 454 | 5 | 428 | 3 | 933 |
| 04:00 PM | 0 | 0 | 3 | 3 | 98 | 1 | 99 | 3 | 109 | 0 | 214 |
| 04:15 PM | 0 | 3 | 4 | 7 | 85 | 2 | 87 | 4 | 78 | 0 | 186 |
| 04:30 PM | 1 | 2 | 5 | 8 | 107 | 1 | 108 | 0 | 93 | 0 | 209 |
| 04:45 PM | 0 | 2 | 10 | 12 | 109 | 2 | 111 | 1 | 95 | 0 | 219 |
| Total | 1 | 7 | 22 | 30 | 415 | 6 | 415 | 8 | 375 | 0 | 828 |



| Start Time | Giant Eagle Entrance | | | Detroit Avenue | | | Detroit Avenue | | | Int. Total | |
|--|----------------------|-------|------|----------------|-------|------|----------------|-------|------|------------|------|
| | Left | Right | Peds | Thru | Right | Peds | Thru | Right | Peds | | |
| Peak Hour for Entire Intersection Begins at 07:30 AM | 0 | 0 | 15 | 83 | 1 | 0 | 84 | 1 | 126 | 0 | 127 |
| 07:30 AM | 0 | 1 | 14 | 6 | 109 | 0 | 109 | 0 | 113 | 0 | 113 |
| 08:00 AM | 0 | 0 | 3 | 74 | 0 | 74 | 0 | 68 | 0 | 68 | 145 |
| 08:15 AM | 0 | 0 | 2 | 60 | 0 | 61 | 0 | 75 | 0 | 75 | 138 |
| Total Volume | 1 | 1 | 24 | 26 | 326 | 1 | 328 | 1 | 382 | 0 | 383 |
| % App. Total | 3.8 | 3.8 | 92.3 | 89.4 | 0.3 | 0.3 | 89.7 | 0.3 | 89.7 | 0 | 89.7 |
| PHF | .250 | .250 | .400 | .433 | .748 | .250 | .752 | .250 | .758 | .000 | .754 |

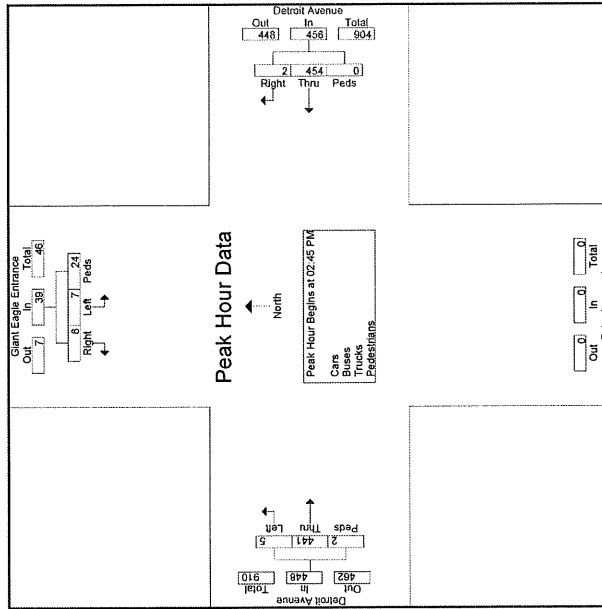


| Start Time | Giant Eagle Entrance | | | Detroit Avenue | | | Detroit Avenue | | | Int. Total | |
|--|----------------------|-------|------|----------------|-------|------|----------------|-------|------|------------|------|
| | Left | Right | Peds | Thru | Right | Peds | Thru | Right | Peds | | |
| Peak Hour for Entire Intersection Begins at 11:45 AM | 1 | 2 | 5 | 88 | 0 | 1 | 89 | 2 | 102 | 2 | 106 |
| 11:45 AM | 0 | 1 | 15 | 16 | 0 | 1 | 17 | 115 | 101 | 0 | 216 |
| 12:00 PM | 0 | 1 | 4 | 6 | 104 | 0 | 104 | 0 | 103 | 0 | 204 |
| 12:30 PM | 0 | 1 | 27 | 34 | 408 | 0 | 411 | 2 | 410 | 2 | 823 |
| Total Volume | 1 | 5 | 47 | 57 | 516 | 1 | 517 | 1 | 517 | 4 | 522 |
| % App. Total | 5.9 | 14.7 | 78.4 | 89.5 | 0 | 0.5 | 89.3 | 1.7 | 97.9 | 0.5 | 92.7 |
| PHF | .500 | .625 | .450 | .531 | .887 | .000 | .500 | .893 | .915 | .250 | .919 |



File Name : Detroit_Avenue_at_Giant_Eagle_565788_09-18-2018
 Site Code : Site 3 - Tues
 Start Date : 9/18/2018
 Page No : 5

| Start Time | Giant Eagle Entrance | | | Detroit Avenue From East | | | Detroit Avenue From West | | | Int. Total |
|---------------|----------------------|-------|------|--------------------------|-------|------|--------------------------|-------|------|------------|
| | Left | Right | Thru | Left | Right | Thru | Left | Right | Thru | |
| 02:45 PM | 1 | 4 | 6 | 92 | 0 | 113 | 0 | 113 | 0 | 211 |
| 03:00 PM | 2 | 2 | 10 | 144 | 1 | 116 | 1 | 118 | 1 | 272 |
| 03:15 PM | 3 | 1 | 11 | 112 | 0 | 110 | 0 | 105 | 0 | 235 |
| 03:30 PM | 1 | 1 | 5 | 107 | 2 | 102 | 2 | 105 | 2 | 213 |
| Total Volume | 7 | 8 | 38 | 457 | 4 | 444 | 2 | 448 | 2 | 943 |
| % App. to PHF | 17.9 | 20.5 | 61.5 | 89.6 | 0.4 | 98.4 | 0.4 | 94.8 | 0.4 | 86.7 |
| | 583 | 500 | 813 | 788 | 500 | 950 | 500 | 949 | 500 | 867 |



File Name : Detroit_Avenue_at_Parkhaven_565793_09-18-2018
 Site Code : Site 4 - Tues
 Start Date : 9/18/2018
 Page No : 1

Partly Sunny - 80 Degrees
 Schools in Session

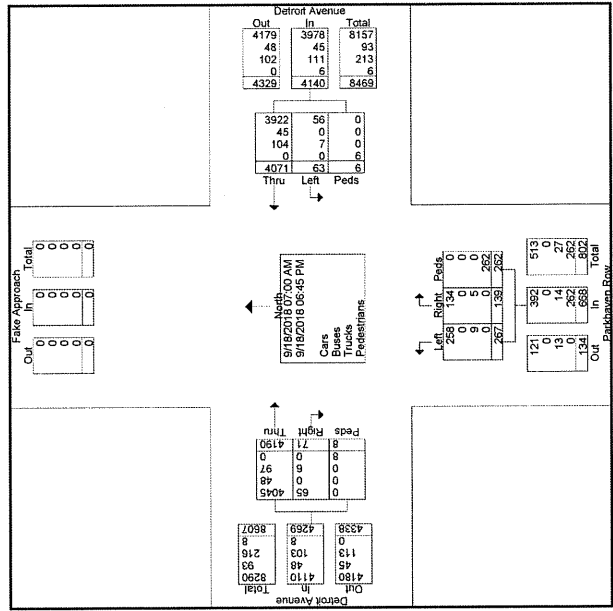
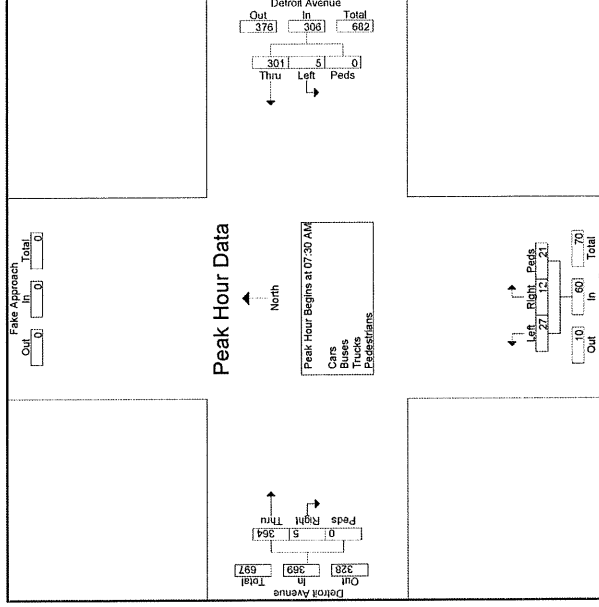
| Start Time | Detroit Avenue From East | | | Parkhaven Row From South | | | Detroit Avenue From West | | | Int. Total |
|------------|--------------------------|-------|------|--------------------------|-------|------|--------------------------|-------|------|------------|
| | Left | Right | Thru | Left | Right | Thru | Left | Right | Thru | |
| 07:00 AM | 4 | 21 | 0 | 25 | 0 | 1 | 3 | 4 | 48 | 78 |
| 07:15 AM | 1 | 31 | 0 | 32 | 6 | 2 | 10 | 7 | 4 | 116 |
| 07:30 AM | 3 | 74 | 0 | 77 | 10 | 6 | 23 | 121 | 3 | 224 |
| 07:45 AM | 2 | 99 | 0 | 101 | 10 | 0 | 7 | 17 | 111 | 229 |
| Total | 10 | 225 | 0 | 235 | 26 | 9 | 19 | 54 | 350 | 647 |
| 08:00 AM | 0 | 69 | 0 | 69 | 5 | 3 | 2 | 10 | 64 | 143 |
| 08:15 AM | 0 | 59 | 0 | 59 | 2 | 3 | 5 | 10 | 68 | 139 |
| 08:30 AM | 2 | 68 | 0 | 70 | 5 | 4 | 6 | 15 | 68 | 153 |
| 08:45 AM | 2 | 71 | 0 | 73 | 7 | 1 | 5 | 13 | 82 | 180 |
| Total | 4 | 267 | 0 | 271 | 19 | 11 | 16 | 46 | 292 | 615 |
| 09:00 AM | 0 | 87 | 0 | 87 | 3 | 1 | 2 | 6 | 56 | 151 |
| 09:15 AM | 4 | 62 | 0 | 66 | 7 | 5 | 7 | 19 | 67 | 151 |
| 09:30 AM | 1 | 54 | 0 | 55 | 6 | 1 | 2 | 9 | 67 | 134 |
| 09:45 AM | 2 | 86 | 0 | 88 | 2 | 3 | 5 | 10 | 64 | 163 |
| Total | 7 | 289 | 0 | 296 | 18 | 10 | 16 | 44 | 248 | 599 |
| 10:00 AM | 0 | 70 | 0 | 70 | 2 | 4 | 7 | 13 | 54 | 139 |
| 10:15 AM | 1 | 64 | 0 | 65 | 3 | 1 | 2 | 6 | 80 | 151 |
| 10:30 AM | 0 | 66 | 0 | 66 | 6 | 2 | 1 | 9 | 78 | 155 |
| 10:45 AM | 1 | 69 | 0 | 70 | 8 | 1 | 4 | 13 | 87 | 174 |
| Total | 2 | 269 | 0 | 271 | 19 | 8 | 14 | 41 | 299 | 619 |
| 11:00 AM | 2 | 74 | 2 | 78 | 5 | 3 | 9 | 17 | 76 | 171 |
| 11:15 AM | 2 | 75 | 0 | 77 | 10 | 6 | 6 | 22 | 110 | 211 |
| 11:30 AM | 0 | 82 | 0 | 82 | 6 | 4 | 4 | 14 | 92 | 200 |
| 11:45 AM | 0 | 87 | 0 | 87 | 1 | 3 | 6 | 10 | 102 | 200 |
| Total | 4 | 318 | 2 | 324 | 22 | 16 | 25 | 63 | 380 | 772 |
| 12:00 PM | 0 | 103 | 0 | 103 | 10 | 1 | 3 | 14 | 105 | 223 |
| 12:15 PM | 1 | 101 | 0 | 102 | 3 | 9 | 15 | 113 | 113 | 233 |
| 12:30 PM | 0 | 96 | 0 | 96 | 2 | 3 | 2 | 16 | 94 | 206 |
| 12:45 PM | 0 | 89 | 0 | 89 | 2 | 3 | 2 | 14 | 88 | 196 |
| Total | 1 | 391 | 0 | 392 | 22 | 10 | 20 | 52 | 410 | 859 |
| 01:00 PM | 1 | 82 | 0 | 83 | 7 | 1 | 4 | 12 | 75 | 172 |
| 01:15 PM | 1 | 79 | 2 | 82 | 3 | 5 | 7 | 15 | 94 | 192 |
| 01:30 PM | 1 | 88 | 0 | 89 | 4 | 6 | 6 | 16 | 87 | 194 |
| 01:45 PM | 1 | 85 | 0 | 86 | 1 | 2 | 4 | 7 | 83 | 177 |
| Total | 4 | 334 | 2 | 340 | 15 | 14 | 21 | 50 | 339 | 735 |
| 02:00 PM | 1 | 66 | 0 | 67 | 6 | 3 | 7 | 16 | 81 | 167 |
| 02:15 PM | 0 | 83 | 0 | 83 | 2 | 4 | 3 | 9 | 92 | 186 |
| 02:30 PM | 3 | 89 | 0 | 92 | 8 | 3 | 1 | 12 | 82 | 187 |
| 02:45 PM | 0 | 84 | 0 | 84 | 7 | 2 | 5 | 14 | 110 | 209 |
| Total | 4 | 322 | 0 | 326 | 23 | 12 | 16 | 51 | 365 | 749 |
| 03:00 PM | 2 | 136 | 0 | 140 | 9 | 2 | 6 | 17 | 117 | 275 |
| 03:15 PM | 4 | 102 | 0 | 106 | 12 | 3 | 16 | 31 | 111 | 251 |
| 03:30 PM | 1 | 101 | 0 | 102 | 5 | 3 | 5 | 13 | 104 | 220 |
| 03:45 PM | 2 | 84 | 0 | 86 | 7 | 3 | 3 | 13 | 101 | 203 |
| Total | 9 | 425 | 0 | 434 | 33 | 11 | 30 | 74 | 433 | 949 |
| 04:00 PM | 0 | 84 | 0 | 84 | 6 | 2 | 4 | 12 | 108 | 214 |
| 04:15 PM | 3 | 83 | 0 | 86 | 4 | 2 | 6 | 12 | 78 | 187 |
| 04:30 PM | 1 | 108 | 0 | 109 | 4 | 3 | 3 | 10 | 95 | 212 |
| 04:45 PM | 1 | 105 | 0 | 106 | 6 | 1 | 5 | 12 | 94 | 214 |
| Total | 5 | 398 | 0 | 403 | 20 | 8 | 18 | 46 | 375 | 827 |

File Name : Detroit_Avenue_at_Parkhaven_565793_09-18-2018
 Site Code : Site 4 - Tues
 Start Date : 9/18/2018
 Page No : 2

| Start Time | Detroit Avenue From East | | | Parkhaven Row From South | | | Detroit Avenue From West | | | Int. Total |
|------------------|--------------------------|------|------------|--------------------------|-------|------------|--------------------------|-------|------------|------------|
| | Left | Thru | App. Total | Left | Right | App. Total | Thru | Right | App. Total | |
| 05:00 PM | 0 | 114 | 0 | 9 | 5 | 21 | 94 | 1 | 0 | 95 |
| 05:15 PM | 4 | 103 | 0 | 6 | 3 | 8 | 85 | 1 | 0 | 86 |
| 05:30 PM | 1 | 112 | 0 | 13 | 5 | 16 | 103 | 4 | 0 | 107 |
| 05:45 PM | 0 | 109 | 0 | 6 | 6 | 11 | 99 | 1 | 0 | 97 |
| Total | 5 | 438 | 0 | 443 | 19 | 34 | 378 | 7 | 0 | 385 |
| 06:00 PM | 2 | 115 | 0 | 8 | 4 | 10 | 101 | 0 | 1 | 102 |
| 06:15 PM | 2 | 105 | 0 | 9 | 2 | 10 | 71 | 2 | 0 | 72 |
| 06:30 PM | 3 | 102 | 0 | 4 | 2 | 10 | 74 | 2 | 0 | 76 |
| 06:45 PM | 1 | 78 | 0 | 8 | 3 | 11 | 75 | 2 | 0 | 77 |
| Total | 8 | 385 | 2 | 405 | 26 | 31 | 321 | 6 | 1 | 328 |
| Grand Total | 63 | 4071 | 6 | 4140 | 267 | 139 | 262 | 4190 | 71 | 8 |
| Approach % Total | 1.5 | 96.3 | 0.1 | 40 | 20.8 | 39.2 | 98.1 | 1.7 | 0.2 | 4269 |
| % Cars | 56 | 3922 | 0 | 3978 | 258 | 134 | 7.4 | 46.2 | 0.8 | 0.1 |
| % Buses | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Trucks | 7 | 104 | 0 | 11 | 5 | 14 | 97 | 6 | 0 | 103 |
| % Pedestrians | 0 | 0 | 0 | 2.7 | 3.4 | 3.6 | 2.1 | 2.3 | 8.5 | 2.4 |

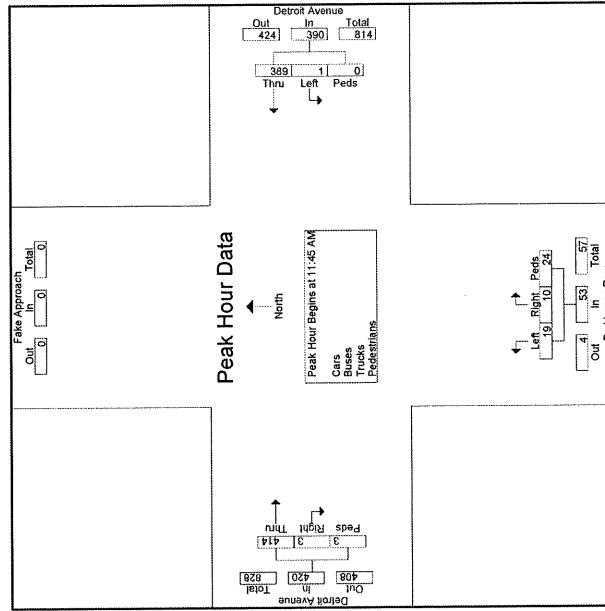
File Name : Detroit_Avenue_at_Parkhaven_565793_09-18-2018
 Site Code : Site 4 - Tues
 Start Date : 9/18/2018
 Page No : 3

| Start Time | Detroit Avenue From East | | | Parkhaven Row From South | | | Detroit Avenue From West | | | Int. Total |
|--------------|--------------------------|------|------------|--------------------------|-------|------------|--------------------------|-------|------------|------------|
| | Left | Thru | App. Total | Left | Right | App. Total | Thru | Right | App. Total | |
| 07:30 AM | 3 | 74 | 0 | 10 | 6 | 7 | 23 | 3 | 0 | 124 |
| 07:45 AM | 2 | 99 | 0 | 69 | 0 | 69 | 5 | 3 | 2 | 111 |
| 08:00 AM | 0 | 69 | 0 | 59 | 0 | 59 | 2 | 10 | 64 | 64 |
| 08:15 AM | 5 | 301 | 0 | 27 | 12 | 21 | 60 | 364 | 5 | 389 |
| Total | 1.6 | 984 | 0 | 417 | 760 | 757 | 675 | 500 | 752 | 1744 |
| % App. Total | 0.4 | 117 | 0 | 10 | 50 | 99 | 16 | 20 | 10 | 200 |
| % PHF | 0.4 | 117 | 0 | 10 | 50 | 99 | 16 | 20 | 10 | 200 |



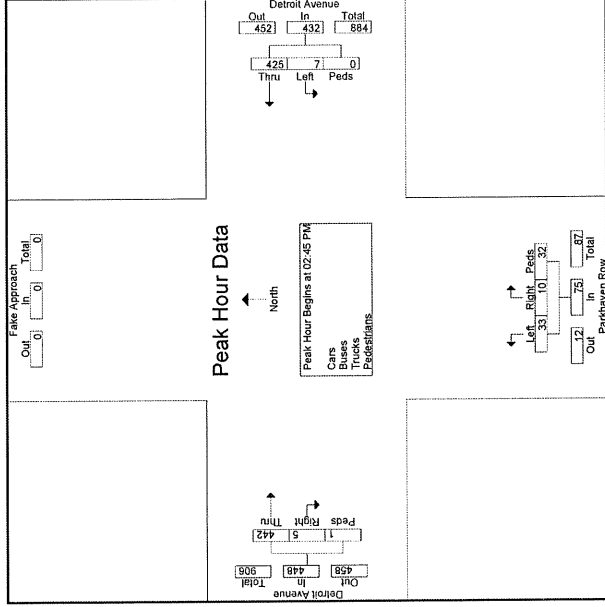
File Name : Detroit_Avenue_at_Parkhaven_565793_09-18-2018
 Site Code : Site 4 - Tues
 Start Date : 9/18/2018
 Page No : 4

| Start Time | Detroit Avenue From East | | | Parkhaven Row From South | | | Detroit Avenue From West | | | Int. Total |
|--|--------------------------|------|------|--------------------------|------|------|--------------------------|------|------|------------|
| | Left | Thru | Peds | Left | Thru | Peds | Left | Thru | Peds | |
| Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1 | | | | | | | | | | |
| 11:45 AM | 0 | 87 | 0 | 1 | 3 | 6 | 10 | 102 | 1 | 0 |
| 12:00 PM | 0 | 103 | 0 | 10 | 1 | 3 | 14 | 105 | 0 | 106 |
| 12:15 PM | 1 | 101 | 0 | 102 | 3 | 3 | 15 | 113 | 1 | 2 |
| 12:30 PM | 0 | 98 | 0 | 5 | 3 | 6 | 14 | 94 | 1 | 95 |
| Total Volume | 1 | 389 | 0 | 19 | 10 | 24 | 53 | 414 | 3 | 420 |
| % App. Total | 0.3 | 99.7 | 0 | 35.8 | 18.9 | 45.3 | 96.8 | 0.7 | 0.7 | 0.7 |
| PHF | .250 | .944 | .000 | .947 | .475 | .833 | .863 | .316 | .750 | .379 |



File Name : Detroit_Avenue_at_Parkhaven_565793_09-18-2018
 Site Code : Site 4 - Tues
 Start Date : 9/18/2018
 Page No : 5

| Start Time | Detroit Avenue From East | | | Parkhaven Row From South | | | Detroit Avenue From West | | | Int. Total |
|--|--------------------------|------|------|--------------------------|------|------|--------------------------|------|------|------------|
| | Left | Thru | Peds | Left | Thru | Peds | Left | Thru | Peds | |
| Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1 | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 02:45 PM | | | | | | | | | | |
| 02:45 PM | 0 | 84 | 0 | 7 | 2 | 5 | 14 | 110 | 1 | 0 |
| 03:00 PM | 2 | 138 | 0 | 9 | 2 | 6 | 17 | 117 | 1 | 0 |
| 03:15 PM | 4 | 102 | 0 | 12 | 3 | 16 | 31 | 104 | 2 | 0 |
| 03:30 PM | 7 | 101 | 0 | 10 | 3 | 13 | 31 | 104 | 2 | 0 |
| Total Volume | 13 | 389 | 0 | 44 | 13 | 42 | 75 | 442 | 5 | 1 |
| % App. Total | 1.6 | 98.3 | 0 | 6.8 | 3.3 | 5.0 | 6.0 | 94.4 | 1.1 | 0.2 |
| PHF | .438 | .770 | .000 | .771 | .500 | .500 | .605 | .944 | .625 | .250 |



File Name : Detroit_Avenue_at_Bunts_Road_565794_09-18-2018
 Site Code : Site 5 - Tues
 Start Date : 9/18/2018
 Page No : 2

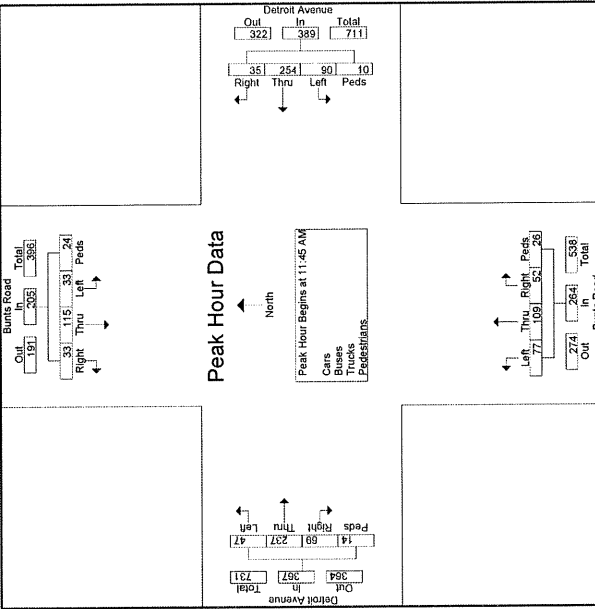
| Start Time | Bunts Road From North | | | | Bunts Road From South | | | | Detroit Avenue From East | | | | Detroit Avenue From West | | | | In Total | | | | |
|---------------|-----------------------|------|-------|------|-----------------------|------|-------|------|--------------------------|------|-------|------|--------------------------|------|-------|------|----------|-----|------|------|-------|
| | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | | | | | |
| 05:00 PM | 11 | 60 | 10 | 6 | 87 | 35 | 76 | 23 | 2 | 136 | 26 | 45 | 19 | 2 | 92 | 12 | 53 | 16 | 10 | 91 | 406 |
| 05:15 PM | 16 | 62 | 19 | 0 | 97 | 28 | 66 | 11 | 0 | 105 | 23 | 66 | 16 | 5 | 109 | 11 | 53 | 18 | 8 | 90 | 401 |
| 05:30 PM | 10 | 69 | 8 | 5 | 92 | 36 | 83 | 14 | 4 | 137 | 22 | 57 | 24 | 7 | 110 | 20 | 60 | 17 | 1 | 98 | 437 |
| 05:45 PM | 13 | 60 | 12 | 6 | 91 | 44 | 57 | 13 | 7 | 123 | 39 | 70 | 21 | 5 | 133 | 7 | 65 | 19 | 3 | 96 | 447 |
| Total | 50 | 251 | 49 | 17 | 367 | 143 | 292 | 61 | 7 | 503 | 110 | 237 | 60 | 19 | 446 | 50 | 231 | 70 | 24 | 373 | 1691 |
| 06:00 PM | 14 | 57 | 3 | 2 | 76 | 49 | 83 | 13 | 2 | 147 | 35 | 71 | 14 | 8 | 128 | 16 | 60 | 9 | 2 | 87 | 438 |
| 06:15 PM | 9 | 51 | 1 | 7 | 78 | 29 | 67 | 12 | 0 | 108 | 26 | 64 | 14 | 2 | 106 | 11 | 49 | 9 | 3 | 72 | 364 |
| 06:30 PM | 9 | 44 | 16 | 2 | 71 | 23 | 58 | 5 | 0 | 85 | 18 | 43 | 22 | 3 | 86 | 7 | 48 | 14 | 4 | 73 | 315 |
| 06:45 PM | 7 | 40 | 17 | 3 | 67 | 24 | 54 | 7 | 2 | 87 | 19 | 53 | 16 | 3 | 91 | 21 | 51 | 11 | 2 | 85 | 330 |
| Total | 39 | 192 | 47 | 14 | 292 | 124 | 262 | 37 | 4 | 427 | 98 | 231 | 66 | 16 | 411 | 55 | 208 | 43 | 11 | 317 | 1447 |
| Grand Total | 417 | 1810 | 404 | 268 | 2899 | 1170 | 2751 | 397 | 81 | 4399 | 909 | 1712 | 754 | 236 | 3611 | 531 | 2663 | 660 | 204 | 4068 | 14987 |
| Approach % | 14.4 | 62.4 | 13.9 | 9.2 | 26.6 | 62.5 | 9 | 1.8 | 2.6 | 47.4 | 20.9 | 6.5 | 1.6 | 24.1 | 3.5 | 17.8 | 4.4 | 1.4 | 27.1 | 3699 | 13737 |
| Total % | 2.8 | 12.1 | 2.7 | 1.8 | 19.4 | 7.8 | 18.4 | 2.7 | 0.5 | 29.4 | 4.1 | 11.4 | 1.6 | 0.4 | 24.1 | 3.5 | 17.8 | 4.4 | 1.4 | 27.1 | 3699 |
| % Cars | 409 | 1777 | 389 | 0 | 2575 | 1145 | 2633 | 384 | 0 | 4162 | 893 | 1676 | 732 | 0 | 3301 | 522 | 2540 | 637 | 0 | 3699 | 13737 |
| % Buses | 2 | 13 | 1 | 0 | 16 | 5 | 42 | 4 | 0 | 51 | 5 | 11 | 3 | 0 | 19 | 3 | 44 | 4 | 0 | 51 | 137 |
| % Trucks | 6 | 20 | 14 | 0 | 40 | 20 | 76 | 9 | 0 | 105 | 50 | 16 | 0 | 0 | 65 | 0 | 6 | 17 | 0 | 104 | 304 |
| % Pedestrians | 1.4 | 1.1 | 3.6 | 0.0 | 2.6 | 2.0 | 8.1 | 1.1 | 2.0 | 4.1 | 1.1 | 1.8 | 2.0 | 0 | 1.5 | 1.1 | 3 | 2.9 | 0 | 2.6 | 2 |

File Name : Detroit_Avenue_at_Bunts_Road_565794_09-18-2018
 Site Code : Site 5 - Tues
 Start Date : 9/18/2018
 Page No : 1

| Start Time | Bunts Road From North | | | | Bunts Road From South | | | | Detroit Avenue From East | | | | Detroit Avenue From West | | | | In Total | | | | |
|------------|-----------------------|------|-------|------|-----------------------|------|-------|------|--------------------------|------|-------|------|--------------------------|------|-------|------|----------|----|----|-----|------|
| | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | | | | | |
| 07:00 AM | 3 | 29 | 1 | 5 | 38 | 21 | 13 | 7 | 0 | 57 | 16 | 25 | 28 | 3 | 64 | 17 | 50 | 10 | 3 | 80 | 282 |
| 07:15 AM | 6 | 56 | 7 | 6 | 70 | 40 | 54 | 12 | 6 | 112 | 15 | 34 | 36 | 13 | 98 | 25 | 72 | 23 | 10 | 130 | 419 |
| 07:30 AM | 13 | 59 | 8 | 5 | 84 | 46 | 79 | 14 | 2 | 141 | 14 | 45 | 26 | 6 | 91 | 19 | 77 | 15 | 1 | 112 | 428 |
| 07:45 AM | 12 | 59 | 8 | 5 | 84 | 46 | 79 | 14 | 2 | 141 | 14 | 45 | 26 | 6 | 91 | 19 | 77 | 15 | 1 | 112 | 428 |
| Total | 34 | 174 | 21 | 23 | 252 | 131 | 171 | 37 | 12 | 351 | 47 | 129 | 106 | 27 | 309 | 71 | 234 | 56 | 15 | 376 | 1288 |
| 08:00 AM | 8 | 42 | 4 | 5 | 59 | 25 | 43 | 10 | 2 | 80 | 16 | 39 | 14 | 2 | 71 | 14 | 41 | 11 | 0 | 66 | 276 |
| 08:15 AM | 8 | 37 | 4 | 1 | 50 | 14 | 38 | 3 | 0 | 55 | 18 | 36 | 9 | 2 | 65 | 9 | 51 | 14 | 0 | 74 | 244 |
| 08:30 AM | 5 | 22 | 7 | 3 | 37 | 22 | 44 | 6 | 1 | 73 | 18 | 32 | 10 | 2 | 62 | 12 | 52 | 7 | 6 | 77 | 249 |
| 08:45 AM | 9 | 36 | 8 | 4 | 57 | 25 | 57 | 14 | 1 | 97 | 12 | 39 | 8 | 3 | 62 | 12 | 64 | 12 | 8 | 96 | 312 |
| Total | 30 | 137 | 23 | 13 | 203 | 86 | 182 | 33 | 4 | 305 | 64 | 146 | 41 | 9 | 260 | 47 | 208 | 44 | 14 | 313 | 1081 |
| 09:00 AM | 8 | 35 | 9 | 2 | 54 | 17 | 50 | 8 | 0 | 75 | 22 | 26 | 13 | 0 | 61 | 11 | 23 | 8 | 0 | 42 | 201 |
| 09:15 AM | 6 | 33 | 7 | 8 | 54 | 18 | 42 | 2 | 3 | 65 | 17 | 26 | 12 | 5 | 60 | 11 | 41 | 8 | 2 | 56 | 181 |
| 09:30 AM | 3 | 21 | 7 | 4 | 35 | 17 | 37 | 2 | 0 | 56 | 14 | 19 | 4 | 2 | 58 | 8 | 44 | 17 | 1 | 68 | 198 |
| 09:45 AM | 2 | 24 | 8 | 3 | 37 | 14 | 31 | 3 | 0 | 74 | 21 | 26 | 8 | 0 | 70 | 11 | 38 | 4 | 17 | 56 | 233 |
| Total | 19 | 113 | 31 | 17 | 160 | 66 | 160 | 21 | 3 | 270 | 74 | 93 | 48 | 11 | 226 | 33 | 148 | 43 | 4 | 228 | 904 |
| 10:00 AM | 6 | 31 | 3 | 3 | 43 | 27 | 49 | 1 | 0 | 72 | 25 | 13 | 7 | 0 | 45 | 9 | 39 | 6 | 7 | 61 | 221 |
| 10:15 AM | 2 | 27 | 4 | 3 | 36 | 12 | 43 | 3 | 0 | 63 | 8 | 25 | 17 | 2 | 52 | 3 | 50 | 14 | 2 | 69 | 220 |
| 10:30 AM | 6 | 31 | 6 | 5 | 48 | 16 | 53 | 2 | 0 | 71 | 12 | 28 | 6 | 1 | 67 | 8 | 50 | 8 | 2 | 68 | 234 |
| 10:45 AM | 8 | 18 | 6 | 7 | 39 | 20 | 46 | 6 | 0 | 72 | 17 | 13 | 5 | 42 | 5 | 49 | 15 | 3 | 72 | 245 | |
| Total | 22 | 107 | 19 | 18 | 166 | 75 | 191 | 12 | 0 | 278 | 62 | 93 | 43 | 8 | 206 | 25 | 188 | 43 | 14 | 270 | 920 |
| 11:00 AM | 9 | 33 | 6 | 8 | 56 | 16 | 44 | 6 | 2 | 68 | 19 | 26 | 19 | 6 | 70 | 8 | 45 | 8 | 1 | 62 | 256 |
| 11:15 AM | 4 | 38 | 6 | 4 | 52 | 17 | 49 | 9 | 0 | 75 | 20 | 20 | 15 | 3 | 69 | 16 | 33 | 9 | 99 | 284 | |
| 11:30 AM | 7 | 31 | 8 | 5 | 51 | 19 | 62 | 4 | 1 | 86 | 12 | 23 | 14 | 4 | 95 | 11 | 70 | 10 | 3 | 94 | 335 |
| 11:45 AM | 6 | 30 | 4 | 7 | 47 | 27 | 63 | 8 | 1 | 99 | 22 | 26 | 16 | 6 | 70 | 14 | 77 | 10 | 0 | 112 | 320 |
| Total | 26 | 132 | 24 | 24 | 206 | 79 | 218 | 27 | 4 | 328 | 73 | 97 | 64 | 19 | 253 | 44 | 251 | 50 | 17 | 362 | 1149 |
| 12:00 PM | 10 | 28 | 7 | 6 | 51 | 17 | 58 | 12 | 3 | 90 | 26 | 25 | 7 | 7 | 65 | 6 | 50 | 22 | 2 | 80 | 286 |
| 12:15 PM | 9 | 28 | 11 | 5 | 54 | 23 | 69 | 6 | 2 | 103 | 9 | 24 | 11 | 7 | 51 | 11 | 73 | 13 | 1 | 98 | 306 |
| 12:30 PM | 9 | 28 | 11 | 5 | 53 | 23 | 64 | 6 | 4 | 97 | 20 | 34 | 18 | 6 | 78 | 16 | 47 | 18 | 1 | 82 | 310 |
| 12:45 PM | 5 | 32 | 11 | 3 | 51 | 13 | 59 | 9 | 1 | 82 | 15 | 21 | 13 | 4 | 53 | 10 | 55 | 14 | 0 | 79 | 265 |
| Total | 32 | 117 | 40 | 20 | 209 | 76 | 250 | 36 | 10 | 372 | 70 | 104 | 49 | 24 | 247 | 43 | 225 | 67 | 4 | 339 | 1167 |
| 01:00 PM | 7 | 36 | 9 | 4 | 56 | 13 | 59 | 6 | 0 | 78 | 17 | 13 | 16 | 4 | 50 | 11 | 56 | 10 | 1 | 78 | 262 |
| 01:15 PM | 10 | 22 | 1 | 2 | 35 | 27 | 66 | 11 | 1 | 105 | 14 | 27 | 13 | 6 | 60 | 15 | 66 | 15 | 1 | 97 | 297 |
| 01:30 PM | 8 | 27 | 9 | 9 | 53 | 18 | 48 | 5 | 2 | 73 | 29 | 34 | 13 | 4 | 80 | 8 | 63 | 14 | 1 | 86 | 292 |
| 01:45 PM | 9 | 23 | 7 | 1 | 40 | 12 | 57 | 4 | 2 | 75 | 12 | 29 | 11 | 5 | 57 | 5 | 56 | 12 | 3 | 76 | 248 |
| Total | 34 | 108 | 26 | 16 | 184 | 70 | 230 | 26 | 5 | 331 | 72 | 103 | 53 | 19 | 247 | 39 | 241 | 51 | 6 | 337 | 1099 |
| 02:00 PM | 9 | 35 | 12 | 2 | 58 | 22 | 43 | 7 | 1 | 73 | 11 | 13 | 12 | 3 | 39 | 10 | 58 | 15 | 0 | 83 | 253 |
| 02:15 PM | 8 | 28 | 4 | 5 | 45 | 20 | 11 | 2 | 1 | 66 | 17 | 22 | 19 | 0 | 65 | 9 | 60 | 16 | 0 | 85 | 279 |
| 02:30 PM | 15 | 39 | 10 | 15 | 75 | 28 | 62 | 8 | 2 | 90 | 24 | 32 | 19 | 0 | 82 | 11 | 48 | 11 | 5 | 97 | 364 |
| Total | 37 | 126 | 30 | 23 | 216 | 95 | 217 | 20 | 5 | 337 | 63 | 111 | 66 | 11 | 251 | 42 | 232 | 56 | 6 | 336 | 1140 |
| 03:00 PM | 14 | 42 | 19 | 28 | 103 | 48 | 88 | 10 | 11 | 125 | 26 | 48 | 24 | 23 | 121 | 11 | 64 | 21 | 15 | 111 | 492 |
| 03:15 PM | 11 | 30 | 15 | 10 | 66 | 32 | 74 | 11 | 8 | 105 | 14 | 27 | 13 | 6 | 80 | 15 | 66 | 15 | 1 | 97 | 397 |
| 03:30 PM | 16 | 48 | 7 | 7 | 78 | 27 | 75 | 12 | 2 | 116 | 14 | 43 | 19 | 10 | 86 | 11 | 62 | 15 | 23 | 111 | 391 |
| 03:45 PM | 7 | 43 | 9 | 9 | 68 | 26 | 49 | 14 | 0 | 89 | 22 | 40 | 16 | 2 | 80 | 16 | 60 | 12 | 4 | 94 | 331 |
| Total | 48 | 163 | 50 | 54 | 315 | 133 | 286 | 47 | 21 | 487 | 77 | 168 | 69 | 58 | 372 | 47 | 267 | 70 | 59 | 443 | 1617 |
| 04:00 PM | 14 | 56 | 10 | 8 | 88 | 20 | 61 | 11 | 0 | 92 | 26 | 46 | 10 | 5 | 87 | 6 | 5 | | | | |

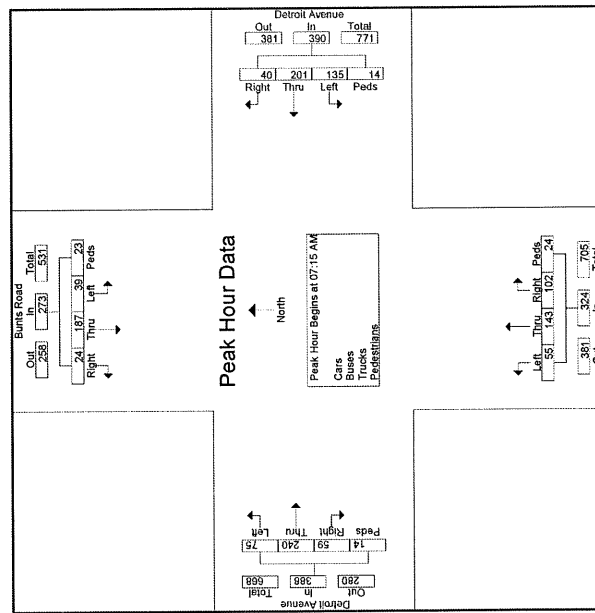
| Start Time | Bunts Road From North | | | | Detroit Avenue From East | | | | Bunts Road From South | | | | Detroit Avenue From West | | | | | | | | |
|--------------|-----------------------|------|-------|------|--------------------------|------|-------|------|-----------------------|-------|-------|------|--------------------------|------|-------|------|-------|------|------|------|------|
| | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | | | | | |
| 11:45 AM | 6 | 30 | 4 | 7 | 47 | 27 | 63 | 8 | 1 | 99 | 22 | 26 | 16 | 9 | 70 | 14 | 67 | 16 | 10 | 303 | |
| 12:00 PM | 10 | 28 | 7 | 6 | 51 | 17 | 56 | 12 | 2 | 109 | 23 | 23 | 11 | 7 | 63 | 13 | 50 | 21 | 2 | 268 | |
| 12:15 PM | 8 | 29 | 11 | 5 | 53 | 23 | 64 | 6 | 4 | 97 | 20 | 24 | 18 | 6 | 58 | 16 | 47 | 18 | 1 | 306 | |
| 12:30 PM | 33 | 115 | 33 | 24 | 205 | 90 | 254 | 35 | 10 | 389 | 77 | 109 | 52 | 26 | 264 | 47 | 237 | 69 | 14 | 1225 | |
| Total | 57 | 175 | 55 | 44 | 425 | 154 | 444 | 61 | 26 | 692 | 126 | 152 | 111 | 68 | 659 | 90 | 484 | 159 | 31 | 1102 | |
| % App. Total | 16.1 | 56.1 | 16.1 | 11.7 | 117.7 | 43.1 | 126.3 | 19.7 | 9.8 | 202.9 | 36.2 | 45.3 | 33.1 | 20.2 | 202.9 | 25.9 | 126.3 | 49.6 | 18.8 | 33.8 | |
| PHF | .825 | .868 | .750 | .857 | .849 | .833 | .920 | .729 | .625 | .944 | .740 | .801 | .722 | .699 | .846 | .734 | .812 | .784 | .350 | .857 | .948 |

Peak Hour for Entire Intersection Begins at 11:45 AM



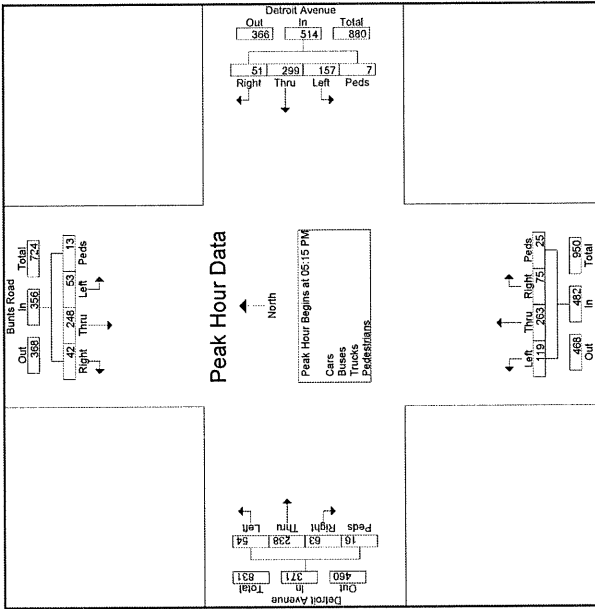
| Start Time | Bunts Road From North | | | | Detroit Avenue From East | | | | Bunts Road From South | | | | Detroit Avenue From West | | | | | | | | |
|--------------|-----------------------|------|-------|------|--------------------------|------|-------|------|-----------------------|------|-------|------|--------------------------|------|-------|------|------|------|------|------|------|
| | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | Left | Thru | Right | Peds | | | | | |
| 07:15 AM | 0 | 51 | 24 | 4 | 57 | 10 | 25 | 26 | 3 | 64 | 17 | 50 | 10 | 3 | 80 | 252 | | | | | |
| 07:30 AM | 13 | 50 | 7 | 9 | 79 | 40 | 54 | 12 | 6 | 112 | 15 | 34 | 13 | 98 | 25 | 72 | 23 | 10 | 130 | 419 | |
| 07:45 AM | 12 | 59 | 8 | 5 | 84 | 46 | 79 | 14 | 2 | 141 | 14 | 45 | 26 | 6 | 91 | 19 | 77 | 15 | 1 | 112 | 428 |
| 08:00 AM | 8 | 42 | 4 | 5 | 59 | 25 | 43 | 10 | 2 | 80 | 16 | 39 | 14 | 2 | 71 | 14 | 41 | 11 | 0 | 66 | 276 |
| Total | 39 | 187 | 24 | 23 | 273 | 135 | 201 | 40 | 14 | 390 | 55 | 143 | 102 | 24 | 324 | 75 | 240 | 59 | 14 | 388 | 1375 |
| % App. Total | 14.3 | 68.5 | 8.8 | 8.4 | 34.6 | 51.5 | 10.3 | 9.6 | 17 | 44.1 | 31.5 | 7.4 | 19.3 | 61.9 | 15.2 | 3.6 | 11.7 | 4.1 | 3.6 | 11.7 | 44.1 |
| PHF | .750 | .782 | .750 | .659 | .813 | .734 | .656 | .714 | .593 | .691 | .859 | .794 | .708 | .462 | .827 | .750 | .779 | .641 | .350 | .746 | .893 |

Peak Hour for Entire Intersection Begins at 07:15 AM



File Name : Detroit_Avenue_at_Bunts_Road_565794_09-18-2018
 Site Code : Site 5 - Tues
 Start Date : 9/18/2018
 Page No : 5

| Start Time | Bunts Road From North | | | | Bunts Road From South | | | | Detroit Avenue From East | | | | Detroit Avenue From West | | | | App Total | Int Total | | | |
|--------------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|--------------------------|-----|-----|-----|--------------------------|-----|-----|-----|-----------|-----------|-----|-----|------|
| | Thru | U | Rig | Ped | Thru | U | Rig | Ped | Thru | U | Rig | Ped | Thru | U | Rig | Ped | | | | | |
| 05:15 PM | 16 | 62 | 19 | 0 | 97 | 28 | 66 | 11 | 0 | 105 | 23 | 65 | 16 | 5 | 109 | 11 | 53 | 18 | 8 | 90 | 401 |
| 05:30 PM | 10 | 69 | 8 | 5 | 92 | 36 | 83 | 14 | 4 | 137 | 22 | 57 | 24 | 7 | 110 | 20 | 60 | 17 | 1 | 98 | 437 |
| 05:45 PM | 13 | 60 | 12 | 6 | 91 | 44 | 67 | 13 | 1 | 125 | 39 | 70 | 21 | 5 | 135 | 7 | 65 | 19 | 5 | 95 | 447 |
| 06:00 PM | 14 | 57 | 3 | 2 | 76 | 49 | 83 | 13 | 2 | 147 | 35 | 71 | 14 | 8 | 123 | 15 | 20 | 6 | 3 | 37 | 1723 |
| Total Volume | 53 | 249 | 42 | 13 | 356 | 157 | 289 | 51 | 14 | 514 | 247 | 266 | 75 | 28 | 482 | 48 | 232 | 63 | 16 | 371 | 1723 |
| % App Total | 14 | 66 | 12 | 4 | 91 | 47 | 84 | 16 | 4 | 100 | 48 | 80 | 17 | 10 | 100 | 12 | 64 | 17 | 4 | 94 | 100 |
| PTM | 829 | 889 | 555 | 542 | 918 | 801 | 801 | 439 | 874 | 763 | 926 | 781 | 781 | 883 | 675 | 915 | 829 | 600 | 500 | 946 | 984 |



APPENDIX B
ITE TRIP GENERATION CALCULATIONS

ITE Trip Generation Procedure

Land Use 934 (Fast-Food Restaurant with Drive-Through Window)

Trip Generations per 1000 Sq. Feet Gross Floor Area
 Setting / Location: General Urban / Suburban

Weekday Trip Generation and Trip Distribution

Trip Generation Formula: $T = 470.85 * (X)$
 where: T = Number of Trips Generated
 X = 1000 Sq. Feet Gross Floor Area

Gross Floor Area: 3,300

Total Trip Ends in the Average Weekday: 1,555

Distribution Percentages of Entering and Exiting Trips. From ITE Trip Generation Manual, 10th Edition

| | |
|---------------------------|-----|
| Entering Trip Percentage: | 50% |
| Exiting Trip Percentage: | 50% |
| Number of Entering Trips: | 778 |
| Number of Exiting Trips: | 777 |

Mid-day Peak Trip Generation and Trip Distribution (Peak Hour of Generator)

Trip Generation Formula: $T = 51.35 * (X)$
 Total Trip Ends in the PM Peak Hour: 170

Distribution Percentages of Entering and Exiting Trips. From ITE Trip Generation Manual, 10th Edition

| | |
|---------------------------|-----|
| Entering Trip Percentage: | 51% |
| Exiting Trip Percentage: | 49% |
| Entering Primary Trips: | 87 |
| Exiting Primary Trips: | 83 |

PM Peak Trip Generation and Trip Distribution (Peak Hour of Adjacent Street)

Trip Generation Formula: $T = 32.67 * (X)$
 Total Trip Ends in the PM Peak Hour: 108

Distribution Percentages of Entering and Exiting Trips. From ITE Trip Generation Manual, 10th Edition

| | |
|---------------------------|-----|
| Entering Trip Percentage: | 52% |
| Exiting Trip Percentage: | 48% |
| Entering Primary Trips: | 56 |
| Exiting Primary Trips: | 52 |

ITE Trip Generation Procedure

Land Use 932: High Turnover (Sit-Down) Restaurant

Trip Generations per 1000 Sq. Feet Gross Floor Area
 Setting / Location: General Urban / Suburban

Weekday Trip Generation and Trip Distribution

Trip Generation Formula: $T = 112.18 * (X)$
 where: T = Number of Trips Generated
 X = 1000 Sq. Feet Gross Floor Area

Gross Floor Area: 5,200

Total Trip Ends in the Average Weekday: 584

Distribution Percentages of Entering and Exiting Trips. From ITE Trip Generation Manual, 10th Edition

| | |
|---------------------------|-----|
| Entering Trip Percentage: | 50% |
| Exiting Trip Percentage: | 50% |
| Number of Entering Trips: | 292 |
| Number of Exiting Trips: | 292 |

AM Peak Trip Generation and Trip Distribution (Peak Hour of Adjacent Street)

Trip Generation Formula: $T = 9.94 * (X)$
 Total Trip Ends in the AM Peak Hour: 52

Distribution Percentages of Entering and Exiting Trips. From ITE Trip Generation Manual, 10th Edition

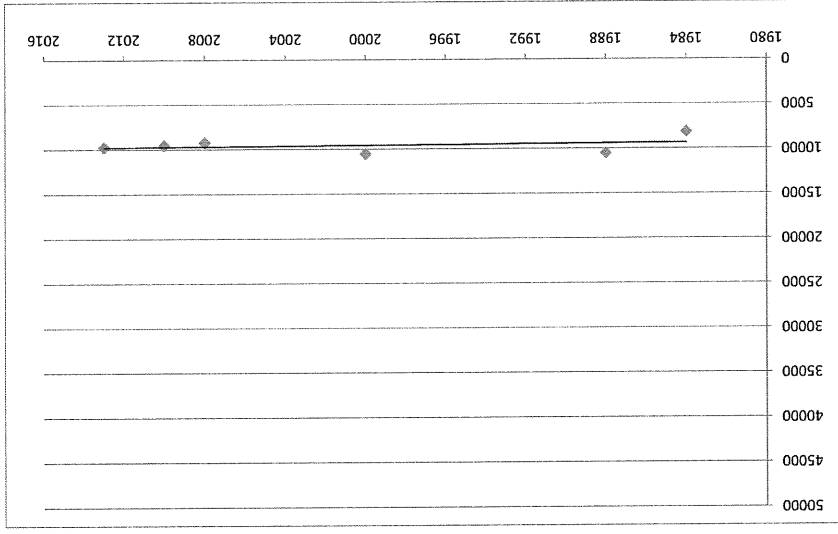
| | |
|---------------------------|-----|
| Entering Trip Percentage: | 55% |
| Exiting Trip Percentage: | 45% |
| Entering Primary Trips: | 29 |
| Exiting Primary Trips: | 23 |

PM Peak Trip Generation and Trip Distribution (Peak Hour of Adjacent Street)

Trip Generation Formula: $T = 9.77 * (X)$
 Total Trip Ends in the PM Peak Hour: 51

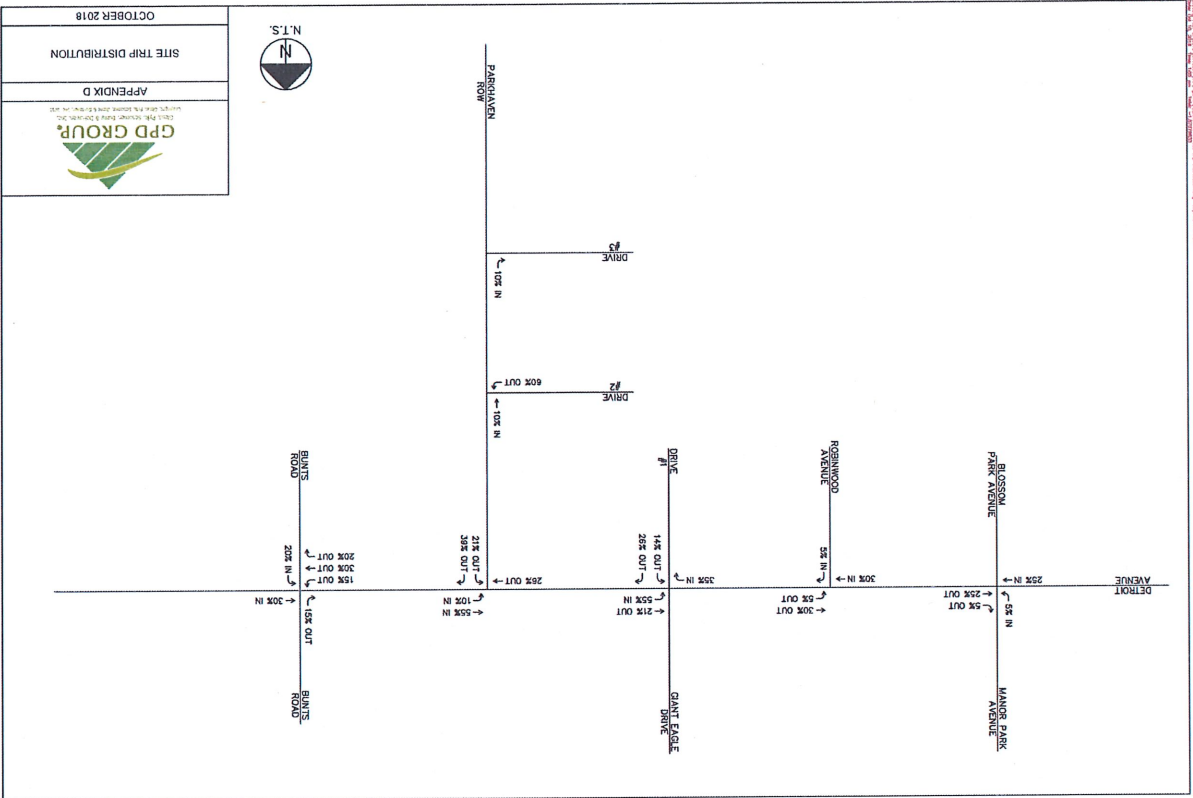
Distribution Percentages of Entering and Exiting Trips. From ITE Trip Generation Manual, 10th Edition

| | |
|---------------------------|-----|
| Entering Trip Percentage: | 62% |
| Exiting Trip Percentage: | 38% |
| Entering Primary Trips: | 32 |
| Exiting Primary Trips: | 19 |



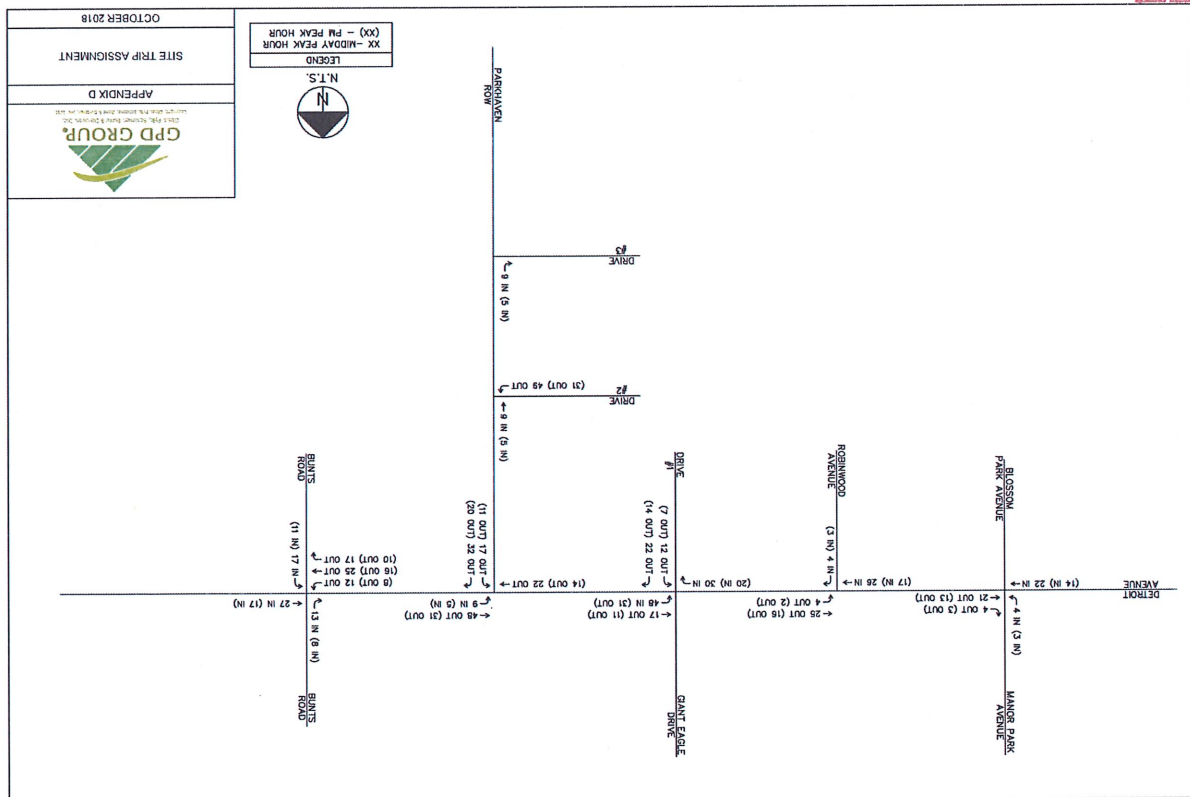
| Roadway Section | | 1984 | 1988 | 2000 | 2008 | 2010 | 2013 | Growth Rate |
|-----------------|--|------|-------|-------|------|------|------|-------------|
| Detroit Avenue | | 8090 | 10480 | 10500 | 9200 | 9520 | 9710 | 0.16% |
| Trendline | | 9333 | 9394 | 9576 | 9697 | 9727 | 9773 | |

**APPENDIX C
GROWTH RATE CALCULATIONS**



APPENDIX D
SITE TRIP DISTRIBUTION AND ASSIGNMENT

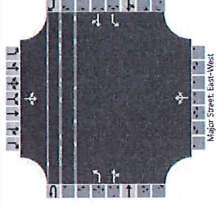
APPENDIX E INTRSECTION CAPACITY ANALYSIS



HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|---|----------------------------|---------------------|
| Analyst | MSS | Intersection | Blossom Park Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Labelwood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Blossom Park Avenue |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'No-Build' Conditions | | |

Lanes



Vehicle Volumes and Adjustments

| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | | |
|----------------------------|-----------|-----|---|-----------|-----|----|------------|---|----|------------|---|----|-----|----|--|
| | U | L | T | U | L | T | U | L | T | U | L | T | R | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| Priority | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | |
| Number of Lanes | L | | | TR | | | L | | | LTR | | | LTR | | |
| Configuration | L | | | TR | | | L | | | LTR | | | LTR | | |
| Volume (veh/h) | 23 | 367 | 5 | 7 | 390 | 11 | 6 | 4 | 10 | 11 | 4 | 24 | 3 | 3 | |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | | | | | | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | | |
| Median Type Storage | Undivided | | | | | | | | | | | | | | |

Critical and Follow-up Headways

| | | | | | | | | | | | | |
|------------------------------|------|--|--|------|--|--|------|------|------|------|------|------|
| Base Critical Headway (sec) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Headway (sec) | 4.13 | | | 4.13 | | | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Base Follow-Up Headway (sec) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | | | 2.23 | | | 3.53 | 4.03 | 3.33 | 3.53 | 4.03 | 3.33 |

Delay, Queue Length, and Level of Service

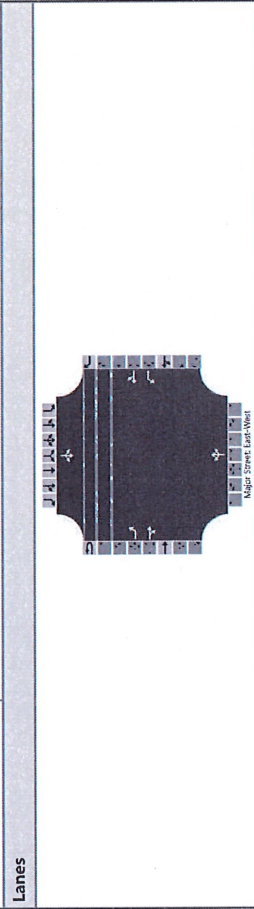
| | | | | | | | | | | | | |
|---|------|--|--|------|--|--|------|--|--|--|--|------|
| Flow Rate, v (veh/h) | 25 | | | 8 | | | 22 | | | | | 42 |
| Capacity, c (veh/h) | 1119 | | | 1149 | | | 357 | | | | | 396 |
| v/c Ratio | 0.02 | | | 0.01 | | | 0.06 | | | | | 0.11 |
| 95% Queue Length, Q ₉₅ (veh) | 0.1 | | | 0.0 | | | 0.2 | | | | | 0.4 |
| Control Delay (s/veh) | 8.3 | | | 8.2 | | | 15.7 | | | | | 15.2 |
| Level of Service (LOS) | A | | | A | | | C | | | | | C |
| Approach Delay (s/veh) | 0.5 | | | 0.1 | | | 15.7 | | | | | 15.2 |
| Approach LOS | | | | | | | C | | | | | C |

OPENING YEAR 2039 'NO-BUILD' CONDITIONS

HCS7 Two-Way Stop-Control Report

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|---|----------------------------|---------------------|
| Analyst | MSS | Intersection | Blossom Park Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Blossom Park Avenue |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'No-Build' Conditions | | |



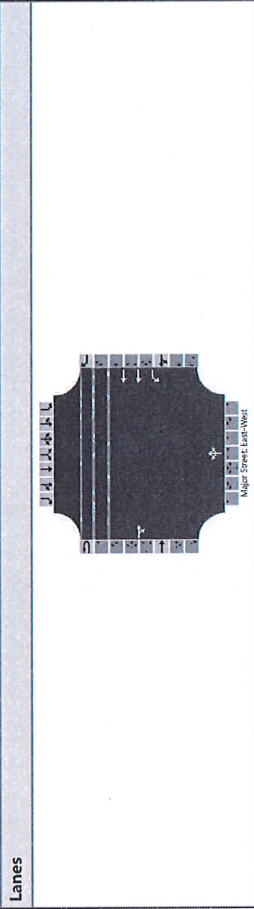
| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|
| | U | L | T | U | L | T | U | L | T | U | L | T |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Priority | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Number of Lanes | L | | | TR | | | L | | | LTR | | |
| Configuration | 20 | | | 348 | | | 7 | | | 15 | | |
| Volume (veh/h) | 20 | | | 348 | | | 7 | | | 15 | | |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | | | 3 | | |
| Proportion Time Blocked | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | |
| Median Type Storage | | | | Undivided | | | | | | | | |

| Critical and Follow-up Headways | | | | | | | | | | | | |
|---------------------------------|------|--|--|--|--|--|--|--|--|--|--|--|
| Base Critical Headway (sec) | 4.1 | | | | | | | | | | | |
| Critical Headway (sec) | 4.13 | | | | | | | | | | | |
| Base Follow-Up Headway (sec) | 2.2 | | | | | | | | | | | |
| Follow-Up Headway (sec) | 2.23 | | | | | | | | | | | |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | |
|---|------|--|--|--|--|--|--|--|--|--|--|--|
| Flow Rate, v (veh/h) | 22 | | | | | | | | | | | |
| Capacity, c (veh/h) | 1073 | | | | | | | | | | | |
| v/c Ratio | 0.02 | | | | | | | | | | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.1 | | | | | | | | | | | |
| Control Delay (s/veh) | 8.4 | | | | | | | | | | | |
| Level of Service (LOS) | A | | | | | | | | | | | |
| Approach Delay (s/veh) | 0.4 | | | | | | | | | | | |
| Approach LOS | | | | | | | | | | | | |

Copyright © 2018 University of Florida. All Rights Reserved. 1 - Blossom Park. CY 2019 No Build PM. xtw
 HCS800 TMSC Version 7.5
 Generated: 10/3/2018 5:15:09 PM

| General Information | | Site Information | |
|--------------------------|---|----------------------------|------------------|
| Analyst | MSS | Intersection | Robinwood Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Robinwood Avenue |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'No-Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|
| | U | L | T | U | L | T | U | L | T | U | L | T |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Priority | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 |
| Number of Lanes | L | | | TR | | | L | | | LTR | | |
| Configuration | 20 | | | 362 | | | 3 | | | 8 | | |
| Volume (veh/h) | 20 | | | 362 | | | 3 | | | 8 | | |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | | | 3 | | |
| Proportion Time Blocked | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | |
| Median Type Storage | | | | Left Only | | | | | | 1 | | |

| Critical and Follow-up Headways | | | | | | | | | | | | |
|---------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|
| Base Critical Headway (sec) | | | | | | | | | | | | |
| Critical Headway (sec) | | | | | | | | | | | | |
| Base Follow-Up Headway (sec) | | | | | | | | | | | | |
| Follow-Up Headway (sec) | | | | | | | | | | | | |

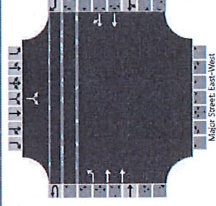
| Delay, Queue Length, and Level of Service | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|
| Flow Rate, v (veh/h) | | | | | | | | | | | | |
| Capacity, c (veh/h) | | | | | | | | | | | | |
| v/c Ratio | | | | | | | | | | | | |
| 95% Queue Length, Q ₉₅ (veh) | | | | | | | | | | | | |
| Control Delay (s/veh) | | | | | | | | | | | | |
| Level of Service (LOS) | | | | | | | | | | | | |
| Approach Delay (s/veh) | | | | | | | | | | | | |
| Approach LOS | | | | | | | | | | | | |

Copyright © 2018 University of Florida. All Rights Reserved. 2 - Robinwood Avenue. CY 2019 No Build Mid. xtw
 HCS800 TMSC Version 7.5
 Generated: 10/3/2018 5:53:38 PM

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|---|----------------------------|-------------------|
| Analyst | MSS | Intersection | Giant Eagle Drive |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Giant Eagle Drive |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'No-Build' Conditions | | |

Lanes



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|
| | U | L | T | U | L | T | U | L | T | U | L | T |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Priority | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| Number of Lanes | L T | | | L T | | | TR | | | LR | | |
| Configuration | 361 | | | 14 | | | 462 | | | 14 | | |
| Volume (veh/h) | 3 | | | 3 | | | 3 | | | 3 | | |
| Percent Heavy Vehicles (%) | 0 | | | 0 | | | 0 | | | 0 | | |
| Proportion Time Blocked | 0 | | | 0 | | | 0 | | | 0 | | |
| Percent Grade (%) | 0 | | | 0 | | | 0 | | | 0 | | |
| Right Turn Channelized | Left Only | | | Left Only | | | Left Only | | | Left Only | | |
| Median Type Storage | 1 | | | 1 | | | 1 | | | 1 | | |

Critical and Follow-up Headways

| | | | | |
|------------------------------|------|------|------|------|
| Base Critical Headway (sec) | 4.1 | 7.5 | 6.5 | 6.9 |
| Critical Headway (sec) | 4.16 | 6.86 | 6.56 | 6.96 |
| Base Follow-Up Headway (sec) | 2.2 | 3.5 | 4.0 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | 3.53 | 4.03 | 3.33 |

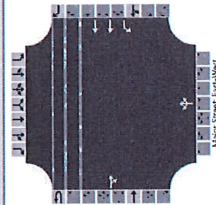
Delay, Queue Length, and Level of Service

| | | |
|---|------|------|
| Flow Rate, v (veh/h) | 15 | 50 |
| Capacity, c (veh/h) | 1152 | 561 |
| v/c Ratio | 0.01 | 0.09 |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.3 |
| Control Delay (s/veh) | 8.2 | 12.0 |
| Level of Service (LOS) | A | B |
| Approach Delay (s/veh) | 0.2 | 12.0 |
| Approach LOS | B | B |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|---|----------------------------|------------------|
| Analyst | MSS | Intersection | Robinwood Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Robinwood Avenue |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'No-Build' Conditions | | |

Lanes



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|
| | U | L | T | U | L | T | U | L | T | U | L | T |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Priority | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| Number of Lanes | L T | | | L T | | | L T | | | L T | | |
| Configuration | 361 | | | 14 | | | 462 | | | 14 | | |
| Volume (veh/h) | 3 | | | 3 | | | 3 | | | 3 | | |
| Percent Heavy Vehicles (%) | 0 | | | 0 | | | 0 | | | 0 | | |
| Proportion Time Blocked | 0 | | | 0 | | | 0 | | | 0 | | |
| Percent Grade (%) | 0 | | | 0 | | | 0 | | | 0 | | |
| Right Turn Channelized | Left Only | | | Left Only | | | Left Only | | | Left Only | | |
| Median Type Storage | 1 | | | 1 | | | 1 | | | 1 | | |

Critical and Follow-up Headways

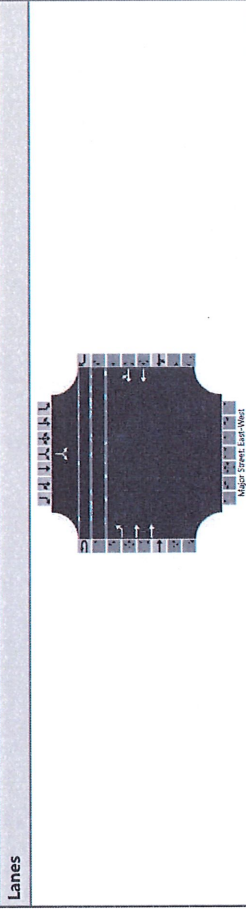
| | | | | |
|------------------------------|------|------|------|------|
| Base Critical Headway (sec) | 4.1 | 7.5 | 6.5 | 6.9 |
| Critical Headway (sec) | 4.16 | 6.86 | 6.56 | 6.96 |
| Base Follow-Up Headway (sec) | 2.2 | 3.5 | 4.0 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | 3.53 | 4.03 | 3.33 |

Delay, Queue Length, and Level of Service

| | | |
|---|------|------|
| Flow Rate, v (veh/h) | 15 | 50 |
| Capacity, c (veh/h) | 1152 | 561 |
| v/c Ratio | 0.01 | 0.09 |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.3 |
| Control Delay (s/veh) | 8.2 | 12.0 |
| Level of Service (LOS) | A | B |
| Approach Delay (s/veh) | 0.2 | 12.0 |
| Approach LOS | B | B |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|---|----------------------------|-------------------|
| Analyst | MSS | Intersection | Giant Eagle Drive |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Giant Eagle Drive |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'No-Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|----|----|
| | U | L | T | U | L | T | U | L | T | U | L | T | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Priority | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Number of Lanes | L T | | | T TR | | | L TR | | | LR | | | | |
| Configuration | 0 6 387 | | | 468 3 | | | | | | 1 1 3 | | | | |
| Volume (veh/h) | 3 3 | | | | | | | | | 3 3 3 | | | | |
| Percent Heavy Vehicles (%) | | | | | | | | | | | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | |
| Median Type Storage | | | | | | | Left Only | | | 1 | | | | |

Critical and Follow-up Headways

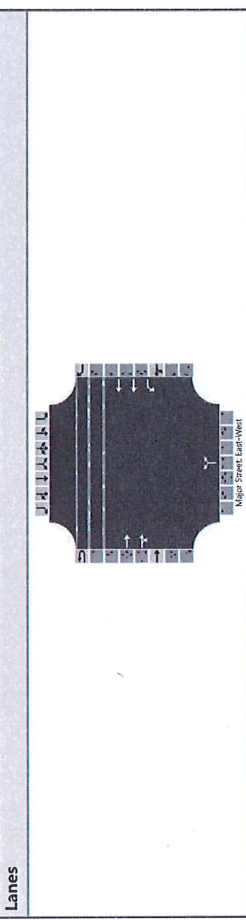
| | | | |
|------------------------------|------|------|------|
| Base Critical Headway (sec) | 4.1 | 7.5 | 6.9 |
| Critical Headway (sec) | 4.16 | 6.86 | 6.96 |
| Base Follow-Up Headway (sec) | 2.2 | 3.5 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | 3.53 | 3.33 |

Delay, Queue Length, and Level of Service

| | | |
|---|------|------|
| Flow Rate, v (veh/h) | 7 | 4 |
| Capacity, c (veh/h) | 1043 | 638 |
| v/c Ratio | 0.01 | 0.01 |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.0 |
| Control Delay (s/veh) | 8.5 | 10.7 |
| Level of Service (LOS) | A | B |
| Approach Delay (s/veh) | 0.1 | 10.7 |
| Approach LOS | | B |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|---|----------------------------|------------------|
| Analyst | MSS | Intersection | Parkhaven Row |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Parkhaven Row |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'No-Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|----|----|
| | U | L | T | U | L | T | U | L | T | U | L | T | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Priority | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| Number of Lanes | L T | | | T TR | | | L TR | | | LR | | | | |
| Configuration | 414 3 | | | 0 1 389 | | | 19 | | | 10 | | | | |
| Volume (veh/h) | 3 3 | | | | | | 3 3 | | | 3 3 | | | | |
| Percent Heavy Vehicles (%) | | | | | | | | | | | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | |
| Median Type Storage | | | | | | | Left Only | | | 1 | | | | |

Critical and Follow-up Headways

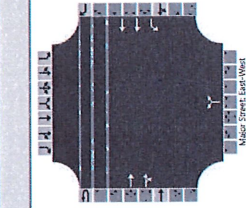
| | | | |
|------------------------------|------|------|------|
| Base Critical Headway (sec) | 4.1 | 7.5 | 6.9 |
| Critical Headway (sec) | 4.16 | 6.86 | 6.96 |
| Base Follow-Up Headway (sec) | 2.2 | 3.5 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | 3.53 | 3.33 |

Delay, Queue Length, and Level of Service

| | | |
|---|------|------|
| Flow Rate, v (veh/h) | 1 | 32 |
| Capacity, c (veh/h) | 1097 | 556 |
| v/c Ratio | 0.00 | 0.06 |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.2 |
| Control Delay (s/veh) | 8.3 | 11.9 |
| Level of Service (LOS) | A | B |
| Approach Delay (s/veh) | 0.0 | 11.9 |
| Approach LOS | | B |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|---|----------------------------|------------------|
| Analyst | MSS | Intersection | Parkhaven Row |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Parkhaven Row |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'No-Build' Conditions | | |



Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | | |
|----------------------------|-----------|---|-----|----|-----------|---|-----|---|------------|---|----|----|------------|----|---|---|---|----|
| | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | | |
| Number of Lanes | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Configuration | | | T | TR | | L | T | | | | LR | | | | | | | |
| Volume (veh/h) | | | 385 | 6 | 0 | 7 | 439 | | | | 23 | | | | | | | 18 |
| Percent Heavy Vehicles (%) | | | | | 3 | 3 | | | | 3 | | | | | | | 3 | |
| Proportion Time Blocked | | | | | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | | | | | |
| Median Type Storage | | | | | | | | | | | | | | | | | | 1 |
| | | | | | | | | | | | | | | | | | | 0 |

Critical and Follow-up Headways

| | | | |
|------------------------------|------|------|------|
| Base Critical Headway (sec) | 4.1 | 7.5 | 6.9 |
| Critical Headway (sec) | 4.16 | 6.86 | 6.96 |
| Base Follow-Up Headway (sec) | 2.2 | 3.5 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | 3.53 | 3.33 |

Delay, Queue Length, and Level of Service

| | | | |
|---|------|------|------|
| Flow Rate, v (veh/h) | 8 | 45 | |
| Capacity, c (veh/h) | 1124 | 583 | |
| v/c Ratio | 0.01 | 0.08 | |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.2 | |
| Control Delay (s/veh) | 8.2 | 11.7 | |
| Level of Service (LOS) | A | B | |
| Approach Delay (s/veh) | | | 11.7 |
| Approach LOS | | | B |

HCS7 Signalized Intersection Results Summary

| General Information | | Intersection Information | |
|---------------------|------------------------------|--------------------------|---|
| Agency | MSS | Analysis Date | 10/4/2018 |
| Analyst | City of Lakewood | Time Period | Mid-Day Peak |
| Jurisdiction | Detroit Avenue | Analysis Year | 2019 |
| Urban Street | Bunts Road | Analysis Period | 1 > 7:00 |
| Intersection | Opening Year 2019 'No-Build' | File Name | 5 - Bunts Road OY 2019 No-Build Mid.xus |
| Project Description | | | |

| Demand Information | | WB | | NB | | SB | | | | |
|--------------------|-------------------|-----|----|----|-----|----|----|-----|----|----|
| Approach Movement | Demand (v), veh/h | L | T | R | L | T | R | L | T | R |
| | 47 | 237 | 69 | 90 | 254 | 35 | 77 | 109 | 52 | 33 |



| Signal Information | | EBT | | WBL | | WBT | | NBL | | NBT | | SBL | | SBT | |
|--------------------|-----------------|-------------|-------|--------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Cycle, s | Reference Phase | End | Green | Yellow | Red | Simult. Gap | Simult. Gap | Simult. Gap | Simult. Gap | Simult. Gap | Simult. Gap | Simult. Gap | Simult. Gap | Simult. Gap | Simult. Gap |
| 110.0 | 2 | 2 | 50.0 | 3.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 0 | On | On | 3.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Uncoordinated | Yes | Simult. Gap | EW | On | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Force Mode | Fixed | Simult. Gap | N/S | On | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Timer Results

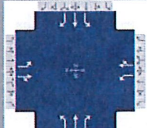
| Assigned Phase | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|------|------|------|------|------|------|------|------|
| Phase Number | 2 | 2 | 6 | 6 | 8 | 8 | 4 | 4 |
| Case Number | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Phase Duration, s | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 |
| Change Period, (Y+R+G), s | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Max Allow Headway (MAH), s | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 |
| Queue Clearance Time (g _q), s | 15.6 | 15.6 | 17.9 | 17.9 | 12.5 | 12.5 | 10.5 | 10.5 |
| Green Extension Time (g _e), s | 1.6 | 1.6 | 1.6 | 1.6 | 0.9 | 0.9 | 0.9 | 0.9 |
| Phase Call Probability | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Max Out Probability | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Movement Group Results

| Approach Movement | WB | | | | NB | | | | SB | | | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|----|
| | L | T | R | L | L | T | R | L | L | T | R | L |
| Assigned Movement | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| Adjusted Flow Rate (v), veh/h | 51 | 258 | 75 | 98 | 276 | 38 | 84 | 175 | 36 | 161 | | |
| Adjusted Saturation Flow Rate (s), veh/h/in | 1121 | 1900 | 1610 | 1140 | 1900 | 1610 | 1245 | 1796 | 1229 | 1827 | | |
| Queue Service Time (g _s), s | 3.4 | 9.4 | 2.9 | 6.5 | 10.2 | 1.5 | 4.7 | 6.5 | 2.0 | 5.8 | | |
| Cycle Queue Clearance Time (g _c), s | 13.6 | 9.4 | 2.9 | 15.9 | 10.2 | 1.5 | 10.5 | 6.5 | 8.5 | 5.8 | | |
| Green Ratio (g/G) | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | | |
| Capacity (c), veh/h | 471 | 864 | 732 | 486 | 864 | 732 | 566 | 816 | 552 | 830 | | |
| Volume-to-Capacity Ratio (X) | 0.108 | 0.288 | 0.102 | 0.201 | 0.320 | 0.052 | 0.148 | 0.214 | 0.065 | 0.194 | | |
| Back of Queue (Q), ft/in (50 th percentile) | 22.1 | 101.3 | 26.7 | 43.5 | 109.8 | 13.2 | 34.2 | 65.9 | 14.2 | 60 | | |
| Back of Queue (Q), veh/in (50 th percentile) | 0.9 | 4.1 | 1.1 | 1.7 | 4.4 | 0.5 | 1.4 | 2.6 | 0.6 | 2.4 | | |
| Queue Storage Ratio (RQ) (50 th percentile) | 0.12 | 0.00 | 0.21 | 0.35 | 0.00 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| Uniform Delay (d ₁), s/veh | 23.5 | 18.9 | 17.2 | 24.0 | 19.1 | 16.8 | 21.1 | 18.1 | 20.7 | 17.9 | | |
| Incremental Delay (d ₂), s/veh | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | |
| Initial Queue Delay (d ₃), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | |
| Control Delay (d), s/veh | 23.5 | 19.0 | 17.2 | 24.0 | 19.2 | 16.8 | 21.1 | 18.2 | 20.7 | 18.0 | | |
| Level of Service (LOS) | C | B | B | C | B | C | B | C | B | C | | |
| Approach Delay, s/veh / LOS | 19.2 | B | 20.1 | C | 19.1 | B | 18.5 | B | | | | |
| Intersection Delay, s/veh / LOS | 19.4 | | | | | | | | | | | |

HCS7 Signalized Intersection Results Summary

| General Information | | Intersection Information | |
|---------------------|------------------------------|--------------------------|--|
| Agency | GPD Group | Duration, h | 0.25 |
| Analyst | MSS | Area Type | Other |
| Jurisdiction | City of Lakewood | Time Period | PHF |
| Urban Street | Detroit Avenue | Analysis Year | 2019 |
| Intersection | Bunts Road | Analysis Period | 1> 7:00 |
| Project Description | Opening Year 2019 'No-Build' | File Name | 5 - Bunts Road OY 2019 No-Build PM.xus |



| Demand Information | EB | | | | WB | | | | NB | | | | SB | | | |
|--------------------|----|-----|----|-----|-----|----|-----|-----|----|----|-----|----|----|---|---|---|
| | L | T | R | L | L | T | R | L | L | T | R | L | L | T | R | L |
| Approach Movement | 54 | 238 | 63 | 157 | 299 | 51 | 119 | 263 | 75 | 53 | 248 | 42 | | | | |
| Demand (v) veh/h | | | | | | | | | | | | | | | | |

| Signal Information | | EB | | WB | | NB | | SB | | |
|--------------------|-----------------|-------------|--------|-----|-------|--------|-----|-------|--------|-----|
| Cycle, s | Reference Phase | Green | Yellow | Red | Green | Yellow | Red | Green | Yellow | Red |
| 100.0 | Reference Phase | 40.0 | 3.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 0 | Reference Point | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Uncoordinated | Yes | Simult. Gap | EW | On | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Force Mode | Fixed | Simult. Gap | N/S | On | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

| Timer Results | EBL | | EBT | | WBL | | WBT | | NBL | | NBT | | SBL | | SBT | | |
|---|----------------|-------------|-------------------|-------------------------|----------------------------|---|---|------------------------|---------------------|----------------|-------------|-------------------|-------------------------|----------------------------|---|---|------------------------|
| | Assigned Phase | Case Number | Phase Duration, s | Change Period, (Y+R), s | Max Allow Headway (MAH), s | Queue Clearance Time (g _c), s | Green Extension Time (g _e), s | Phase Call Probability | Max Out Probability | Assigned Phase | Case Number | Phase Duration, s | Change Period, (Y+R), s | Max Allow Headway (MAH), s | Queue Clearance Time (g _c), s | Green Extension Time (g _e), s | Phase Call Probability |
| Assigned Phase | 2 | 5.0 | 55.0 | 5.0 | 3.2 | 15.8 | 2.0 | 1.00 | 0.00 | 8 | 6.0 | 45.0 | 5.0 | 3.3 | 24.1 | 1.8 | 1.00 |
| Case Number | 5.0 | 55.0 | 5.0 | 3.2 | 15.8 | 2.0 | 1.00 | 0.00 | 8 | 6.0 | 45.0 | 5.0 | 3.3 | 24.1 | 1.8 | 1.00 | 0.00 |
| Phase Duration, s | 5.0 | 55.0 | 5.0 | 3.2 | 15.8 | 2.0 | 1.00 | 0.00 | 8 | 6.0 | 45.0 | 5.0 | 3.3 | 24.1 | 1.8 | 1.00 | 0.00 |
| Change Period, (Y+R), s | 5.0 | 55.0 | 5.0 | 3.2 | 15.8 | 2.0 | 1.00 | 0.00 | 8 | 6.0 | 45.0 | 5.0 | 3.3 | 24.1 | 1.8 | 1.00 | 0.00 |
| Max Allow Headway (MAH), s | 3.2 | 15.8 | 2.0 | 1.00 | 0.00 | 8 | 6.0 | 45.0 | 5.0 | 3.3 | 24.1 | 1.8 | 1.00 | 0.00 | 8 | 6.0 | 45.0 |
| Queue Clearance Time (g _c), s | 15.8 | 2.0 | 1.00 | 0.00 | 8 | 6.0 | 45.0 | 5.0 | 3.3 | 24.1 | 1.8 | 1.00 | 0.00 | 8 | 6.0 | 45.0 | 5.0 |
| Green Extension Time (g _e), s | 2.0 | 1.00 | 0.00 | 8 | 6.0 | 45.0 | 5.0 | 3.3 | 24.1 | 1.8 | 1.00 | 0.00 | 8 | 6.0 | 45.0 | 5.0 | 3.3 |
| Phase Call Probability | 1.00 | 0.00 | 8 | 6.0 | 45.0 | 5.0 | 3.3 | 24.1 | 1.8 | 1.00 | 0.00 | 8 | 6.0 | 45.0 | 5.0 | 3.3 | 24.1 |
| Max Out Probability | 0.00 | 8 | 6.0 | 45.0 | 5.0 | 3.3 | 24.1 | 1.8 | 1.00 | 0.00 | 8 | 6.0 | 45.0 | 5.0 | 3.3 | 24.1 | 1.8 |

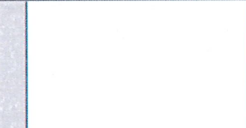
| Movement Group Results | EB | | | | WB | | | | NB | | | | SB | | | |
|---|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|----|----|---|---|---|
| | L | T | R | L | L | T | R | L | L | T | R | L | L | T | R | L |
| Approach Movement | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 | | | | |
| Assigned Movement | 59 | 259 | 68 | 171 | 325 | 55 | 129 | 367 | 58 | 315 | | | | | | |
| Adjusted Flow Rate (v), veh/h | 1072 | 1900 | 1610 | 1139 | 1900 | 1610 | 1081 | 1827 | 1031 | 1852 | | | | | | |
| Adjusted Saturation Flow Rate (s), veh/hln | 3.5 | 7.9 | 2.2 | 10.2 | 10.3 | 1.8 | 9.8 | 15.1 | 4.4 | 12.3 | | | | | | |
| Queue Service Time (g _s), s | 13.8 | 7.9 | 2.2 | 18.1 | 10.3 | 1.8 | 22.1 | 15.1 | 19.5 | 12.3 | | | | | | |
| Cycle Queue Clearance Time (g _c), s | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.40 | 0.40 | 0.40 | 0.40 | | | | | | |
| Green Ratio (g/c) | 497 | 950 | 805 | 552 | 950 | 805 | 371 | 731 | 329 | 741 | | | | | | |
| Capacity (c), veh/h | 0.118 | 0.272 | 0.085 | 0.309 | 0.342 | 0.069 | 0.348 | 0.503 | 0.175 | 0.426 | | | | | | |
| Volume-to-Capacity Ratio (X) | 38.4 | 145.9 | 34.8 | 117.9 | 190.6 | 27.9 | 113.3 | 259.4 | 49.1 | 222.8 | | | | | | |
| Back of Queue (Q), ft/in (95 th percentile) | 1.5 | 5.8 | 1.4 | 4.7 | 7.6 | 1.1 | 4.5 | 10.4 | 2.0 | 8.9 | | | | | | |
| Back of Queue (Q), veh/in (95 th percentile) | 0.21 | 0.00 | 0.28 | 0.94 | 0.00 | 0.47 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | |
| Queue Storage Ratio (RQ) (95 th percentile) | 19.2 | 14.5 | 13.1 | 19.7 | 15.1 | 12.9 | 29.7 | 22.5 | 29.9 | 21.7 | | | | | | |
| Uniform Delay (d ₁), s/veh | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.2 | 0.2 | 0.1 | 0.1 | | | | | | |
| Incremental Delay (d ₂), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | |
| Initial Queue Delay (d ₃), s/veh | 19.3 | 14.5 | 13.1 | 19.8 | 15.2 | 13.0 | 29.9 | 22.7 | 30.0 | 21.8 | | | | | | |
| Control Delay (d _f), s/veh | B | B | B | B | B | B | B | B | C | C | | | | | | |
| Level of Service (LOS) | B | B | B | B | B | B | B | B | C | C | | | | | | |
| Approach Delay, s/veh / LOS | 15.0 | B | 16.4 | B | 24.6 | B | 23.1 | C | | | | | | | | |
| Intersection Delay, s/veh / LOS | 19.7 B | | | | | | | | | | | | | | | |

| Multimodal Results | | EB | | WB | | NB | | SB | |
|----------------------------|--|----|--|----|--|----|--|----|--|
| Pedestrian LOS Score / LOS | | | | | | | | | |
| Bicycle LOS Score / LOS | | | | | | | | | |

DESIGN YEAR 2039 'NO-BUILD' CONDITIONS

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--|----------------------------|---------------------|
| Analyst | MSS | Intersection | Blossom Park Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Blossom Park Avenue |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'No-Build' Conditions | | |



| Vehicle Volumes and Adjustments | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|---------------------------------|-----------|-----|---|-----------|-----|----|------------|---|----|------------|---|----|
| | U | L | T | U | L | T | U | L | T | U | L | T |
| Approach | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Priority | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| Number of Lanes | L | | | L | | | L | | | L | | |
| Configuration | TR | | | L | | | TR | | | L | | |
| Volume (veh/h) | 24 | 382 | 5 | 7 | 406 | 11 | 6 | 4 | 10 | 11 | 4 | 25 |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | 3 | 3 | 3 | 3 | 3 |
| Proportion Time Blocked | | | | | | | | | | | | |
| Percent Grade (%) | 0 | | | | | | | | | | | |
| Right Turn Channelized | Undivided | | | | | | | | | | | |
| Median Type Storage | Undivided | | | | | | | | | | | |

| Critical and Follow-up Headways | | | | | | | | | | | | |
|---------------------------------|------|--|--|--|--|--|--|--|--|--|--|--|
| Base Critical Headway (sec) | 4.1 | | | | | | | | | | | |
| Critical Headway (sec) | 4.13 | | | | | | | | | | | |
| Base Follow-Up Headway (sec) | 2.2 | | | | | | | | | | | |
| Follow-Up Headway (sec) | 2.23 | | | | | | | | | | | |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | |
|---|------|--|--|--|--|--|--|--|--|--|--|--|
| Flow Rate, v (veh/h) | 26 | | | | | | | | | | | |
| Capacity, c (veh/h) | 1102 | | | | | | | | | | | |
| v/c Ratio | 0.02 | | | | | | | | | | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.1 | | | | | | | | | | | |
| Control Delay (s/veh) | 8.3 | | | | | | | | | | | |
| Level of Service (LOS) | A | | | | | | | | | | | |
| Approach Delay (s/veh) | 0.5 | | | | | | | | | | | |
| Approach LOS | | | | | | | | | | | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--|----------------------------|---------------------|
| Analyst | MSS | Intersection | Blossom Park Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Blossom Park Avenue |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'No-Build' Conditions | | |



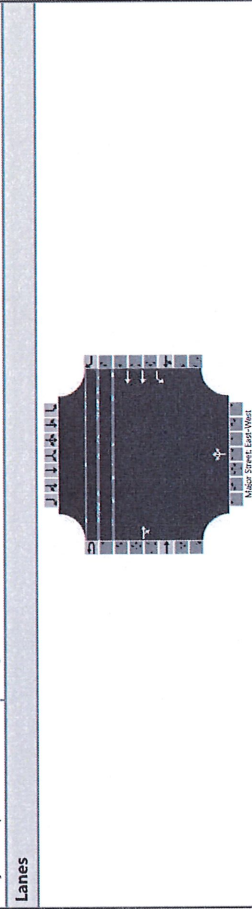
| Vehicle Volumes and Adjustments | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|---------------------------------|-----------|-----|---|-----------|-----|----|------------|---|----|------------|----|----|
| | U | L | T | U | L | T | U | L | T | U | L | T |
| Approach | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Priority | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| Number of Lanes | L | | | L | | | L | | | L | | |
| Configuration | TR | | | L | | | TR | | | L | | |
| Volume (veh/h) | 21 | 362 | 7 | 16 | 438 | 26 | 4 | 7 | 12 | 16 | 15 | 52 |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | 3 | 3 | 3 | 3 | 3 |
| Proportion Time Blocked | | | | | | | | | | | | |
| Percent Grade (%) | 0 | | | | | | | | | | | |
| Right Turn Channelized | Undivided | | | | | | | | | | | |
| Median Type Storage | Undivided | | | | | | | | | | | |

| Critical and Follow-up Headways | | | | | | | | | | | | |
|---------------------------------|------|--|--|--|--|--|--|--|--|--|--|--|
| Base Critical Headway (sec) | 4.1 | | | | | | | | | | | |
| Critical Headway (sec) | 4.13 | | | | | | | | | | | |
| Base Follow-Up Headway (sec) | 2.2 | | | | | | | | | | | |
| Follow-Up Headway (sec) | 2.23 | | | | | | | | | | | |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | |
|---|------|--|--|--|--|--|--|--|--|--|--|--|
| Flow Rate, v (veh/h) | 23 | | | | | | | | | | | |
| Capacity, c (veh/h) | 1055 | | | | | | | | | | | |
| v/c Ratio | 0.02 | | | | | | | | | | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.1 | | | | | | | | | | | |
| Control Delay (s/veh) | 8.5 | | | | | | | | | | | |
| Level of Service (LOS) | A | | | | | | | | | | | |
| Approach Delay (s/veh) | 0.5 | | | | | | | | | | | |
| Approach LOS | | | | | | | | | | | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--|----------------------------|------------------|
| Analyst | MSS | Intersection | Robinwood Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Robinwood Avenue |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'No-Build' Conditions | | |



| Vehicle Volumes and Adjustments | | | | | | | | | | | | | | |
|---------------------------------|---------------|---|---|-----------|----|---|------------|---|---|------------|---|----|----|----|
| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
| | U | L | T | U | L | T | U | L | T | U | L | T | R | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Priority | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Number of Lanes | TR | | | L | | | L | | | LTR | | | | |
| Configuration | 376 | | | 3 | | | 8 | | | 420 | | | | |
| Volume (veh/h) | 376 | | | 3 | | | 8 | | | 420 | | | | |
| Percent Heavy Vehicles (%) | 0 | | | 0 | | | 0 | | | 0 | | | | |
| Proportion Time Blocked | 0 | | | 0 | | | 0 | | | 0 | | | | |
| Percent Grade (%) | 0 | | | | | | | | | | | | | |
| Right Turn Channelized | Left Only | | | | | | | | | | | | | |
| Median Type Storage | Left Only 1 | | | | | | | | | | | | | |

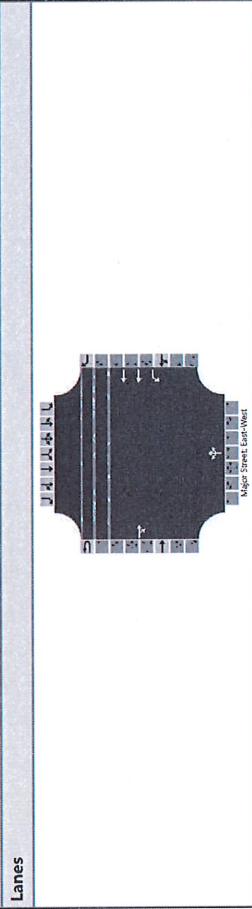
| Critical and Follow-up Headways | | | | | | | | | | | | | | | |
|---------------------------------|------|--|--|------|--|--|------|--|--|------|--|--|------|--|--|
| Base Critical Headway (sec) | 4.1 | | | 4.1 | | | 7.5 | | | 6.5 | | | 6.9 | | |
| Critical Headway (sec) | 4.16 | | | 4.16 | | | 6.86 | | | 6.56 | | | 6.96 | | |
| Base Follow-Up Headway (sec) | 2.2 | | | 2.2 | | | 3.5 | | | 4.0 | | | 3.3 | | |
| Follow-Up Headway (sec) | 2.23 | | | 2.23 | | | 3.53 | | | 4.03 | | | 3.33 | | |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | | | | |
|---|------|--|--|------|--|--|------|--|--|------|--|--|------|---|--|
| Flow Rate, v (veh/h) | 9 | | | 9 | | | 79 | | | 79 | | | 79 | | |
| Capacity, c (veh/h) | 1136 | | | 1136 | | | 557 | | | 557 | | | 557 | | |
| v/c Ratio | 0.01 | | | 0.01 | | | 0.14 | | | 0.14 | | | 0.14 | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | | | 0.0 | | | 0.5 | | | 0.5 | | | 0.5 | | |
| Control Delay (s/veh) | 8.2 | | | 8.2 | | | 12.5 | | | 12.5 | | | 12.5 | | |
| Level of Service (LOS) | A | | | A | | | B | | | B | | | B | | |
| Approach Delay (s/veh) | 0.2 | | | | | | | | | | | | | B | |
| Approach LOS | B | | | | | | | | | | | | | B | |

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 2 - Robinwood Avenue DY 2039 No Build Mid.xw

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--|----------------------------|------------------|
| Analyst | MSS | Intersection | Robinwood Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Robinwood Avenue |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'No-Build' Conditions | | |



| Vehicle Volumes and Adjustments | | | | | | | | | | | | | | |
|---------------------------------|---------------|---|---|-----------|----|---|------------|---|---|------------|---|----|----|----|
| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
| | U | L | T | U | L | T | U | L | T | U | L | T | R | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Priority | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Number of Lanes | TR | | | L | | | L | | | LTR | | | | |
| Configuration | 375 | | | 3 | | | 15 | | | 480 | | | | |
| Volume (veh/h) | 375 | | | 3 | | | 15 | | | 480 | | | | |
| Percent Heavy Vehicles (%) | 0 | | | 0 | | | 0 | | | 0 | | | | |
| Proportion Time Blocked | 0 | | | 0 | | | 0 | | | 0 | | | | |
| Percent Grade (%) | 0 | | | | | | | | | | | | | |
| Right Turn Channelized | Left Only | | | | | | | | | | | | | |
| Median Type Storage | Left Only 1 | | | | | | | | | | | | | |

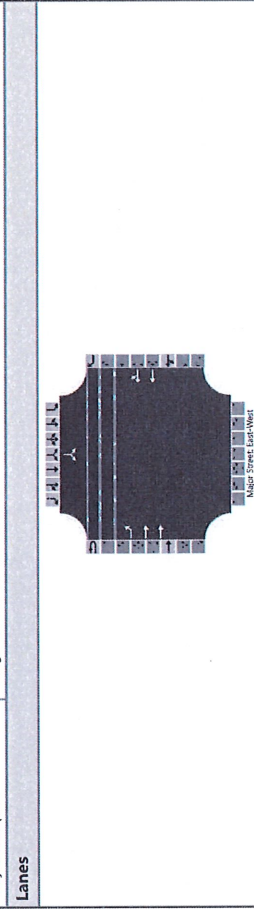
| Critical and Follow-up Headways | | | | | | | | | | | | | | | |
|---------------------------------|------|--|--|------|--|--|------|--|--|------|--|--|------|--|--|
| Base Critical Headway (sec) | 4.1 | | | 4.1 | | | 7.5 | | | 6.5 | | | 6.9 | | |
| Critical Headway (sec) | 4.16 | | | 4.16 | | | 6.86 | | | 6.56 | | | 6.96 | | |
| Base Follow-Up Headway (sec) | 2.2 | | | 2.2 | | | 3.5 | | | 4.0 | | | 3.3 | | |
| Follow-Up Headway (sec) | 2.23 | | | 2.23 | | | 3.53 | | | 4.03 | | | 3.33 | | |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | | | | |
|---|------|--|--|------|--|--|------|--|--|------|--|--|------|---|--|
| Flow Rate, v (veh/h) | 16 | | | 16 | | | 52 | | | 52 | | | 52 | | |
| Capacity, c (veh/h) | 1137 | | | 1137 | | | 547 | | | 547 | | | 547 | | |
| v/c Ratio | 0.01 | | | 0.01 | | | 0.10 | | | 0.10 | | | 0.10 | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | | | 0.0 | | | 0.3 | | | 0.3 | | | 0.3 | | |
| Control Delay (s/veh) | 8.2 | | | 8.2 | | | 12.3 | | | 12.3 | | | 12.3 | | |
| Level of Service (LOS) | A | | | A | | | B | | | B | | | B | | |
| Approach Delay (s/veh) | 0.2 | | | | | | | | | | | | | B | |
| Approach LOS | B | | | | | | | | | | | | | B | |

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 2 - Robinwood Avenue DY 2039 No Build PM.xw

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--|----------------------------|-------------------|
| Analyst | MSS | Intersection | Giant Eagle Drive |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Giant Eagle Drive |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'No-Build' Conditions | | |



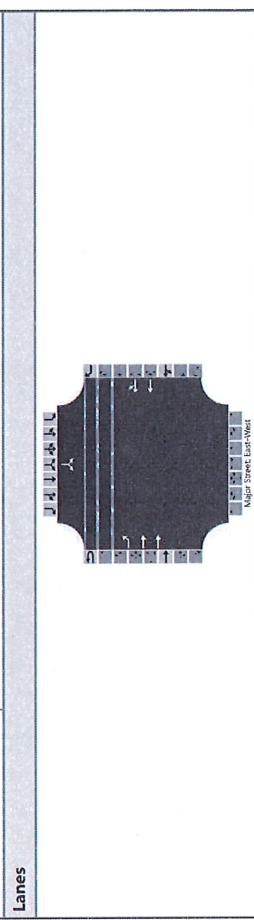
| Vehicle Volumes and Adjustments | | Eastbound | | Westbound | | Northbound | | Southbound | | | | | | | |
|---------------------------------|--|-----------|---|-----------|----|------------|---|------------|---|---|---|----|----|----|----|
| Approach | | U | L | T | R | U | L | T | R | U | L | T | R | | |
| Movement | | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Priority | | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| Number of Lanes | | L | T | T | TR | | | | | | | LR | | | |
| Configuration | | 0 | 7 | 426 | | 425 | 0 | | | 2 | | | 5 | | |
| Volume (veh/h) | | 3 | 3 | | | | | | | 3 | | 3 | 3 | | |
| Percent Heavy Vehicles (%) | | | | | | | | | | | | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | | |
| Median Type Storage | | Left Only | | | | | | | | | | | | | |

| Critical and Follow-up Headways | | Eastbound | | Westbound | | Northbound | | Southbound | |
|---------------------------------|--|-----------|--|-----------|--|------------|--|------------|------|
| Base Critical Headway (sec) | | 4.1 | | | | | | 7.5 | 6.9 |
| Critical Headway (sec) | | 4.16 | | | | | | 6.86 | 6.96 |
| Base Follow-Up Headway (sec) | | 2.2 | | | | | | 3.5 | 3.3 |
| Follow-Up Headway (sec) | | 2.23 | | | | | | 3.53 | 3.33 |

| Delay, Queue Length, and Level of Service | | Eastbound | | Westbound | | Northbound | | Southbound | |
|---|--|-----------|--|-----------|--|------------|--|------------|------|
| Flow Rate, v (veh/h) | | 8 | | | | | | | |
| Capacity, c (veh/h) | | 1088 | | | | | | 649 | B |
| v/c Ratio | | 0.01 | | | | | | 0.01 | 0.01 |
| 95% Queue Length, Q ₉₅ (veh) | | 0.0 | | | | | | 0.0 | 0.0 |
| Control Delay (s/veh) | | 8.3 | | | | | | 10.6 | 10.6 |
| Level of Service (LOS) | | A | | | | | | B | B |
| Approach Delay (s/veh) | | 0.1 | | | | | | 10.6 | |
| Approach LOS | | | | | | | | B | B |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--|----------------------------|-------------------|
| Analyst | MSS | Intersection | Giant Eagle Drive |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Giant Eagle Drive |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'No-Build' Conditions | | |



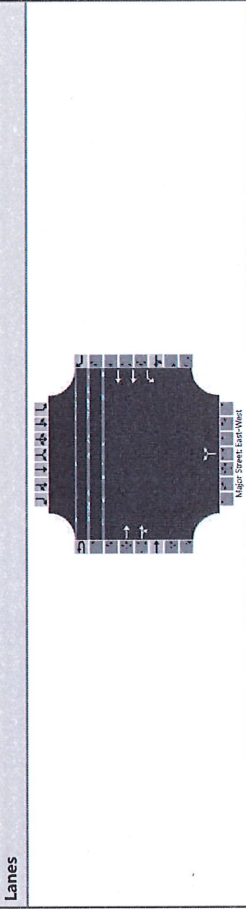
| Vehicle Volumes and Adjustments | | Eastbound | | Westbound | | Northbound | | Southbound | | | | | | | |
|---------------------------------|--|-----------|---|-----------|----|------------|---|------------|---|---|---|----|----|----|----|
| Approach | | U | L | T | R | U | L | T | R | U | L | T | R | | |
| Movement | | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Priority | | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| Number of Lanes | | L | T | T | TR | | | | | | | LR | | | |
| Configuration | | 0 | 6 | 402 | | 487 | 3 | | | 1 | | | 3 | | |
| Volume (veh/h) | | 3 | 3 | | | | | | | 3 | | 3 | 3 | | |
| Percent Heavy Vehicles (%) | | | | | | | | | | | | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | | |
| Median Type Storage | | Left Only | | | | | | | | | | | | | |

| Critical and Follow-up Headways | | Eastbound | | Westbound | | Northbound | | Southbound | |
|---------------------------------|--|-----------|--|-----------|--|------------|--|------------|------|
| Base Critical Headway (sec) | | 4.1 | | | | | | 7.5 | 6.9 |
| Critical Headway (sec) | | 4.16 | | | | | | 6.86 | 6.96 |
| Base Follow-Up Headway (sec) | | 2.2 | | | | | | 3.5 | 3.3 |
| Follow-Up Headway (sec) | | 2.23 | | | | | | 3.53 | 3.33 |

| Delay, Queue Length, and Level of Service | | Eastbound | | Westbound | | Northbound | | Southbound | |
|---|--|-----------|--|-----------|--|------------|--|------------|------|
| Flow Rate, v (veh/h) | | 7 | | | | | | | |
| Capacity, c (veh/h) | | 1024 | | | | | | 626 | B |
| v/c Ratio | | 0.01 | | | | | | 0.01 | 0.01 |
| 95% Queue Length, Q ₉₅ (veh) | | 0.0 | | | | | | 0.0 | 0.0 |
| Control Delay (s/veh) | | 8.5 | | | | | | 10.8 | 10.8 |
| Level of Service (LOS) | | A | | | | | | B | B |
| Approach Delay (s/veh) | | 0.1 | | | | | | 10.8 | |
| Approach LOS | | | | | | | | B | B |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--|----------------------------|------------------|
| Analyst | MSS | Intersection | Parkhaven Row |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Parkhaven Row |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'No-Build' Conditions | | |



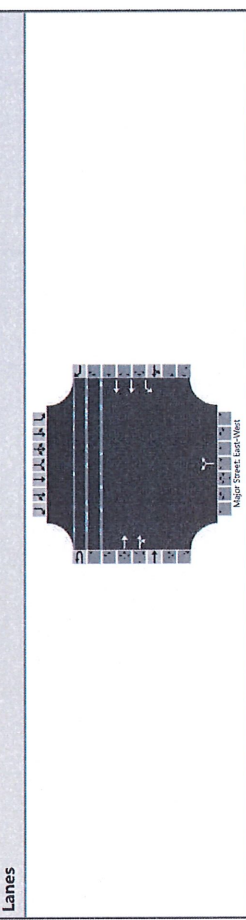
| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|
| | U | L | T | U | L | T | U | L | T | U | L | T |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Priority | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 |
| Number of Lanes | T TR | | | L T | | | LR | | | LR | | |
| Configuration | 431 | | | 3 0 1 | | | 405 | | | 10 | | |
| Volume (veh/h) | 431 | | | 3 0 1 | | | 405 | | | 10 | | |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | | | 3 | | |
| Proportion Time Blocked | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | |
| Median Type Storage | Left Only | | | Left Only | | | Left Only | | | 1 | | |

| Critical and Follow-up Headways | | | | | | | | | | | | |
|---------------------------------|--|--|--|------|--|--|------|--|--|------|--|--|
| Base Critical Headway (sec) | | | | 4.1 | | | 7.5 | | | 6.9 | | |
| Critical Headway (sec) | | | | 4.16 | | | 6.86 | | | 6.96 | | |
| Base Follow-Up Headway (sec) | | | | 2.2 | | | 3.5 | | | 3.3 | | |
| Follow-Up Headway (sec) | | | | 2.23 | | | 3.53 | | | 3.33 | | |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | |
|---|--|--|--|------|--|--|------|--|--|------|--|--|
| Flow Rate, v (veh/h) | | | | 1 | | | 33 | | | 33 | | |
| Capacity, c (veh/h) | | | | 1079 | | | 541 | | | 541 | | |
| v/c Ratio | | | | 0.00 | | | 0.06 | | | 0.06 | | |
| 95% Queue Length, Q ₉₅ (veh) | | | | 0.0 | | | 0.2 | | | 0.2 | | |
| Control Delay (s/veh) | | | | 8.3 | | | 12.1 | | | 12.1 | | |
| Level of Service (LOS) | | | | A | | | B | | | B | | |
| Approach Delay (s/veh) | | | | 0.0 | | | 12.1 | | | 12.1 | | |
| Approach LOS | | | | B | | | B | | | B | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--|----------------------------|------------------|
| Analyst | MSS | Intersection | Parkhaven Row |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Parkhaven Row |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'No-Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|
| | U | L | T | U | L | T | U | L | T | U | L | T |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Priority | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 |
| Number of Lanes | T TR | | | L T | | | LR | | | LR | | |
| Configuration | 400 | | | 6 0 7 | | | 457 | | | 24 | | |
| Volume (veh/h) | 400 | | | 6 0 7 | | | 457 | | | 24 | | |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | | | 3 | | |
| Proportion Time Blocked | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | |
| Median Type Storage | Left Only | | | Left Only | | | Left Only | | | 1 | | |

| Critical and Follow-up Headways | | | | | | | | | | | | |
|---------------------------------|--|--|--|------|--|--|------|--|--|------|--|--|
| Base Critical Headway (sec) | | | | 4.1 | | | 7.5 | | | 6.9 | | |
| Critical Headway (sec) | | | | 4.16 | | | 6.86 | | | 6.96 | | |
| Base Follow-Up Headway (sec) | | | | 2.2 | | | 3.5 | | | 3.3 | | |
| Follow-Up Headway (sec) | | | | 2.23 | | | 3.53 | | | 3.33 | | |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | |
|---|--|--|--|------|--|--|------|--|--|------|--|--|
| Flow Rate, v (veh/h) | | | | 8 | | | 47 | | | 47 | | |
| Capacity, c (veh/h) | | | | 1108 | | | 572 | | | 572 | | |
| v/c Ratio | | | | 0.01 | | | 0.08 | | | 0.08 | | |
| 95% Queue Length, Q ₉₅ (veh) | | | | 0.0 | | | 0.3 | | | 0.3 | | |
| Control Delay (s/veh) | | | | 8.3 | | | 11.9 | | | 11.9 | | |
| Level of Service (LOS) | | | | A | | | B | | | B | | |
| Approach Delay (s/veh) | | | | 0.1 | | | 11.9 | | | 11.9 | | |
| Approach LOS | | | | B | | | B | | | B | | |

HCS7 Signalized Intersection Results Summary

| | | | |
|----------------------------|-----------------------------|---------------------------------|---|
| General Information | | Intersection Information | |
| Agency | GPD Group | Duration, h | 0.25 |
| Analyst | MSS | Analysis Date | 10/4/2018 |
| Jurisdiction | City of Lakewood | Time Period | Mid-day Peak |
| Urban Street | Detroit Avenue | Analysis Year | 2039 |
| Intersection | Bunts Road | File Name | 5 - Bunts Road DY 2039 No-Build Mid.xus |
| Project Description | Design Year 2039 'No-Build' | | |

| | | | | | | | | | | | | |
|---------------------------|----|-----------|----|-----------|-----|-----------|----|-----|----|----|-----|----|
| Demand Information | | WB | | NB | | SB | | | | | | |
| Approach Movement | L | T | R | L | T | R | L | T | R | | | |
| Demand (v), veh/h | 49 | 246 | 72 | 94 | 264 | 36 | 80 | 113 | 54 | 34 | 120 | 34 |

| | | | | | | | | | |
|---------------------------|-------|-----------------|-----|-----------|-----|-----------|-----|-----------|-----|
| Signal Information | | EB | | WB | | NB | | SB | |
| Cycle, s | 110.0 | Reference Phase | 2 | | | | | | |
| Offset, s | 0 | Reference Point | End | | | | | | |
| Uncoordinated | Yes | Simult. Gap | EW | On | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Force Mode | Fixed | Simult. Gap | N/S | On | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | | | | | | | | | | | | | | |
|---|--|------------|------|------------|------|------------|------|------------|------|------------|------|------------|----|------------|--|------------|--|
| Timer Results | | EBL | | EBT | | WBL | | WBT | | NBL | | NBT | | SBL | | SBT | |
| Assigned Phase | | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 | | | | |
| Case Number | | 53 | 267 | 78 | 102 | 287 | 39 | 87 | 182 | | | | | | | | |
| Phase Duration, s | | 1110 | 1900 | 1610 | 1130 | 1900 | 1610 | 1237 | 1795 | 1222 | 1827 | | | | | | |
| Change Period, (Y+R+G), s | | 3.6 | 9.8 | 3.1 | 6.9 | 10.7 | 1.5 | 5.0 | 6.7 | 2.1 | 6.1 | | | | | | |
| Max Allow Headway (MAH), s | | 14.2 | 9.8 | 3.1 | 16.8 | 10.7 | 1.5 | 11.0 | 6.7 | 8.8 | 6.1 | | | | | | |
| Queue Clearance Time (g _c), s | | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | | | | | | |
| Green Extension Time (g _e), s | | 16.2 | 16.2 | 16.2 | 16.2 | 16.2 | 16.2 | 16.2 | 16.2 | 16.2 | 16.2 | | | | | | |
| Phase Call Probability | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| Max Out Probability | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | |

| | | | | | | | | | | |
|---|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|---|
| Movement Group Results | | EB | | WB | | NB | | SB | | |
| Approach Movement | L | T | R | L | T | R | L | T | R | |
| Assigned Movement | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | |
| Adjusted Flow Rate (v), veh/h | 53 | 267 | 78 | 102 | 287 | 39 | 87 | 182 | 37 | |
| Adjusted Saturation Flow Rate (s), veh/h/in | 1110 | 1900 | 1610 | 1130 | 1900 | 1610 | 1237 | 1795 | 1222 | |
| Queue Service Time (g _s), s | 3.6 | 9.8 | 3.1 | 6.9 | 10.7 | 1.5 | 5.0 | 6.7 | 2.1 | |
| Cycle Queue Clearance Time (g _c), s | 14.2 | 9.8 | 3.1 | 16.8 | 10.7 | 1.5 | 11.0 | 6.7 | 8.8 | |
| Green Ratio (g/C) | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | |
| Capacity (c), veh/h | 462 | 864 | 732 | 478 | 864 | 732 | 560 | 816 | 546 | |
| Volume-to-Capacity Ratio (X) | 0.115 | 0.310 | 0.107 | 0.214 | 0.332 | 0.053 | 0.155 | 0.222 | 0.068 | |
| Back of Queue (Q), ft/in (95 th percentile) | 41.8 | 190.1 | 50.3 | 82.9 | 202.8 | 24.6 | 64.5 | 123.5 | 26.6 | |
| Queue Storage Ratio (RQ) (95 th percentile) | 1.7 | 7.6 | 2.0 | 3.3 | 8.1 | 1.0 | 2.6 | 4.9 | 1.1 | |
| Uniform Delay (d ₁), s/veh | 23.8 | 19.0 | 17.2 | 24.4 | 19.3 | 16.8 | 21.3 | 18.2 | 20.9 | |
| Incremental Delay (d ₂), s/veh | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | |
| Initial Queue Delay (d ₃), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Control Delay (d'), s/veh | 23.9 | 19.1 | 17.2 | 24.4 | 19.4 | 16.8 | 21.4 | 18.3 | 20.9 | |
| Level of Service (LOS) | C | B | B | C | B | B | C | B | C | |
| Approach Delay, s/veh / LOS | 19.4 | B | 20.3 | C | 19.3 | B | 18.6 | B | | |
| Intersection Delay, s/veh / LOS | 19.5 | | | | | | | | | B |

| | | | | | | | | | |
|----------------------------|--|-----------|--|-----------|--|-----------|--|-----------|--|
| Multimodal Results | | EB | | WB | | NB | | SB | |
| Pedestrian LOS Score / LOS | | | | | | | | | |
| Bicycle LOS Score / LOS | | | | | | | | | |

HCS7 Signalized Intersection Results Summary

| | | | |
|----------------------------|-----------------------------|---------------------------------|--|
| General Information | | Intersection Information | |
| Agency | GPD Group | Duration, h | 0.25 |
| Analyst | MSS | Analysis Date | 10/4/2018 |
| Jurisdiction | City of Lakewood | Time Period | PM Peak |
| Urban Street | Detroit Avenue | Analysis Year | 2039 |
| Intersection | Bunts Road | File Name | 5 - Bunts Road DY 2039 No-Build PM.xus |
| Project Description | Design Year 2039 'No-Build' | | |

| | | | | | | | | | |
|---------------------------|----|-----------|----|-----------|-----|-----------|-----|-----------|----|
| Demand Information | | EB | | WB | | NB | | SB | |
| Approach Movement | L | T | R | L | T | R | L | T | R |
| Demand (v), veh/h | 56 | 248 | 66 | 163 | 311 | 53 | 124 | 274 | 78 |

| | | | | | | | | | | | | | | | | | |
|---------------------------|-------|-----------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|------------|--|------------|--|------------|--|
| Signal Information | | EBL | | EBT | | WBL | | WBT | | NBL | | NBT | | SBL | | SBT | |
| Cycle, s | 100.0 | Reference Phase | 2 | | | | | | | | | | | | | | |
| Offset, s | 0 | Reference Point | End | | | | | | | | | | | | | | |
| Uncoordinated | Yes | Simult. Gap | EW | On | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | |
| Force Mode | Fixed | Simult. Gap | N/S | On | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | |

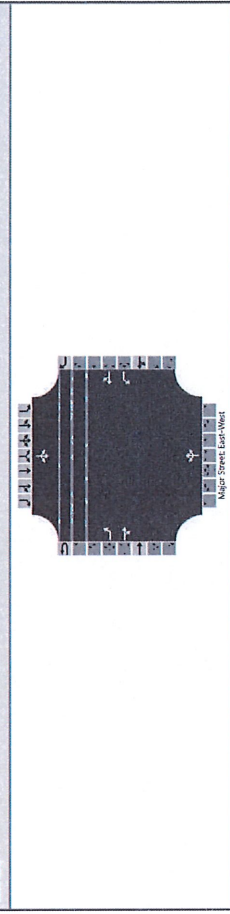
| | | | | | | | | | | | | | | | | | |
|---|--|------------|------|------------|------|------------|------|------------|------|------------|------|------------|----|------------|--|------------|--|
| Timer Results | | EBL | | EBT | | WBL | | WBT | | NBL | | NBT | | SBL | | SBT | |
| Assigned Phase | | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 | | | | |
| Case Number | | 61 | 270 | 72 | 177 | 338 | 58 | 135 | 383 | | | | | | | | |
| Phase Duration, s | | 1059 | 1900 | 1610 | 1127 | 1900 | 1610 | 1068 | 1827 | 1016 | 1851 | | | | | | |
| Change Period, (Y+R+G), s | | 3.7 | 8.3 | 2.3 | 10.9 | 10.8 | 1.9 | 10.5 | 15.9 | 4.7 | 12.9 | | | | | | |
| Max Allow Headway (MAH), s | | 14.5 | 8.3 | 2.3 | 19.1 | 10.8 | 1.9 | 23.5 | 15.9 | 20.6 | 12.9 | | | | | | |
| Queue Clearance Time (g _c), s | | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | | | | | | |
| Green Extension Time (g _e), s | | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | | | | | | |
| Phase Call Probability | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | |
| Max Out Probability | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | |

| | | | | | | | | | | |
|---|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|---|
| Movement Group Results | | EB | | WB | | NB | | SB | | |
| Approach Movement | L | T | R | L | T | R | L | T | R | |
| Assigned Movement | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | |
| Adjusted Flow Rate (v), veh/h | 61 | 270 | 72 | 177 | 338 | 58 | 135 | 383 | 60 | |
| Adjusted Saturation Flow Rate (s), veh/h/in | 1059 | 1900 | 1610 | 1127 | 1900 | 1610 | 1068 | 1827 | 1016 | |
| Queue Service Time (g _s), s | 3.7 | 8.3 | 2.3 | 10.9 | 10.8 | 1.9 | 10.5 | 15.9 | 4.7 | |
| Cycle Queue Clearance Time (g _c), s | 14.5 | 8.3 | 2.3 | 19.1 | 10.8 | 1.9 | 23.5 | 15.9 | 20.6 | |
| Green Ratio (g/C) | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | |
| Capacity (c), veh/h | 487 | 950 | 805 | 542 | 950 | 805 | 361 | 731 | 317 | |
| Volume-to-Capacity Ratio (X) | 0.125 | 0.284 | 0.089 | 0.327 | 0.356 | 0.072 | 0.373 | 0.524 | 0.189 | |
| Back of Queue (Q), ft/in (95 th percentile) | 40.4 | 153 | 36.6 | 124.5 | 197.6 | 29.1 | 120.2 | 271.2 | 51.8 | |
| Queue Storage Ratio (RQ) (95 th percentile) | 1.6 | 6.1 | 1.5 | 5.0 | 7.9 | 1.2 | 4.8 | 10.8 | 2.1 | |
| Uniform Delay (d ₁), s/veh | 0.22 | 0.00 | 0.29 | 1.00 | 0.00 | 0.48 | 0.00 | 0.00 | 0.00 | |
| Incremental Delay (d ₂), s/veh | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.2 | 0.3 | 0.1 | |
| Initial Queue Delay (d ₃), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Control Delay (d'), s/veh | 19.7 | 14.6 | 13.1 | 20.3 | 15.3 | 13.0 | 30.7 | 23.1 | 30.7 | |
| Level of Service (LOS) | B | B | B | C | B | B | C | C | C | |
| Approach Delay, s/veh / LOS | 15.1 | B | 16.6 | B | 25.1 | C | 23.4 | C | | |
| Intersection Delay, s/veh / LOS | 20.0 | | | | | | | | | C |

| | | | | | | | | | |
|----------------------------|--|-----------|--|-----------|--|-----------|--|-----------|--|
| Multimodal Results | | EB | | WB | | NB | | SB | |
| Pedestrian LOS Score / LOS | | | | | | | | | |
| Bicycle LOS Score / LOS | | | | | | | | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|---------------------|
| Analyst | MSS | Intersection | Blossom Park Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Blossom Park Avenue |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|-----|---|-----------|-----|----|------------|---|----|------------|---|----|----|----|
| | U | L | T | U | L | T | U | L | T | U | L | T | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Number of Lanes | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Configuration | L | | | TR | | | L | | | TR | | | | |
| Volume (veh/h) | 23 | 389 | 5 | 7 | 411 | 15 | 6 | 4 | 10 | 15 | 4 | 24 | | |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | 3 | 3 | 3 | 3 | 3 | | |
| Proportion Time Blocked | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | |
| Median Type Storage | Undivided | | | | | | | | | | | | | |

| Critical and Follow-up Headways | | | | | | | | | | | | | | |
|---------------------------------|------|--|--|--|------|--|--|--|------|------|------|------|------|------|
| Base Critical Headway (sec) | 4.1 | | | | 4.1 | | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Headway (sec) | 4.13 | | | | 4.13 | | | | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Base Follow-Up Headway (sec) | 2.2 | | | | 2.2 | | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | | | | 2.23 | | | | 3.53 | 4.03 | 3.33 | 3.53 | 4.03 | 3.33 |

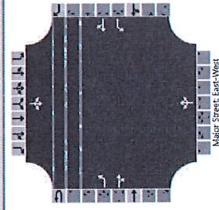
| Delay, Queue Length, and Level of Service | | | | | | | | | | | | | | |
|---|------|--|--|--|------|--|--|--|------|--|--|--|--|------|
| Flow Rate, v (veh/h) | 25 | | | | 8 | | | | | | | | | 47 |
| Capacity, c (veh/h) | 1093 | | | | 1126 | | | | | | | | | 352 |
| v/c Ratio | 0.02 | | | | 0.01 | | | | | | | | | 0.13 |
| 95% Queue Length, Q ₉₅ (veh) | 0.1 | | | | 0.0 | | | | | | | | | 0.5 |
| Control Delay (s/veh) | 8.4 | | | | 8.2 | | | | | | | | | 16.8 |
| Level of Service (LOS) | A | | | | A | | | | | | | | | C |
| Approach Delay (s/veh) | 0.5 | | | | 0.1 | | | | 16.5 | | | | | 16.8 |
| Approach LOS | | | | | | | | | C | | | | | C |

OPENING YEAR 2019 'BUILD' CONDITIONS

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|---------------------|
| Analyst | MSS | Intersection | Blossom Park Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Blossom Park Avenue |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'Build' Conditions | | |

Lanes



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|-----|---|-----------|-----|----|------------|---|----|------------|----|----|----|----|
| | U | L | T | U | L | T | U | L | T | U | L | T | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Priority | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| Number of Lanes | L | | | TR | | | L | | | L | | | | |
| Configuration | L | | | TR | | | L | | | L | | | | |
| Volume (veh/h) | 20 | 362 | 7 | 15 | 434 | 28 | 4 | 7 | 12 | 18 | 14 | 50 | | |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | 3 | 3 | 3 | 3 | 3 | | |
| Proportion Time Blocked | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | |
| Median Type Storage | Undivided | | | | | | | | | | | | | |

Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | | | | |
|------------------------------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Base Critical Headway (sec) | 4.1 | | | | | | | | | | | | | | | | | | |
| Critical Headway (sec) | 4.13 | | | | | | | | | | | | | | | | | | |
| Base Follow-Up Headway (sec) | 2.2 | | | | | | | | | | | | | | | | | | |
| Follow-Up Headway (sec) | 2.23 | | | | | | | | | | | | | | | | | | |

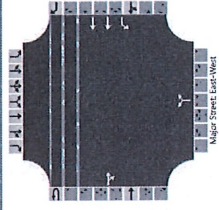
Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | | | | |
|---|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Flow Rate, v (veh/h) | 22 | | | | | | | | | | | | | | | | | | |
| Capacity, c (veh/h) | 1057 | | | | | | | | | | | | | | | | | | |
| v/c Ratio | 0.02 | | | | | | | | | | | | | | | | | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.1 | | | | | | | | | | | | | | | | | | |
| Control Delay (s/veh) | 8.5 | | | | | | | | | | | | | | | | | | |
| Level of Service (LOS) | A | | | | | | | | | | | | | | | | | | |
| Approach Delay (s/veh) | 0.4 | | | | | | | | | | | | | | | | | | |
| Approach LOS | | | | | | | | | | | | | | | | | | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Robinwood Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Robinwood Avenue |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'Build' Conditions | | |

Lanes



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|-----|---|-----------|-----|----|------------|----|---|------------|---|----|----|----|
| | U | L | T | U | L | T | U | L | T | U | L | T | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Priority | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| Number of Lanes | L | | | TR | | | L | | | L | | | | |
| Configuration | L | | | TR | | | L | | | L | | | | |
| Volume (veh/h) | 20 | 388 | 3 | 12 | 429 | 20 | 20 | 54 | 3 | 3 | 3 | 3 | | |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | 3 | 3 | 3 | 3 | 3 | | |
| Proportion Time Blocked | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | |
| Median Type Storage | Left Only | | | | | | | | | | | | | |

Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | | | | |
|------------------------------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Base Critical Headway (sec) | 4.1 | | | | | | | | | | | | | | | | | | |
| Critical Headway (sec) | 4.16 | | | | | | | | | | | | | | | | | | |
| Base Follow-Up Headway (sec) | 2.2 | | | | | | | | | | | | | | | | | | |
| Follow-Up Headway (sec) | 2.23 | | | | | | | | | | | | | | | | | | |

Delay, Queue Length, and Level of Service

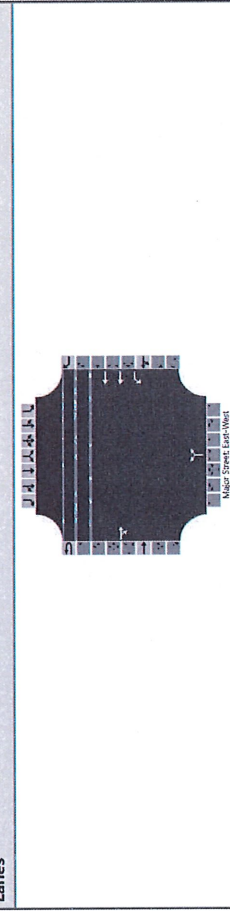
| | | | | | | | | | | | | | | | | | | | |
|---|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Flow Rate, v (veh/h) | 13 | | | | | | | | | | | | | | | | | | |
| Capacity, c (veh/h) | 1124 | | | | | | | | | | | | | | | | | | |
| v/c Ratio | 0.01 | | | | | | | | | | | | | | | | | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | | | | | | | | | | | | | | | | | | |
| Control Delay (s/veh) | 8.2 | | | | | | | | | | | | | | | | | | |
| Level of Service (LOS) | A | | | | | | | | | | | | | | | | | | |
| Approach Delay (s/veh) | 0.2 | | | | | | | | | | | | | | | | | | |
| Approach LOS | | | | | | | | | | | | | | | | | | | |

HCS7 Two-Way Stop-Control Report

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Robinwood Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Robinwood Avenue |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'Build' Conditions | | |

Lanes



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|----|----|--|
| | U | L | T | U | L | T | U | L | T | U | L | T | | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| Priority | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | |
| Number of Lanes | TR | | | L | | | T | | | LR | | | | | |
| Configuration | 3 | | | 16 | | | 478 | | | 14 | | | 35 | | |
| Volume (veh/h) | 378 | | | 3 | | | 3 | | | 3 | | | 3 | | |
| Percent Heavy Vehicles (%) | | | | | | | | | | | | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | | |
| Median Type Storage | | | | | | | Left Only | | | 1 | | | | | |

Critical and Follow-up Headways

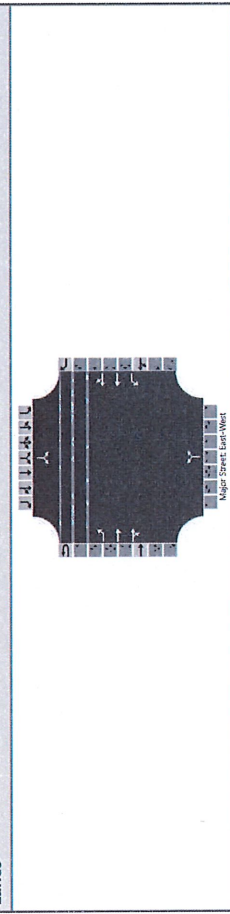
| | | | |
|------------------------------|------|------|------|
| Base Critical Headway (sec) | 4.1 | 7.5 | 6.9 |
| Critical Headway (sec) | 4.16 | 6.86 | 6.96 |
| Base Follow-Up Headway (sec) | 2.2 | 3.5 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | 3.53 | 3.33 |

Delay, Queue Length, and Level of Service

| | | | |
|---|------|------|--|
| Flow Rate, v (veh/h) | 17 | 53 | |
| Capacity, c (veh/h) | 1134 | 548 | |
| v/c Ratio | 0.02 | 0.10 | |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.3 | |
| Control Delay (s/veh) | 8.2 | 12.3 | |
| Level of Service (LOS) | A | B | |
| Approach Delay (s/veh) | 0.3 | 12.3 | |
| Approach LOS | B | B | |

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|-------------------|
| Analyst | MSS | Intersection | Giant Eagle Drive |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Giant Eagle Drive |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'Build' Conditions | | |

Lanes



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|-----|----|--|
| | U | L | T | U | L | T | U | L | T | U | L | T | | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| Priority | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | |
| Number of Lanes | L | | | T | | | TR | | | LR | | | | | |
| Configuration | 3 | | | 7 | | | 410 | | | 30 | | | 426 | | |
| Volume (veh/h) | 3 | | | 3 | | | 3 | | | 3 | | | 3 | | |
| Percent Heavy Vehicles (%) | | | | | | | | | | | | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | | |
| Median Type Storage | | | | | | | Left Only | | | 1 | | | | | |

Critical and Follow-up Headways

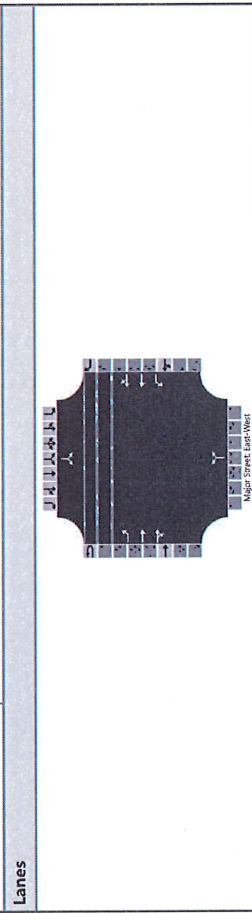
| | | | |
|------------------------------|------|------|------|
| Base Critical Headway (sec) | 4.1 | 7.5 | 6.9 |
| Critical Headway (sec) | 4.16 | 6.86 | 6.96 |
| Base Follow-Up Headway (sec) | 2.2 | 3.5 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | 3.53 | 3.33 |

Delay, Queue Length, and Level of Service

| | | | |
|---|------|------|------|
| Flow Rate, v (veh/h) | 8 | 52 | 37 |
| Capacity, c (veh/h) | 1087 | 1073 | 557 |
| v/c Ratio | 0.01 | 0.05 | 0.07 |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.2 | 0.2 |
| Control Delay (s/veh) | 8.3 | 8.5 | 11.9 |
| Level of Service (LOS) | A | A | B |
| Approach Delay (s/veh) | 0.1 | 0.9 | 11.9 |
| Approach LOS | B | B | B |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|-------------------|
| Analyst | MSS | Intersection | Giant Eagle Drive |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Giant Eagle Drive |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'Build' Conditions | | |



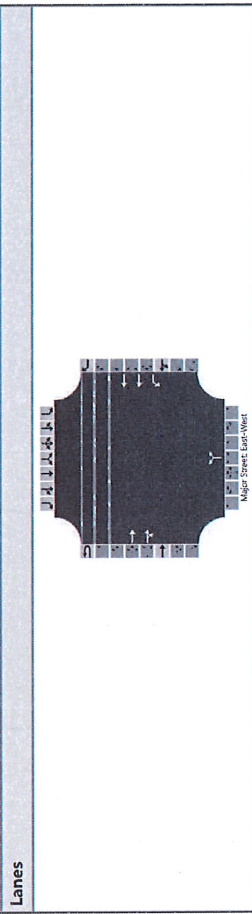
| Vehicle Volumes and Adjustments | | | | | | | | | | | | | | | | |
|---------------------------------|-----------|---|-----|----|-----------|----|-----|---|------------|----|---|---|------------|----|----|---|
| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
| | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | | 10 | 11 | 12 | |
| Priority | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | | 0 | 1 | 0 | |
| Number of Lanes | L | T | TR | | L | T | TR | | LR | | | | LR | | | |
| Configuration | 0 | 6 | 387 | 20 | 0 | 31 | 479 | 3 | 7 | 14 | | | 1 | 1 | 3 | |
| Volume (veh/h) | 3 | 3 | | | 3 | 3 | | | 3 | 3 | | | 3 | 3 | | |
| Percent Heavy Vehicles (%) | | | | | | | | | | | | | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | | | |
| Right Turn Channelized | Left Only | | | | | | | | | | | | | 1 | | |
| Median Type Storage | Left Only | | | | | | | | | | | | | 1 | | |

| Critical and Follow-up Headways | | | | | | | | | | | | | | | | |
|---------------------------------|------|--|--|--|------|--|--|--|------|--|--|--|------|--|--|--|
| Base Critical Headway (sec) | 4.1 | | | | 4.1 | | | | 7.5 | | | | 6.9 | | | |
| Critical Headway (sec) | 4.16 | | | | 4.16 | | | | 7.56 | | | | 6.96 | | | |
| Base Follow-Up Headway (sec) | 2.2 | | | | 2.2 | | | | 3.5 | | | | 3.3 | | | |
| Follow-Up Headway (sec) | 2.23 | | | | 2.23 | | | | 3.53 | | | | 3.33 | | | |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | | | | | |
|---|------|--|--|--|------|--|--|--|------|--|--|--|------|--|--|--|
| Flow Rate, v (veh/h) | 7 | | | | 34 | | | | 23 | | | | 4 | | | |
| Capacity, c (veh/h) | 1032 | | | | 1107 | | | | 589 | | | | 579 | | | |
| v/c Ratio | 0.01 | | | | 0.03 | | | | 0.04 | | | | 0.01 | | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | | | | 0.1 | | | | 0.1 | | | | 0.0 | | | |
| Control Delay (s/veh) | 8.5 | | | | 8.4 | | | | 11.4 | | | | 11.3 | | | |
| Level of Service (LOS) | A | | | | A | | | | B | | | | B | | | |
| Approach Delay (s/veh) | 0.1 | | | | 0.5 | | | | 11.4 | | | | 11.3 | | | |
| Approach LOS | | | | | | | | | B | | | | B | | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Parkhaven Row |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Parkhaven Row |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'Build' Conditions | | |



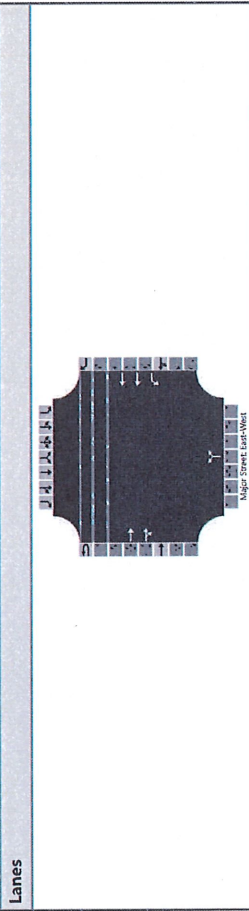
| Vehicle Volumes and Adjustments | | | | | | | | | | | | | | | | |
|---------------------------------|-----------|---|-----|----|-----------|----|-----|---|------------|----|---|---|------------|----|----|---|
| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
| | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | | 10 | 11 | 12 | |
| Priority | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | | 0 | 0 | 0 | |
| Number of Lanes | L | T | TR | | L | T | TR | | LR | | | | LR | | | |
| Configuration | 0 | 6 | 387 | 20 | 0 | 31 | 479 | 3 | 7 | 14 | | | 1 | 1 | 3 | |
| Volume (veh/h) | 3 | 3 | | | 3 | 3 | | | 3 | 3 | | | 3 | 3 | | |
| Percent Heavy Vehicles (%) | | | | | | | | | | | | | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | | | |
| Right Turn Channelized | Left Only | | | | | | | | | | | | | 1 | | |
| Median Type Storage | Left Only | | | | | | | | | | | | | 1 | | |

| Critical and Follow-up Headways | | | | | | | | | | | | | | | | |
|---------------------------------|------|--|--|--|------|--|--|--|------|--|--|--|------|--|--|--|
| Base Critical Headway (sec) | 4.1 | | | | 4.1 | | | | 7.5 | | | | 6.9 | | | |
| Critical Headway (sec) | 4.16 | | | | 4.16 | | | | 7.56 | | | | 6.96 | | | |
| Base Follow-Up Headway (sec) | 2.2 | | | | 2.2 | | | | 3.5 | | | | 3.3 | | | |
| Follow-Up Headway (sec) | 2.23 | | | | 2.23 | | | | 3.53 | | | | 3.33 | | | |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | | | | | |
|---|------|--|--|--|------|--|--|--|------|--|--|--|------|--|--|--|
| Flow Rate, v (veh/h) | 7 | | | | 34 | | | | 23 | | | | 4 | | | |
| Capacity, c (veh/h) | 1032 | | | | 1107 | | | | 589 | | | | 579 | | | |
| v/c Ratio | 0.01 | | | | 0.03 | | | | 0.04 | | | | 0.01 | | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | | | | 0.1 | | | | 0.1 | | | | 0.0 | | | |
| Control Delay (s/veh) | 8.5 | | | | 8.4 | | | | 11.4 | | | | 11.3 | | | |
| Level of Service (LOS) | A | | | | A | | | | B | | | | B | | | |
| Approach Delay (s/veh) | 0.1 | | | | 0.5 | | | | 11.4 | | | | 11.3 | | | |
| Approach LOS | | | | | | | | | B | | | | B | | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|------------------|
| Agency | MSS | Intersection | Parkhaven Row |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2019 | North/South Street | Parkhaven Row |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'Build' Conditions | | |



| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|----------------------------|-----------|---|---|----|-----------|----|----|---|------------|----|---|---|------------|----|---|---|
| | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Movement | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Priority | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of Lanes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Configuration | T | | | | L | | | | LR | | | | LR | | | |
| Volume (veh/h) | 399 | 6 | 0 | 12 | 470 | 34 | 38 | 3 | 34 | 38 | 3 | 3 | 34 | 38 | 3 | 3 |
| Percent Heavy Vehicles (%) | 0 | | | | | | | | | | | | | | | |
| Proportion Time Blocked | 0 | | | | | | | | | | | | | | | |
| Percent Grade (%) | 0 | | | | | | | | | | | | | | | |
| Right Turn Channelized | Left Only | | | | | | | | | | | | | | | |
| Median Type Storage | 1 | | | | | | | | | | | | | | | |

Critical and Follow-up Headways

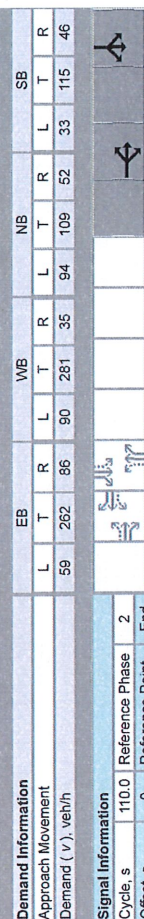
| | | | |
|------------------------------|------|------|------|
| Base Critical Headway (sec) | 4.1 | 7.5 | 6.9 |
| Critical Headway (sec) | 4.16 | 6.86 | 6.96 |
| Base Follow-up Headway (sec) | 2.2 | 3.5 | 3.3 |
| Follow-up Headway (sec) | 2.23 | 3.53 | 3.33 |

Delay, Queue Length, and Level of Service

| | | | |
|---|------|------|--|
| Flow Rate, v (veh/h) | 13 | 78 | |
| Capacity, c (veh/h) | 1109 | 591 | |
| v/c Ratio | 0.01 | 0.13 | |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.5 | |
| Control Delay (s/veh) | 8.3 | 12.0 | |
| Level of Service (LOS) | A | B | |
| Approach Delay (s/veh) | 12.0 | | |
| Approach LOS | B | | |

HCS7 Signalized Intersection Results Summary

| General Information | | Intersection Information | | | | | | | | | | | |
|---------------------|---------------------------|--------------------------------------|--|--|--|--|--|--|--|--|--|--|--|
| Agency | GPD Group | Duration, h | | | | | | | | | | | |
| Analyst | MSS | Area Type | | | | | | | | | | | |
| Jurisdiction | City of Lakewood | PHF | | | | | | | | | | | |
| Urban Street | Detroit Avenue | Analysis Period | | | | | | | | | | | |
| Intersection | Bunts Road | File Name | | | | | | | | | | | |
| Project Description | Opening Year 2019 'Build' | 5 - Bunts Road OY 2019 Build Mid.xus | | | | | | | | | | | |



| Signal Information | EB | | | | WB | | | | NB | | | | SB | | | |
|--------------------|-------|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | L | T | R | L | L | T | R | L | L | T | R | L | L | T | R | L |
| Cycle, s | 110.0 | Reference Phase | 2 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Assigned Phase | 0 | Reference Point | End | End | End | End | End | End | End | End | End | End | End | End | End | End |
| Offset, s | 0 | Simult. Gap | EW | On | On | On | On | On | On | On | On | On | On | On | On | On |
| Uncoordinated | Yes | Simult. Gap | N/S | On | On | On | On | On | On | On | On | On | On | On | On | On |
| Force Mode | Fixed | Simult. Gap | N/S | On | On | On | On | On | On | On | On | On | On | On | On | On |

Timer Results

| Assigned Phase | EBT | | | | WBT | | | | NBT | | | | SBT | | | |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | L | T | R | L | L | T | R | L | L | T | R | L | L | T | R | L |
| Case Number | 2 | 5.0 | 55.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Phase Duration, s | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Change Period, (Y+R+G), s | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 |
| Max Allow Headway (MAH), s | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| Queue Clearance Time (g _q), s | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| Green Extension Time (g _e), s | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Phase Call Probability | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Max Out Probability | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Movement Group Results

| Approach Movement | EB | | | | WB | | | | NB | | | | SB | | | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | L | T | R | L | L | T | R | L | L | T | R | L | L | T | R | L |
| Assigned Movement | 64 | 285 | 93 | 98 | 305 | 38 | 102 | 175 | 18 | 7 | 4 | 14 | 36 | 175 | 1229 | 1807 |
| Adjusted Flow Rate (v), veh/h | 1091 | 1900 | 1610 | 1112 | 1900 | 1610 | 1610 | 1796 | 1796 | 1796 | 1796 | 1796 | 1796 | 1796 | 1796 | 1796 |
| Adjusted Saturation Flow Rate (s), veh/hln | 4.5 | 10.6 | 3.7 | 6.8 | 11.5 | 1.5 | 6.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| Queue Service Time (g _q), s | 16.0 | 10.6 | 3.7 | 17.4 | 11.5 | 1.5 | 12.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| Cycle Queue Clearance Time (g _c), s | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| Green Ratio (g/c) | 447 | 864 | 732 | 464 | 864 | 732 | 552 | 816 | 816 | 816 | 816 | 816 | 816 | 816 | 816 | 816 |
| Capacity (c), veh/h | 0.143 | 0.330 | 0.128 | 0.211 | 0.354 | 0.062 | 0.185 | 0.214 | 0.214 | 0.214 | 0.214 | 0.214 | 0.214 | 0.214 | 0.214 | 0.214 |
| Volumes-to-Capacity Ratio (X) | 28.7 | 114 | 33.8 | 44.5 | 123.8 | 13.2 | 43 | 65.9 | 65.9 | 65.9 | 65.9 | 65.9 | 65.9 | 65.9 | 65.9 | 65.9 |
| Back of Queue (Q), ft/ln (50 th percentile) | 1.1 | 4.6 | 1.4 | 1.8 | 5.0 | 0.5 | 1.7 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| Back of Queue (Q), veh/ln (50 th percentile) | 0.15 | 0.00 | 0.27 | 0.36 | 0.00 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Queue Storage Ratio (RQ) (50 th percentile) | 24.7 | 19.2 | 17.4 | 24.8 | 19.5 | 16.8 | 21.9 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 |
| Uniform Delay (d ₁), s/veh | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Incremental Delay (d ₂), 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 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Delay (d ₃), s/veh | 24.7 | 19.3 | 17.4 | 24.9 | 19.6 | 16.8 | 21.9 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 |
| Control Delay (d), s/veh | 19.7 | 19.3 | 17.4 | 24.9 | 19.6 | 16.8 | 21.9 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 | 18.2 |
| Level of Service (LOS) | C | B | B | C | B | C | B | C | B | C | B | C | B | C | B | C |
| Approach Delay, s/veh / LOS | 19.8 | | | | | | | | | | | | | | | |
| Intersection Delay, s/veh / LOS | B | | | | | | | | | | | | | | | |

HCS7 Signalized Intersection Results Summary

| General Information | | Intersection Information | |
|---------------------|---------------------------|--------------------------|------------------------------------|
| Agency | GPD Group | Duration, h | 0.25 |
| Analyst | MSS | Area Type | Other |
| Jurisdiction | City of Lakewood | PHF | 0.92 |
| Urban Street | Detroit Avenue | Analysis Period | 1> 7:00 |
| Intersection | Bunts Road | File Name | 5 - Bunts Road OY 2019 Build PM.ux |
| Project Description | Opening Year 2019 'Build' | | |

| Demand Information | | Demand (v, veh/h) | | Demand (v, veh/h) | | Demand (v, veh/h) | | Demand (v, veh/h) | |
|--------------------|--|-------------------|-----|-------------------|-----|-------------------|----|-------------------|-----|
| Approach Movement | | L | T | R | L | T | R | L | T |
| Demand (v, veh/h) | | 62 | 254 | 73 | 157 | 316 | 51 | 130 | 263 |

| Signal Information | | Signal Timing | | Signal Timing | | Signal Timing | | Signal Timing | |
|--------------------|-------|-----------------|-----|---------------|--|---------------|--|---------------|--|
| Cycle, s | 100.0 | Reference Phase | 2 | | | | | | |
| Offset, s | 0 | Reference Point | End | | | | | | |
| Uncoordinated | Yes | Simult. Gap | EW | On | | | | | |
| Force Mode | Fixed | Simult. Gap | N/S | On | | | | | |

| Timer Results | | EBT | | WBL | | WBT | | NBL | | NBT | | SBL | | SBT | |
|---|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Assigned Phase | | L | T | R | L | T | R | L | T | R | L | T | R | L | T |
| Case Number | | 2 | 5.0 | 5.0 | 6 | 5.0 | 6.0 | 8 | 6.0 | 8 | 6.0 | 8 | 6.0 | 8 | 6.0 |
| Phase Duration, s | | 55.0 | 55.0 | 5.0 | 5.0 | 5.0 | 45.0 | 5.0 | 5.0 | 5.0 | 45.0 | 5.0 | 5.0 | 45.0 | 5.0 |
| Change Period, (Y+R), s | | 3.3 | 3.3 | 3.3 | 21.0 | 25.8 | 21.5 | 1.8 | 1.8 | 1.00 | 1.00 | 0.02 | 0.00 | 0.00 | 0.00 |
| Max Allow Headway (MAH), s | | 17.2 | 2.2 | 2.1 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Queue Clearance Time (g _z), s | | 2.2 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Green Extension Time (g _e), s | | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Phase Call Probability | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Max Out Probability | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

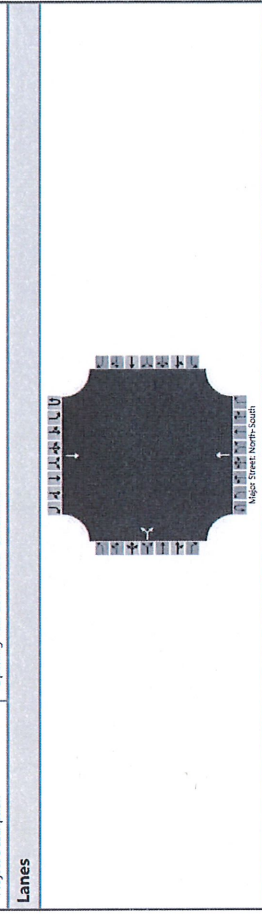
| Movement Group Results | | EB | | WB | | NB | | SB | | |
|---|--|-------|-------|-------|-------|-------|-------|-------|-------|--|
| Approach Movement | | L | T | R | L | T | R | L | T | |
| Assigned Movement | | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | |
| Adjusted Flow Rate (V), veh/h | | 67 | 276 | 79 | 171 | 343 | 55 | 141 | 367 | |
| Adjusted Saturation Flow Rate (s), veh/hln | | 1054 | 1900 | 1610 | 1121 | 1900 | 1610 | 1073 | 1827 | |
| Queue Service Time (g _s), s | | 4.2 | 8.5 | 2.6 | 10.5 | 11.0 | 1.8 | 11.0 | 15.1 | |
| Cycle Queue Clearance Time (g _c), s | | 15.2 | 8.5 | 2.6 | 19.0 | 11.0 | 1.8 | 23.8 | 15.1 | |
| Green Ratio (g/C) | | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.40 | 0.40 | 0.40 | |
| Capacity (c), veh/h | | 483 | 950 | 805 | 537 | 950 | 805 | 364 | 731 | |
| Volume-to-Capacity Ratio (X) | | 0.140 | 0.291 | 0.099 | 0.318 | 0.362 | 0.069 | 0.388 | 0.503 | |
| Back of Queue (Q), ftln (95 th percentile) | | 45.2 | 157.1 | 40.7 | 120.1 | 200.7 | 27.9 | 128.4 | 258.4 | |
| Back of Queue (Q), vehln (95 th percentile) | | 1.8 | 6.3 | 1.6 | 4.8 | 8.0 | 1.1 | 5.1 | 10.4 | |
| Queue Storage Ratio (RQ) (95 th percentile) | | 0.24 | 0.00 | 0.33 | 0.96 | 0.00 | 0.47 | 0.00 | 0.00 | |
| Uniform Delay (d ₁), s/veh | | 19.9 | 14.6 | 13.1 | 20.2 | 15.3 | 12.9 | 30.5 | 22.5 | |
| Incremental Delay (d ₂), s/veh | | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.3 | 0.2 | |
| Initial Queue Delay (d ₃), s/veh | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Control Delay (d ₄), s/veh | | 19.9 | 14.7 | 13.2 | 20.3 | 15.3 | 13.0 | 30.8 | 22.7 | |
| Level of Service (LOS) | | B | B | B | C | B | B | C | C | |
| Approach Delay, s/veh / LOS | | 15.2 | B | 16.6 | B | 25.0 | C | 23.2 | C | |
| Intersection Delay, s/veh / LOS | | 19.9 | | | | | | | | |

| Multimodal Results | | EB | | WB | | NB | | SB | |
|----------------------------|--|----|--|----|--|----|--|----|--|
| Pedestrian LOS Score / LOS | | | | | | | | | |
| Bicycle LOS Score / LOS | | | | | | | | | |

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HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Drive # 2 |
| Agency/C.o. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Drive # 2 |
| Analysis Year | 2019 | North/South Street | Parkhaven Row |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'Build' Conditions | | |



Vehicle Volumes and Adjustments

| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | |
|----------------------------|-----------|----|----|-----------|---|---|------------|---|---|------------|----|---|---|
| | U | L | T | R | U | L | T | R | U | L | T | R | |
| Movement | 10 | 11 | 12 | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 |
| Priority | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Number of Lanes | LR | | | LR | | | LR | | | LR | | | |
| Configuration | LR | | | LR | | | LR | | | LR | | | |
| Volume (veh/h) | 49 | | | 0 | | | 29 | | | 13 | | | |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | | | 3 | | | |
| Proportion Time Blocked | 0 | | | 0 | | | 0 | | | 0 | | | |
| Percent Grade (%) | 0 | | | 0 | | | 0 | | | 0 | | | |
| Right Turn Channelized | 0 | | | 0 | | | 0 | | | 0 | | | |
| Median Type Storage | Undivided | | | Undivided | | | Undivided | | | Undivided | | | |

Critical and Follow-up Headways

| | |
|------------------------------|------|
| Base Critical Headway (sec) | 7.1 |
| Critical Headway (sec) | 6.43 |
| Base Follow-Up Headway (sec) | 3.5 |
| Follow-Up Headway (sec) | 3.53 |

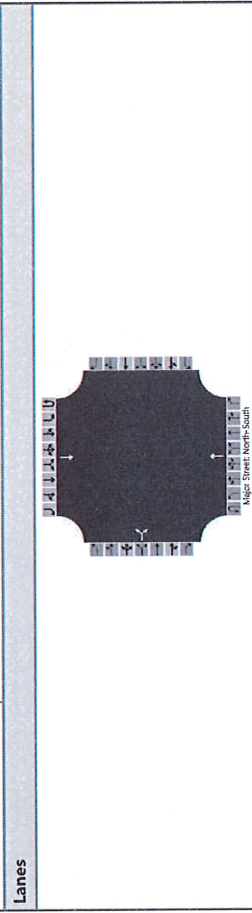
Delay, Queue Length, and Level of Service

| | |
|---|------|
| Flow Rate, v (veh/h) | 53 |
| Capacity, c (veh/h) | 962 |
| v/c Ratio | 0.06 |
| 95% Queue Length, Q ₉₅ (veh) | 0.2 |
| Control Delay (s/veh) | 9.0 |
| Level of Service (LOS) | A |
| Approach Delay (s/veh) | 9.0 |
| Approach LOS | A |

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HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Drive # 2 |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Drive # 2 |
| Analysis Year | 2019 | North/South Street | Parkhaven Row |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|----|----|-----------|---|---|------------|---|---|------------|----|---|---|---|
| | U | L | T | U | L | T | U | L | T | U | L | T | | |
| Movement | 10 | 11 | 12 | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 |
| Priority | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Number of Lanes | LR | | | T | | | T | | | T | | | | |
| Configuration | 31 | | | 0 | | | 41 | | | 18 | | | | |
| Volume (veh/h) | 3 | | | 3 | | | | | | | | | | |
| Percent Heavy Vehicles (%) | 0 | | | 0 | | | | | | | | | | |
| Proportion Time Blocked | 0 | | | 0 | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | |
| Median Type Storage | | | | Undivided | | | | | | | | | | |

Critical and Follow-up Headways

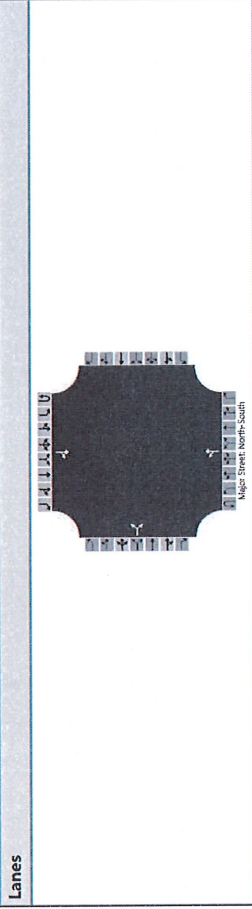
| | | | | | | | | | | | | | | |
|------------------------------|------|------|--|--|--|--|--|--|--|--|--|--|--|--|
| Base Critical Headway (sec) | 7.1 | 6.2 | | | | | | | | | | | | |
| Critical Headway (sec) | 6.43 | 6.23 | | | | | | | | | | | | |
| Base Follow-Up Headway (sec) | 3.5 | 3.3 | | | | | | | | | | | | |
| Follow-Up Headway (sec) | 3.53 | 3.33 | | | | | | | | | | | | |

Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | |
|---|------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Flow Rate, v (veh/h) | 34 | | | | | | | | | | | | | |
| Capacity, c (veh/h) | 939 | | | | | | | | | | | | | |
| v/c Ratio | 0.04 | | | | | | | | | | | | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.1 | | | | | | | | | | | | | |
| Control Delay (s/veh) | 9.0 | | | | | | | | | | | | | |
| Level of Service (LOS) | A | | | | | | | | | | | | | |
| Approach Delay (s/veh) | 9.0 | | | | | | | | | | | | | |
| Approach LOS | A | | | | | | | | | | | | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Drive # 3 |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Drive # 3 |
| Analysis Year | 2019 | North/South Street | Parkhaven Row |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|----|----|-----------|---|---|------------|---|---|------------|----|---|---|---|
| | U | L | T | U | L | T | U | L | T | U | L | T | | |
| Movement | 10 | 11 | 12 | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 |
| Priority | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Number of Lanes | LR | | | T | | | LT | | | TR | | | | |
| Configuration | 0 | | | 0 | | | 0 | | | 29 | | | | |
| Volume (veh/h) | 3 | | | 3 | | | 3 | | | 4 | | | | |
| Percent Heavy Vehicles (%) | 0 | | | 0 | | | 0 | | | 0 | | | | |
| Proportion Time Blocked | 0 | | | 0 | | | 0 | | | 0 | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | |
| Median Type Storage | | | | Undivided | | | | | | | | | | |

Critical and Follow-up Headways

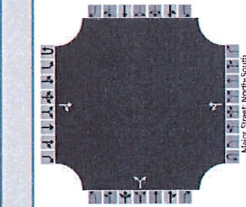
| | | | | | | | | | | | | | | |
|------------------------------|------|------|--|--|--|--|--|--|--|--|--|--|--|--|
| Base Critical Headway (sec) | 7.1 | 6.2 | | | | | | | | | | | | |
| Critical Headway (sec) | 6.43 | 6.23 | | | | | | | | | | | | |
| Base Follow-Up Headway (sec) | 3.5 | 3.3 | | | | | | | | | | | | |
| Follow-Up Headway (sec) | 3.53 | 3.33 | | | | | | | | | | | | |

Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | |
|---|------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Flow Rate, v (veh/h) | 0 | | | | | | | | | | | | | |
| Capacity, c (veh/h) | 1597 | | | | | | | | | | | | | |
| v/c Ratio | 0.00 | | | | | | | | | | | | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | | | | | | | | | | | | | |
| Control Delay (s/veh) | 7.3 | | | | | | | | | | | | | |
| Level of Service (LOS) | A | | | | | | | | | | | | | |
| Approach Delay (s/veh) | 0.0 | | | | | | | | | | | | | |
| Approach LOS | A | | | | | | | | | | | | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Drive # 3 |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Drive # 3 |
| Analysis Year | 2019 | North/South Street | Parkhaven Row |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2019 'Build' Conditions | | |



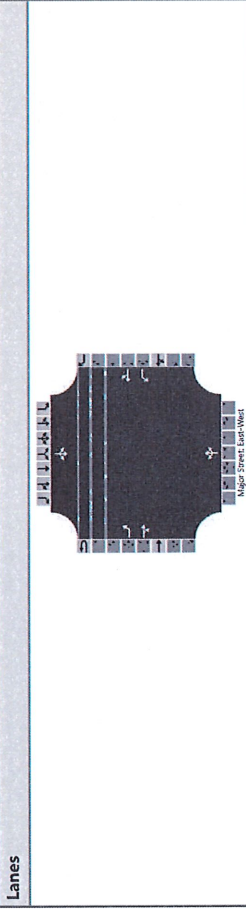
| Vehicle Volumes and Adjustments | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|---------------------------------|-----------|----|----|-----------|---|---|------------|---|---|------------|----|----|
| | U | L | T | U | L | T | U | L | T | U | L | T |
| Approach | | | | | | | | | | | | |
| Movement | | | | | | | | | | | | |
| Priority | 10 | 11 | 12 | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 |
| Number of Lanes | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Configuration | LR | | | | | | LT | | | TR | | |
| Volume (veh/h) | 0 | 0 | 0 | | | | | | 0 | 41 | | 13 |
| Percent Heavy Vehicles (%) | 3 | 3 | 3 | | | | | | 3 | | | 5 |
| Proportion Time Blocked | | | | | | | | | | | | |
| Percent Grade (%) | 0 | | | | | | | | | | | |
| Right Turn Channelized | Undivided | | | | | | | | | | | |
| Median Type Storage | Undivided | | | | | | | | | | | |

| Critical and Follow-up Headways | |
|---------------------------------|------|
| Base Critical Headway (sec) | 7.1 |
| Critical Headway (sec) | 6.43 |
| Base Follow-up Headway (sec) | 3.5 |
| Follow-up Headway (sec) | 3.53 |

| Delay, Queue Length, and Level of Service | |
|---|------|
| Flow Rate, v (veh/h) | 0 |
| Capacity, c (veh/h) | 1590 |
| v/c Ratio | 0.00 |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 |
| Control Delay (s/veh) | 7.3 |
| Level of Service (LOS) | A |
| Approach Delay (s/veh) | |
| Approach LOS | 0.0 |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|-------------------------------------|----------------------------|---------------------|
| Analyst | MSS | Intersection | Blossom Park Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Blossom Park Avenue |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'Build' Conditions | | |



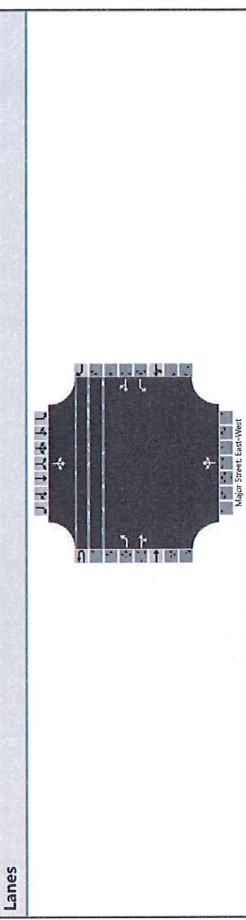
| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|-----|---|-----------|-----|----|------------|---|----|------------|---|----|----|----|
| | U | L | T | U | L | T | U | L | T | U | L | T | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Priority | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Number of Lanes | L | | | L | | | L | | | L | | | | |
| Configuration | L | | | L | | | L | | | L | | | | |
| Volume (veh/h) | 24 | 404 | 5 | 7 | 427 | 15 | 6 | 4 | 10 | 15 | 4 | 25 | 3 | 3 |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | | | 3 | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | |
| Median Type Storage | | | | Undivided | | | | | | | | | | |

| Critical and Follow-up Headways | | | | | | | | | | | | |
|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Base Critical Headway (sec) | 4.1 | | | | | | | | | | | |
| Critical Headway (sec) | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 |
| Base Follow-Up Headway (sec) | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| Follow-Up Headway (sec) | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| Flow Rate, v (veh/h) | 26 | | | | | | | | | | | |
| Capacity, c (veh/h) | 1077 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 |
| v/c Ratio | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| 95% Queue Length, Q ₉₅ (veh) | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (s/veh) | 8.4 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 |
| Level of Service (LOS) | A | A | A | A | A | A | A | A | A | A | A | A |
| Approach Delay (s/veh) | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Approach LOS | | | | | | | | | | | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|-------------------------------------|----------------------------|---------------------|
| Analyst | MSS | Intersection | Blossom Park Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Blossom Park Avenue |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'Build' Conditions | | |



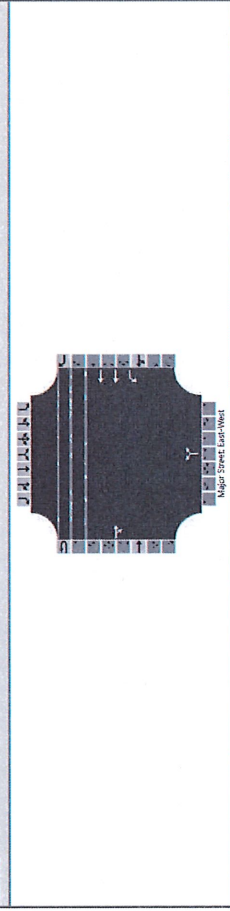
| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|-----|---|-----------|-----|----|------------|---|----|------------|----|----|----|----|
| | U | L | T | U | L | T | U | L | T | U | L | T | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Priority | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Number of Lanes | L | | | L | | | L | | | L | | | | |
| Configuration | L | | | L | | | L | | | L | | | | |
| Volume (veh/h) | 21 | 376 | 7 | 16 | 451 | 29 | 4 | 7 | 12 | 19 | 15 | 52 | 3 | 3 |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | | | 3 | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | |
| Median Type Storage | | | | Undivided | | | | | | | | | | |

| Critical and Follow-up Headways | | | | | | | | | | | | |
|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Base Critical Headway (sec) | 4.1 | | | | | | | | | | | |
| Critical Headway (sec) | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 | 4.13 |
| Base Follow-Up Headway (sec) | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| Follow-Up Headway (sec) | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| Flow Rate, v (veh/h) | 23 | | | | | | | | | | | |
| Capacity, c (veh/h) | 1040 | 1137 | 1137 | 1137 | 1137 | 1137 | 1137 | 1137 | 1137 | 1137 | 1137 | 1137 |
| v/c Ratio | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| 95% Queue Length, Q ₉₅ (veh) | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Control Delay (s/veh) | 8.5 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 |
| Level of Service (LOS) | A | A | A | A | A | A | A | A | A | A | A | A |
| Approach Delay (s/veh) | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Approach LOS | | | | | | | | | | | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|-------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Robinwood Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Robinwood Avenue |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|----|----|
| | U | L | T | U | L | T | U | L | T | U | L | T | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Number of Lanes | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Configuration | TR | | | L | | | LR | | | | | | | |
| Volume (veh/h) | 402 | | | 12 | | | 445 | | | 21 | | | | |
| Percent Heavy Vehicles (%) | | | | 3 | | | | | | 3 | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | |
| Median Type Storage | | | | | | | Left Only | | | 1 | | | | |

Critical and Follow-up Headways

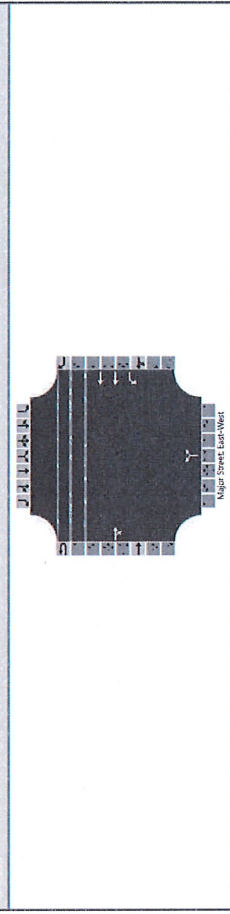
| | 4.1 | 4.16 | 2.2 | 2.23 | 7.5 | 6.96 | 3.3 | 3.33 |
|------------------------------|-----|------|-----|------|-----|------|-----|------|
| Base Critical Headway (sec) | | | | | | | | |
| Critical Headway (sec) | | | | | | | | |
| Base Follow-Up Headway (sec) | | | | | | | | |
| Follow-Up Headway (sec) | | | | | | | | |

Delay, Queue Length, and Level of Service

| | | |
|---|------|------|
| Flow Rate, v (veh/h) | 13 | 84 |
| Capacity, c (veh/h) | 1109 | 534 |
| v/c Ratio | 0.01 | 0.16 |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.6 |
| Control Delay (s/veh) | 8.3 | 13.0 |
| Level of Service (LOS) | A | B |
| Approach Delay (s/veh) | 0.2 | 13.0 |
| Approach LOS | B | B |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|-------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Robinwood Avenue |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Robinwood Avenue |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|----|----|
| | U | L | T | U | L | T | U | L | T | U | L | T | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Number of Lanes | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Configuration | TR | | | L | | | LR | | | | | | | |
| Volume (veh/h) | 392 | | | 17 | | | 496 | | | 15 | | | | |
| Percent Heavy Vehicles (%) | | | | 3 | | | | | | 3 | | | | |
| Proportion Time Blocked | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | |
| Median Type Storage | | | | | | | Left Only | | | 1 | | | | |

Critical and Follow-up Headways

| | 4.1 | 4.16 | 2.2 | 2.23 | 7.5 | 6.96 | 3.3 | 3.33 |
|------------------------------|-----|------|-----|------|-----|------|-----|------|
| Base Critical Headway (sec) | | | | | | | | |
| Critical Headway (sec) | | | | | | | | |
| Base Follow-Up Headway (sec) | | | | | | | | |
| Follow-Up Headway (sec) | | | | | | | | |

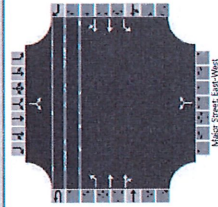
Delay, Queue Length, and Level of Service

| | | |
|---|------|------|
| Flow Rate, v (veh/h) | 18 | 55 |
| Capacity, c (veh/h) | 1119 | 534 |
| v/c Ratio | 0.02 | 0.10 |
| 95% Queue Length, Q ₉₅ (veh) | 0.1 | 0.3 |
| Control Delay (s/veh) | 8.3 | 12.5 |
| Level of Service (LOS) | A | B |
| Approach Delay (s/veh) | 0.3 | 12.5 |
| Approach LOS | B | B |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|-------------------|
| Analyst | MSS | Intersection | Giant Eagle Drive |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/2/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Giant Eagle Drive |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2039 'Build' Conditions | | |

Lanes



Vehicle Volumes and Adjustments

| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|----------------------------|-----------|----|-----|-----------|----|----|------------|---|----|------------|----|----|
| | U | L | T | U | L | T | U | L | T | U | L | T |
| Movement | 1U | 1L | 1T | 4U | 4L | 4T | 7 | 8 | 9 | 10 | 11 | 12 |
| Priority | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| Number of Lanes | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 0 |
| Configuration | L | T | TR | L | T | TR | LR | | | LR | | |
| Volume (veh/h) | 0 | 7 | 426 | 30 | 0 | 48 | 442 | 0 | 12 | 22 | 2 | 5 |
| Percent Heavy Vehicles (%) | 3 | 3 | | 3 | 3 | | 3 | 3 | | 3 | 3 | 3 |
| Proportion Time Blocked | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | |
| Median Type Storage | Left Only | | | | | | | | | | | |

Critical and Follow-up Headways

| | | | | | | |
|------------------------------|------|------|------|------|------|------|
| Base Critical Headway (sec) | 4.1 | 4.1 | 4.1 | 7.5 | 6.9 | 6.9 |
| Critical Headway (sec) | 4.16 | 4.16 | 4.16 | 7.56 | 6.96 | 6.96 |
| Base Follow-Up Headway (sec) | 2.2 | 2.2 | 2.2 | 3.5 | 3.3 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | 2.23 | 2.23 | 3.53 | 3.33 | 3.33 |

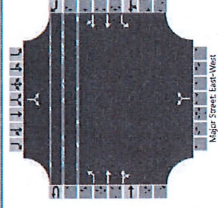
Delay, Queue Length, and Level of Service

| | | | | | |
|---|------|------|------|------|------|
| Flow Rate, v (veh/h) | 8 | 52 | 37 | 37 | 8 |
| Capacity, c (veh/h) | 1071 | 1057 | 545 | 545 | 562 |
| v/c Ratio | 0.01 | 0.05 | 0.07 | 0.07 | 0.01 |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.2 | 0.2 | 0.2 | 0.0 |
| Control Delay (s/veh) | 8.4 | 8.6 | 12.1 | 12.1 | 11.5 |
| Level of Service (LOS) | A | A | B | B | B |
| Approach Delay (s/veh) | 0.1 | 0.8 | 12.1 | 12.1 | 11.5 |
| Approach LOS | | B | B | B | B |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|-------------------------------------|----------------------------|-------------------|
| Analyst | MSS | Intersection | Giant Eagle Drive |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Giant Eagle Drive |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'Build' Conditions | | |

Lanes



Vehicle Volumes and Adjustments

| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|----------------------------|-----------|----|-----|-----------|----|----|------------|---|---|------------|---|---|
| | U | L | T | U | L | T | U | L | T | U | L | T |
| Movement | 1U | 1L | 1T | 4U | 4L | 4T | 5 | 6 | 6 | 7 | 8 | 9 |
| Priority | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 |
| Number of Lanes | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 0 |
| Configuration | L | T | TR | L | T | TR | LR | | | LR | | |
| Volume (veh/h) | 0 | 6 | 402 | 20 | 0 | 31 | 498 | 3 | 7 | 14 | 1 | 3 |
| Percent Heavy Vehicles (%) | 3 | 3 | | 3 | 3 | | 3 | 3 | | 3 | 3 | 3 |
| Proportion Time Blocked | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | |
| Median Type Storage | Left Only | | | | | | | | | | | |

Critical and Follow-up Headways

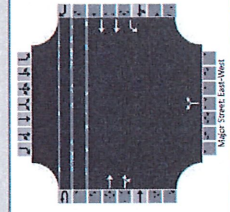
| | | | | | | |
|------------------------------|------|------|------|------|------|------|
| Base Critical Headway (sec) | 4.1 | 4.1 | 4.1 | 7.5 | 6.9 | 6.9 |
| Critical Headway (sec) | 4.16 | 4.16 | 4.16 | 7.56 | 6.96 | 6.96 |
| Base Follow-Up Headway (sec) | 2.2 | 2.2 | 2.2 | 3.5 | 3.3 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | 2.23 | 2.23 | 3.53 | 3.33 | 3.33 |

Delay, Queue Length, and Level of Service

| | | | | | |
|---|------|------|------|------|------|
| Flow Rate, v (veh/h) | 7 | 34 | 23 | 23 | 4 |
| Capacity, c (veh/h) | 1014 | 1092 | 577 | 577 | 566 |
| v/c Ratio | 0.01 | 0.03 | 0.04 | 0.04 | 0.01 |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 |
| Control Delay (s/veh) | 8.6 | 8.4 | 11.5 | 11.5 | 11.4 |
| Level of Service (LOS) | A | A | B | B | B |
| Approach Delay (s/veh) | 0.1 | 0.5 | 11.5 | 11.5 | 11.4 |
| Approach LOS | | B | B | B | B |

HC57 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|-------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Parkhaven Row |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Parkhaven Row |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|-----|----|--|
| | U | L | T | U | L | T | U | L | T | U | L | T | R | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| Priority | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | |
| Number of Lanes | T | | | L | | | LR | | | | | | | | |
| Configuration | 453 | | | 3 | | | 0 | | | 37 | | | 42 | | |
| Volume (veh/h) | 453 | | | 3 | | | 0 | | | 10 | | | 453 | | |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | | | 3 | | | 3 | | |
| Proportion Time Blocked | | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | | |
| Median Type Storage | | | | | | | Left Only | | | | | | 1 | | |

Critical and Follow-up Headways

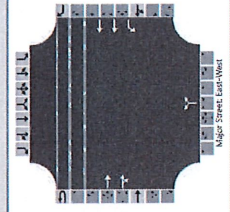
| | | | |
|------------------------------|------|------|------|
| Base Critical Headway (sec) | 4.1 | 7.5 | 6.9 |
| Critical Headway (sec) | 4.16 | 6.86 | 6.96 |
| Base Follow-Up Headway (sec) | 2.2 | 3.5 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | 3.53 | 3.33 |

Delay, Queue Length, and Level of Service

| | | |
|---|------|------|
| Flow Rate, v (veh/h) | 11 | 86 |
| Capacity, c (veh/h) | 1057 | 567 |
| v/c Ratio | 0.01 | 0.15 |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.5 |
| Control Delay (s/veh) | 8.4 | 12.5 |
| Level of Service (LOS) | A | B |
| Approach Delay (s/veh) | | 12.5 |
| Approach LOS | | B |

HC57 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|-------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Parkhaven Row |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Detroit Avenue |
| Analysis Year | 2039 | North/South Street | Parkhaven Row |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | | |
|----------------------------|-----------|---|---|-----------|----|---|------------|---|---|------------|---|----|-----|----|--|
| | U | L | T | U | L | T | U | L | T | U | L | T | R | | |
| Movement | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| Priority | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | |
| Number of Lanes | T | | | TR | | | L | | | LR | | | | | |
| Configuration | 414 | | | 6 | | | 0 | | | 12 | | | 489 | | |
| Volume (veh/h) | 414 | | | 3 | | | 3 | | | 3 | | | 39 | | |
| Percent Heavy Vehicles (%) | 3 | | | 3 | | | 3 | | | 3 | | | 3 | | |
| Proportion Time Blocked | | | | | | | | | | | | | | | |
| Percent Grade (%) | | | | | | | | | | | | | | | |
| Right Turn Channelized | | | | | | | | | | | | | | | |
| Median Type Storage | | | | | | | Left Only | | | | | | 1 | | |

Critical and Follow-up Headways

| | | | |
|------------------------------|------|------|------|
| Base Critical Headway (sec) | 4.1 | 7.5 | 6.9 |
| Critical Headway (sec) | 4.16 | 6.86 | 6.96 |
| Base Follow-Up Headway (sec) | 2.2 | 3.5 | 3.3 |
| Follow-Up Headway (sec) | 2.23 | 3.53 | 3.33 |

Delay, Queue Length, and Level of Service

| | | |
|---|------|------|
| Flow Rate, v (veh/h) | 13 | 80 |
| Capacity, c (veh/h) | 1094 | 580 |
| v/c Ratio | 0.01 | 0.14 |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | 0.5 |
| Control Delay (s/veh) | 8.3 | 12.2 |
| Level of Service (LOS) | A | B |
| Approach Delay (s/veh) | | 12.2 |
| Approach LOS | | B |

HCS7 Signalized Intersection Results Summary

| General Information | | Intersection Information | | | | | | | | | | |
|---------------------|------------------------|--------------------------|--------------------------------------|-----------------|--|--|--|--|--|--|--------|--|
| Agency | GPD Group | Duration, h | | | | | | | | | 0.25 | |
| Analyst | MSS | Analysis Date | 10/4/2018 | Area Type | | | | | | | Other | |
| Jurisdiction | City of Lakewood | Time Period | Mid-Day Peak | PHF | | | | | | | 0.92 | |
| Urban Street | Detroit Avenue | Analysis Year | 2039 | Analysis Period | | | | | | | > 7:00 | |
| Intersection | Bunts Road | File Name | 5 - Bunts Road DY 2039 Build Mid.xus | | | | | | | | | |
| Project Description | Design Year 2039 Build | | | | | | | | | | | |

| Demand Information | | EB | | | | | WB | | | | | NB | | | | | SB | | | | | | | | |
|--------------------|--|----|-----|----|----|-----|----|----|-----|----|----|-----|----|---|---|---|----|---|---|---|---|---|---|---|---|
| Approach Movement | | L | T | R | R | L | L | T | R | R | L | L | T | R | R | L | L | T | R | R | L | L | T | R | R |
| Demand (v), veh/h | | 61 | 271 | 89 | 94 | 291 | 36 | 97 | 113 | 54 | 34 | 120 | 47 | | | | | | | | | | | | |

| Signal Information | | 110.0 | | Reference Phase | 2 | | | | | | | | |
|--------------------|-------|--------|------|-----------------|-----|----|-----|-----|-----|-----|-----|-----|-----|
| Cycle, s | | Green | 50.0 | Reference Point | End | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Offset, s | 0 | Yellow | 3.0 | Simult. Gap | EW | On | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Uncoordinated | Yes | Red | 2.0 | Simult. Gap | NS | On | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Force Mode | Fixed | | | | | | | | | | | | |

| Timer Results | | EBL | | | | | EBT | | | | | WBL | | | | | WBT | | | | | NBL | | | | | NBT | | | | | SBL | | | | | SBT | | | | |
|-------------------------------|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|
| Assigned Phase | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Case Number | | 2 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | |
| Phase Duration, s | | 55.0 | | | | | 55.0 | | | | | 55.0 | | | | | 55.0 | | | | | 55.0 | | | | | 55.0 | | | | | 55.0 | | | | | 55.0 | | | | |
| Change Period, (Y+R_c), s | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | |
| Max Allow Headway (MAH), s | | 3.2 | | | | | 3.2 | | | | | 3.2 | | | | | 3.2 | | | | | 3.2 | | | | | 3.2 | | | | | 3.2 | | | | | 3.2 | | | | |
| Queue Clearance Time (g_c), s | | 18.7 | | | | | 20.3 | | | | | 20.3 | | | | | 20.3 | | | | | 20.3 | | | | | 20.3 | | | | | 20.3 | | | | | 20.3 | | | | |
| Green Extension Time (g_e), s | | 1.9 | | | | | 1.9 | | | | | 1.9 | | | | | 1.9 | | | | | 1.9 | | | | | 1.9 | | | | | 1.9 | | | | | 1.9 | | | | |
| Phase Call Probability | | 1.00 | | | | | 1.00 | | | | | 1.00 | | | | | 1.00 | | | | | 1.00 | | | | | 1.00 | | | | | 1.00 | | | | | 1.00 | | | | |
| Max Out Probability | | 0.00 | | | | | 0.00 | | | | | 0.00 | | | | | 0.00 | | | | | 0.00 | | | | | 0.00 | | | | | 0.00 | | | | | 0.00 | | | | |

| Movement Group Results | | EB | | | | | WB | | | | | NB | | | | | SB | | | | | | | | | |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|----|---|---|---|------|---|---|---|---|---|---|---|---|--|
| Approach Movement | | L | T | R | R | L | L | T | R | R | L | L | T | R | R | L | L | T | R | R | L | L | T | R | R | |
| Assigned Movement | | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 | | | | | | | | | | | | | |
| Adjusted Flow Rate (v), veh/h | | 66 | 295 | 97 | 102 | 316 | 39 | 105 | 182 | 37 | 182 | | | | | | | | | | | | | | | |
| Adjusted Saturation Flow Rate (s), veh/hln | | 1080 | 1900 | 1610 | 1102 | 1900 | 1610 | 1222 | 1785 | 1222 | 1808 | | | | | | | | | | | | | | | |
| Queue Service Time (g_s), s | | 4.7 | 11.0 | 3.8 | 7.3 | 12.0 | 1.5 | 6.3 | 6.7 | 2.1 | 6.7 | | | | | | | | | | | | | | | |
| Cycle Queue Clearance Time (g_c), s | | 16.7 | 11.0 | 3.8 | 18.3 | 12.0 | 1.5 | 13.0 | 6.7 | 8.8 | 6.7 | | | | | | | | | | | | | | | |
| Green Ratio (g/C) | | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | | | | | | | | | | | | | | | |
| Capacity (c), veh/h | | 439 | 864 | 732 | 456 | 864 | 732 | 546 | 816 | 546 | 822 | | | | | | | | | | | | | | | |
| Volume-to-Capacity Ratio (X) | | 0.151 | 0.341 | 0.192 | 0.224 | 0.366 | 0.053 | 0.193 | 0.222 | 0.068 | 0.221 | | | | | | | | | | | | | | | |
| Back of Queue (Q), ft/ln (50 th percentile) | | 30 | 118.5 | 35 | 47.1 | 129.1 | 13.6 | 44.7 | 66.6 | 14.8 | 68.6 | | | | | | | | | | | | | | | |
| Back of Queue (Q), veh/ln (50 th percentile) | | 1.2 | 4.7 | 1.4 | 1.9 | 5.2 | 0.5 | 1.8 | 2.7 | 0.6 | 2.7 | | | | | | | | | | | | | | | |
| Queue Storage Ratio (R/Q) (50 th percentile) | | 0.16 | 0.00 | 0.28 | 0.38 | 0.00 | 0.23 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | | | | | | | | |
| Uniform Delay (d_1), s/veh | | 25.1 | 19.4 | 17.4 | 25.3 | 19.6 | 16.8 | 22.1 | 18.2 | 20.9 | 18.2 | | | | | | | | | | | | | | | |
| Incremental Delay (d_2), s/veh | | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | | | | | | | | | | | | | | | |
| Initial Queue Delay (d_3), s/veh | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | |
| Control Delay (d), s/veh | | 25.2 | 19.5 | 17.4 | 25.4 | 19.7 | 16.8 | 22.2 | 18.3 | 20.9 | 18.2 | | | | | | | | | | | | | | | |
| Level of Service (LOS) | | C | B | B | C | B | B | C | B | C | B | | | | | | | | | | | | | | | |
| Approach Delay, s/veh / LOS | | 19.9 | | | | | 20.7 | | | | | 19.7 | | | | | 16.7 | | | | | | | | | |
| Intersection Delay, s/veh / LOS | | 19.9 | | | | | | | | | | | | | | | | | | | | | | | | |

| Multimodal Results | | EB | | | | | WB | | | | | NB | | | | | SB | | | | |
|----------------------------|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|
| Pedestrian LOS Score / LOS | | | | | | | | | | | | | | | | | | | | | |
| Bicycle LOS Score / LOS | | | | | | | | | | | | | | | | | | | | | |

HCS7 Signalized Intersection Results Summary

| General Information | | Intersection Information | | | | | | | | | | |
|---------------------|------------------------|--------------------------|-------------------------------------|-----------------|--|--|--|--|--|--|--------|--|
| Agency | GPD Group | Duration, h | | | | | | | | | 0.25 | |
| Analyst | MSS | Analysis Date | 10/4/2018 | Area Type | | | | | | | Other | |
| Jurisdiction | City of Lakewood | Time Period | PM Peak | PHF | | | | | | | 0.92 | |
| Urban Street | Detroit Avenue | Analysis Year | 2039 | Analysis Period | | | | | | | > 7:00 | |
| Intersection | Bunts Road | File Name | 5 - Bunts Road DY 2039 Build PM.xus | | | | | | | | | |
| Project Description | Design Year 2039 Build | | | | | | | | | | | |

| Demand Information | | EB | | | | | WB | | | | | NB | | | | | SB | | | | | | | | |
|--------------------|--|----|-----|----|-----|-----|----|-----|-----|----|----|-----|----|---|---|---|----|---|---|---|---|---|---|---|---|
| Approach Movement | | L | T | R | R | L | L | T | R | R | L | L | T | R | R | L | L | T | R | R | L | L | T | R | R |
| Demand (v), veh/h | | 64 | 284 | 76 | 163 | 328 | 53 | 135 | 274 | 78 | 55 | 258 | 52 | | | | | | | | | | | | |

| Signal Information | | 100.0 | | Reference Phase | 2 | | | | | | | | |
|--------------------|-------|--------|------|-----------------|-----|----|-----|-----|-----|-----|-----|-----|-----|
| Cycle, s | | Green | 50.0 | Reference Point | End | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Offset, s | 0 | Yellow | 3.0 | Simult. Gap | EW | On | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Uncoordinated | Yes | Red | 2.0 | Simult. Gap | NS | On | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Force Mode | Fixed | | | | | | | | | | | | |

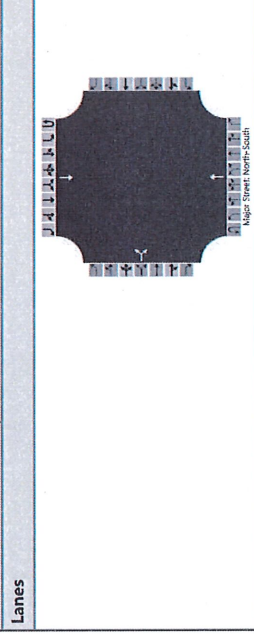
| Timer Results | | EBL | | | | | EBT | | | | | WBL | | | | | WBT | | | | | NBL | | | | | NBT | | | | | SBL | | | | | SBT | | | | |
|-------------------------------|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|------|--|--|--|--|-----|--|--|--|--|
| Assigned Phase | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Case Number | | 2 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | | | | | |
| Phase Duration, s | | 55.0 | | | | | 55.0 | | | | | 55.0 | | | | | 55.0 | | | | | 55.0 | | | | | 55.0 | | | | | 55.0 | | | | | | | | | |
| Change Period, (Y+R_c), s | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | 5.0 | | | | | | | | | |
| Max Allow Headway (MAH), s | | 3.3 | | | | | 3.3 | | | | | 3.3 | | | | | 3.3 | | | | | 3.3 | | | | | 3.3 | | | | | 3.3 | | | | | | | | | |
| Queue Clearance Time (g_c), s | | 18.0 | | | | | 22.1 | | | | | 22.1 | | | | | 22.1 | | | | | 22.1 | | | | | 22.1 | | | | | 22.1 | | | | | | | | | |
| Green Extension Time (g_e), s | | 2.3 | | | | | 2.3 | | | | | 2.3 | | | | | 2.3 | | | | | 2.3 | | | | | 2.3 | | | | | 2.3 | | | | | | | | | |
| Phase Call Probability | | 1.00 | | | | | 1.00 | | | | | 1.00 | | | | | 1.00 | | | | | 1.00 | | | | | 1.00 | | | | | 1.00 | | | | | | | | | |
| Max Out Probability | | 0.00 | | | | | 0.00 | | | | | 0.00 | | | | | 0.00 | | | | | 0.00 | | | | | 0.00 | | | | | 0.00 | | | | | | | | | |

| Movement Group Results | | EB | | | | | WB | | | | | NB | | | | | SB | | | | | | | | | |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|----|---|---|---|------|---|---|---|---|---|---|---|---|--|
| Approach Movement | | L | T | R | R | L | L | T | R | R | L | L | T | R | R | L | L | T | R | R | L | L | T | R | R | |
| Assigned Movement | | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 | | | | | | | | | | | | | |
| Adjusted Flow Rate (v), veh/h | | 70 | 287 | 83 | 177 | 357 | 58 | 147 | 383 | 60 | 337 | | | | | | | | | | | | | | | |
| Adjusted Saturation Flow Rate (s), veh/hln | | 1041 | 1900 | 1610 | 1110 | 1900 | 1610 | 1060 | 1827 | 1016 | 1844 | | | | | | | | | | | | | | | |
| Queue Service Time (g_s), s | | 4.4 | 8.9 | 2.7 | 11.2 | 11.5 | 1.9 | 11.8 | 15.9 | 4.7 | 13.4 | | | | | | | | | | | | | | | |
| Cycle Queue Clearance Time (g_c), s | | 16.0 | 8.9 | 2.7 | 20.1 | 11.5 | 1.9 | 25.2 | 15.9 | 20.6 | 13.4 | | | | | | | | | | | | | | | |
| Green Ratio (g/C) | | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.40 | 0.40 | 0.40 | 0.40 | | | | | | | | | | | | | | | |
| Capacity (c), veh/h | | 472 | 950 | 805 | 528 | 950 | 805 | 354 | 731 | 317 | 738 | | | | | | | | | | | | | | | |
| Volume-to-Capacity Ratio (X) | | 0.147 | 0.302 | 0.103 | 0.336 | 0.375 | 0.072 | 0.415 | 0.524 | 0.189 | 0.457 | | | | | | | | | | | | | | | |
| Back of Queue (Q), ft/ln (95 th percentile) | | 47.3 | 164.7 | 42.3 | 126.5 | 208 | 29.1 | 133.9 | 271.2 | 51.8 | 237.8 | | | | | | | | | | | | | | | |
| Back of Queue (Q), veh/ln (95 th percentile) | | 1.9 | 6.6 | 1.7 | 5.1 | 8.3 | 1.2 | 5.4 | 10.8 | 2.1 | 9.5 | | | | | | | | | | | | | | | |
| Queue Storage Ratio (R/Q) (95 th percentile) | | 0.26 | 0.00 | 0.34 | 1.01 | 0.00 | 0.48 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | | | | | | | | | |
| Uniform Delay (d_1), s/veh | | 20.3 | 14.7 | 13.2 | 20.6 | 15.4 | 13.0 | 31.3 | 22.8 | 30.6 | 22.0 | | | | | | | | | | | | | | | |
| Incremental Delay (d_2), s/veh | | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.3 | 0.3 | 0.1 | 0.2 | | | | | | | | | | | | | | | |
| Initial Queue Delay (d_3), s/veh | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | |
| Control Delay (d), s/veh | | 20.4 | 14.8 | 13.2 | 20.8 | 15.5 | 13.0 | 31.6 | 23.1 | 30.7 | 22.2 | | | | | | | | | | | | | | | |
| Level of Service (LOS) | | C | B | B | C | B | B | C | C | C | C | | | | | | | | | | | | | | | |
| Approach Delay, s/veh / LOS | | 15.4 | | | | | 16.8 | | | | | 25.4 | | | | | 23.5 | | | | | | | | | |
| Intersection Delay, s/veh / LOS | | 20.2 | | | | | | | | | | | | | | | | | | | | | | | | |

| Multimodal Results | | EB | | | | | WB | | | | | NB | | | | | SB | | | | |
|----------------------------|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|----|--|--|--|--|
| Pedestrian LOS Score / LOS | | | | | | | | | | | | | | | | | | | | | |
| Bicycle LOS Score / LOS | | | | | | | | | | | | | | | | | | | | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|-------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Drive # 2 |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Drive # 2 |
| Analysis Year | 2039 | North/South Street | Parikhaven Row |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|----|----|-----------|---|---|------------|---|---|------------|----|---|----|---|
| | U | L | T | R | L | T | U | L | T | R | L | T | R | |
| Movement | 10 | 11 | 12 | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 |
| Priority | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Number of Lanes | LR | | | T | | | T | | | T | | | | |
| Volume (veh/h) | 49 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 13 | |
| Percent Heavy Vehicles (%) | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Proportion Time Blocked | 0 | | | 0 | | | 0 | | | 0 | | | | |
| Percent Grade (%) | 0 | | | 0 | | | 0 | | | 0 | | | | |
| Right Turn Channelized | 0 | | | 0 | | | 0 | | | 0 | | | | |
| Median Type Storage | Undivided | | | Undivided | | | Undivided | | | Undivided | | | | |

Critical and Follow-up Headways

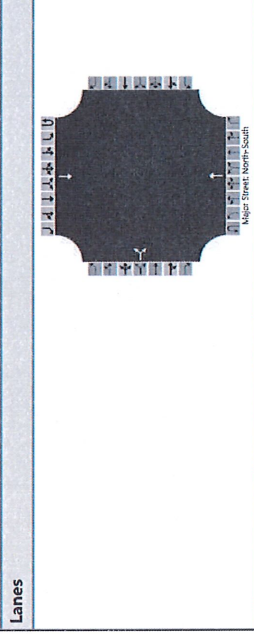
| | | |
|------------------------------|------|------|
| Base Critical Headway (sec) | 7.1 | 6.2 |
| Critical Headway (sec) | 6.43 | 6.23 |
| Base Follow-Up Headway (sec) | 3.5 | 3.3 |
| Follow-Up Headway (sec) | 3.53 | 3.33 |

Delay, Queue Length, and Level of Service

| | |
|---|------|
| Flow Rate, v (veh/h) | 53 |
| Capacity, c (veh/h) | 961 |
| v/c Ratio | 0.06 |
| 95% Queue Length, Q ₉₅ (veh) | 0.2 |
| Control Delay (s/veh) | 9.0 |
| Level of Service (LOS) | A |
| Approach Delay (s/veh) | 9.0 |
| Approach LOS | A |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|--------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Drive # 2 |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Drive # 2 |
| Analysis Year | 2039 | North/South Street | Parikhaven Row |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Opening Year 2039 'Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | |
|----------------------------|-----------|----|----|-----------|---|---|------------|---|---|------------|----|---|----|---|
| | U | L | T | R | L | T | U | L | T | R | L | T | R | |
| Movement | 10 | 11 | 12 | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 |
| Priority | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Number of Lanes | LR | | | T | | | T | | | T | | | | |
| Volume (veh/h) | 31 | 0 | 0 | 0 | 0 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 19 | |
| Percent Heavy Vehicles (%) | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Proportion Time Blocked | 0 | | | 0 | | | 0 | | | 0 | | | | |
| Percent Grade (%) | 0 | | | 0 | | | 0 | | | 0 | | | | |
| Right Turn Channelized | 0 | | | 0 | | | 0 | | | 0 | | | | |
| Median Type Storage | Undivided | | | Undivided | | | Undivided | | | Undivided | | | | |

Critical and Follow-up Headways

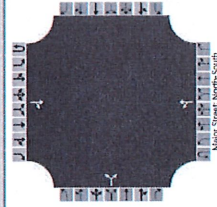
| | | |
|------------------------------|------|------|
| Base Critical Headway (sec) | 7.1 | 6.2 |
| Critical Headway (sec) | 6.43 | 6.23 |
| Base Follow-Up Headway (sec) | 3.5 | 3.3 |
| Follow-Up Headway (sec) | 3.53 | 3.33 |

Delay, Queue Length, and Level of Service

| | |
|---|------|
| Flow Rate, v (veh/h) | 34 |
| Capacity, c (veh/h) | 935 |
| v/c Ratio | 0.04 |
| 95% Queue Length, Q ₉₅ (veh) | 0.1 |
| Control Delay (s/veh) | 9.0 |
| Level of Service (LOS) | A |
| Approach Delay (s/veh) | 9.0 |
| Approach LOS | A |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|-------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Drive # 3 |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Drive # 3 |
| Analysis Year | 2039 | North/South Street | Parkhaven Row |
| Time Analyzed | Mid-day Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'Build' Conditions | | |



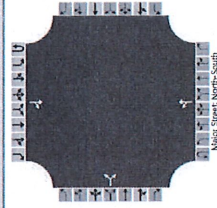
| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | | |
|----------------------------|-----------|----|----|-----------|---|---|------------|---|---|------------|----|---|---|---|---|
| | U | L | T | R | L | T | R | L | T | R | L | T | R | | |
| Movement | 10 | 11 | 12 | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | |
| Priority | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Number of Lanes | LR | | | | | | LT | | | TR | | | | | |
| Volume (veh/h) | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 4 | 9 | | | |
| Percent Heavy Vehicles (%) | 3 | 3 | 3 | 3 | | | | | | | | | | | |
| Proportion Time Blocked | 0 | | | | | | | | | | | | | | |
| Percent Grade (%) | 0 | | | | | | | | | | | | | | |
| Right Turn Channelized | Undivided | | | | | | | | | | | | | | |
| Median Type Storage | Undivided | | | | | | | | | | | | | | |

| Critical and Follow-up Headways | | | | | | | | | | | | |
|---------------------------------|------|------|------|--|--|--|--|--|--|--|--|--|
| Base Critical Headway (sec) | 7.1 | 6.2 | 4.1 | | | | | | | | | |
| Critical Headway (sec) | 6.43 | 6.23 | 4.13 | | | | | | | | | |
| Base Follow-Up Headway (sec) | 3.5 | 3.3 | 2.2 | | | | | | | | | |
| Follow-Up Headway (sec) | 3.53 | 3.33 | 2.23 | | | | | | | | | |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | |
|---|------|--|--|--|--|--|--|--|--|--|--|--|
| Flow Rate, v (veh/h) | 0 | | | | | | | | | | | |
| Capacity, c (veh/h) | 1597 | | | | | | | | | | | |
| v/c Ratio | 0.00 | | | | | | | | | | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | | | | | | | | | | | |
| Control Delay (s/veh) | 7.3 | | | | | | | | | | | |
| Level of Service (LOS) | A | | | | | | | | | | | |
| Approach Delay (s/veh) | 0.0 | | | | | | | | | | | |
| Approach LOS | | | | | | | | | | | | |

HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|--------------------------|-------------------------------------|----------------------------|------------------|
| Analyst | MSS | Intersection | Drive # 3 |
| Agency/Co. | GPD Group | Jurisdiction | City of Lakewood |
| Date Performed | 10/3/2018 | East/West Street | Drive # 3 |
| Analysis Year | 2039 | North/South Street | Parkhaven Row |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.92 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Design Year 2039 'Build' Conditions | | |



| Approach | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | | |
|----------------------------|-----------|----|----|-----------|---|---|------------|---|---|------------|----|---|---|---|---|
| | U | L | T | R | L | T | R | L | T | R | L | T | R | | |
| Movement | 10 | 11 | 12 | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | |
| Priority | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Number of Lanes | LR | | | | | | LT | | | TR | | | | | |
| Volume (veh/h) | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 0 | 0 | 0 | 14 | 5 | | | |
| Percent Heavy Vehicles (%) | 3 | 3 | 3 | 3 | | | | | | | | | | | |
| Proportion Time Blocked | 0 | | | | | | | | | | | | | | |
| Percent Grade (%) | 0 | | | | | | | | | | | | | | |
| Right Turn Channelized | Undivided | | | | | | | | | | | | | | |
| Median Type Storage | Undivided | | | | | | | | | | | | | | |

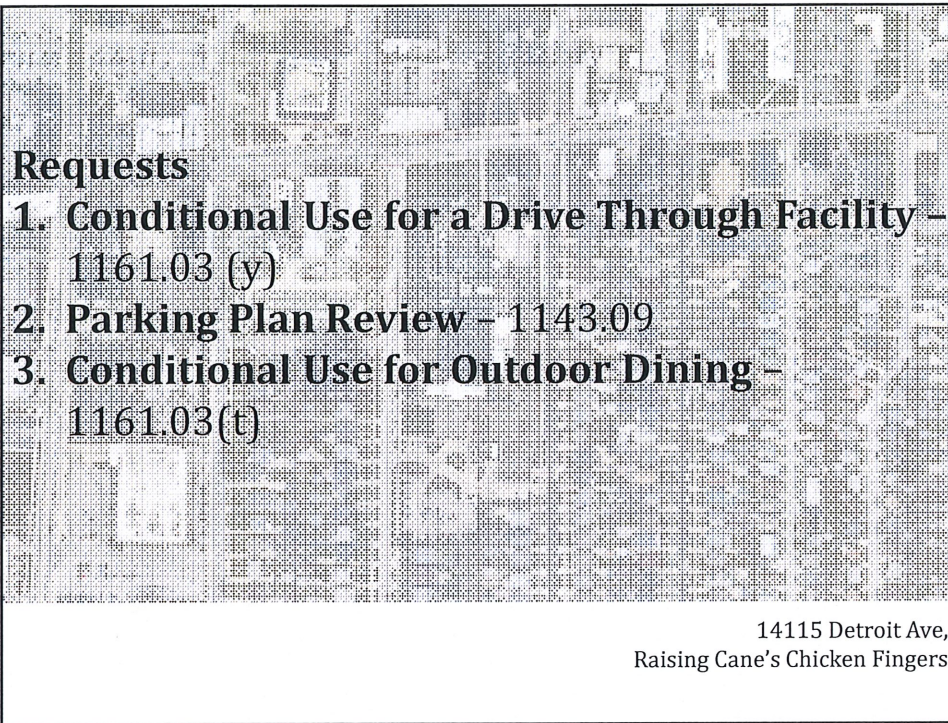
| Critical and Follow-up Headways | | | | | | | | | | | | |
|---------------------------------|------|------|------|--|--|--|--|--|--|--|--|--|
| Base Critical Headway (sec) | 7.1 | 6.2 | 4.1 | | | | | | | | | |
| Critical Headway (sec) | 6.43 | 6.23 | 4.13 | | | | | | | | | |
| Base Follow-Up Headway (sec) | 3.5 | 3.3 | 2.2 | | | | | | | | | |
| Follow-Up Headway (sec) | 3.53 | 3.33 | 2.23 | | | | | | | | | |

| Delay, Queue Length, and Level of Service | | | | | | | | | | | | |
|---|------|--|--|--|--|--|--|--|--|--|--|--|
| Flow Rate, v (veh/h) | 0 | | | | | | | | | | | |
| Capacity, c (veh/h) | 1589 | | | | | | | | | | | |
| v/c Ratio | 0.00 | | | | | | | | | | | |
| 95% Queue Length, Q ₉₅ (veh) | 0.0 | | | | | | | | | | | |
| Control Delay (s/veh) | 7.3 | | | | | | | | | | | |
| Level of Service (LOS) | A | | | | | | | | | | | |
| Approach Delay (s/veh) | 0.0 | | | | | | | | | | | |
| Approach LOS | | | | | | | | | | | | |



**Planning Commission
November 1, 2018**

**One Lakewood Place DEFERRED
until December Meeting**



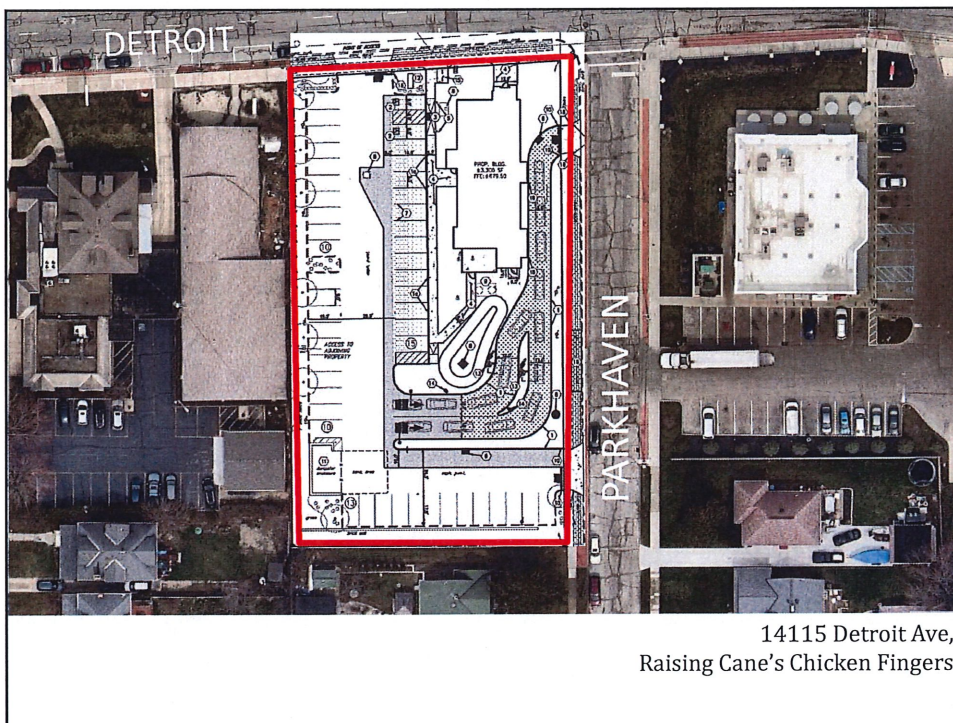
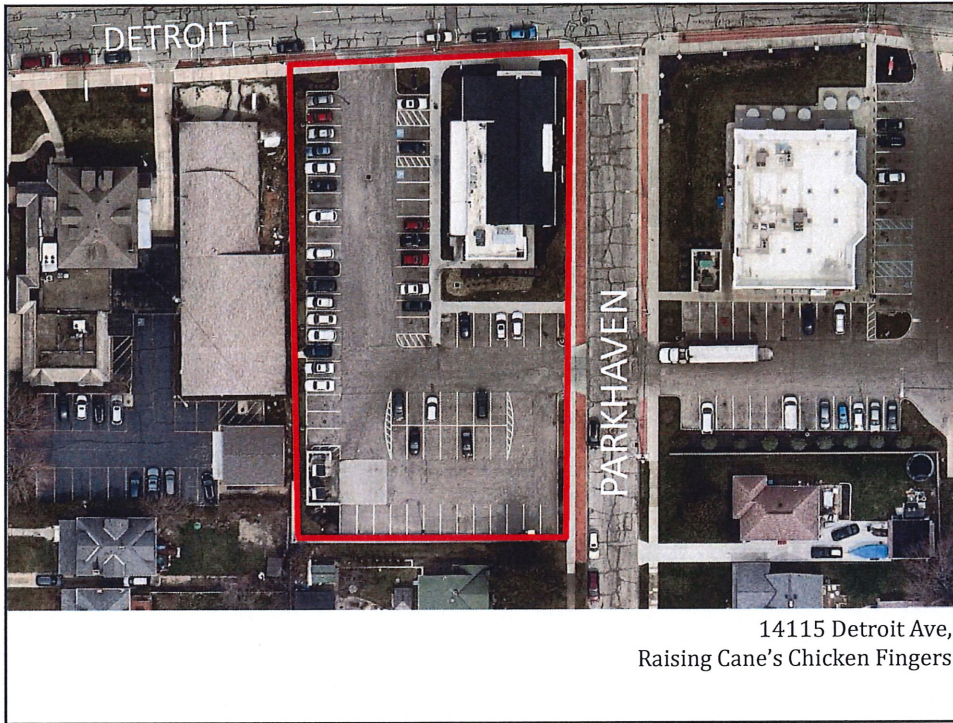
Requests

- 1. Conditional Use for a Drive Through Facility - 1161.03 (y)**
- 2. Parking Plan Review - 1143.09**
- 3. Conditional Use for Outdoor Dining - 1161.03(t)**

14115 Detroit Ave,
Raising Cane's Chicken Fingers



14115 Detroit Ave,
Raising Cane's Chicken Fingers









Request – Conditional Use for Drive-Through

The review and approval for drive-through service at the location of a new 3,340 square foot restaurant, pursuant to section 1129.02 - principal and conditional permitted uses and section 1161.03(y) - drive-through facility. The property is located in a C3, General Business district.

14115 Detroit Ave,
Raising Cane's Chicken Fingers
Conditional Use- Drive Through

1161.02 General Standards for Conditional Uses

- (a) That the conditional use will be consistent with the general objectives, or any specific objectives, for the zoning district in which it is located, as set forth in this Code and the Vision.
- (b) That the conditional use will be designed, constructed, operated and maintained so as not to be detrimental to or endanger the public health, safety, or general welfare.
- (c) That the conditional use will not change the essential character of the general vicinity in which it is located.
- (d) That the conditional use will not be injurious to the uses permitted by right in the immediate vicinity, nor substantially diminish or impair property values within said vicinity.
- (e) That establishment of the conditional use will not impede the normal and orderly development of uses permitted by right in the immediate vicinity.
- (f) That adequate utilities and public facilities and services, such as streets and sewer and water services, are or will be provided; and that establishment of the conditional use will not require expenditures of public funds for such public facilities or services.
- (g) That adequate measures have been taken to minimize traffic congestion on public streets.
- (h) That the conditional use will not suffer substantial hardship in the future due to the conditional use being surrounded by uses permitted by right, which are incompatible with the conditional use.
- (i) That the conditional use shall, in all other respects, conform to the applicable regulations of the district in which it is located as well as the specific conditions set forth in Section 1161.03.

14115 Detroit Ave,
Raising Cane's Chicken Fingers
Conditional Use- Drive Through

1161.03(y)

- (y) Drive-Through Facility. In a C1 Office, C2 Retail, C3 General Business or PD Planned Development District, a drive-through facility may be conditionally permitted as an accessory use provided that:
 - (1) Equipment installed for the operation of the drive-through facility including, but not limited to point of sale speakers, service windows, menu boards, vacuums, and washing bays shall not be located within fifty (50) feet of the nearest point of a dwelling regardless of the permitted use of the property;
 - (2) Subject to Section 1129.16(d), no drive-through facility shall be operated between the hours of 12:00 a.m. and 6:00 a.m., and no drive-through facility abutting residentially zoned or residentially used property shall be operated between the hours of 10:00 p.m. and 6:00 a.m.;
 - (3) Any drive-through equipment used in the drive-through facility including, but not limited to point of sale speakers, vacuums, and windows shall be designed and oriented to minimize the effect on abutting residential properties; sound attenuation walls, landscaping or other materials shall be used, as approved by the Architectural Board of Review where necessary;
 - (4) A traffic impact analysis shall be submitted by the applicant for the streets, signalized intersections and unsignalized intersections in the vicinity of the development to illustrate the pre-development and post-development traffic volumes and delay per vehicle at intersections, which analysis may be waived at the discretion of the Director with the agreement of the City Engineer but may notwithstanding a waiver, be required by the Commission;
 - (5) Adequate measures will be taken by the applicant to ensure that an acceptable flow of traffic will be maintained;
 - (6) A photometric study shall be required and the lighting design shall be approved by the Architectural Board of Review pursuant to Chapter 1325 of the Building Code, all lights shall be full cutoff fixtures and spotlights shall be projected down; all lighting shall be designed in a manner to minimize the intrusive effect of glare and illumination upon abutting properties, especially residential properties;
 - (7) Landscaping and screening pursuant to Chapter 1141, as approved by the Architectural Board of Review, shall be provided where such use abuts a residential district or use; said landscaped area shall not be less than ten (10) feet wide;
 - (8) The drive-through stacking lane shall be situated so that any overflow from the stacking lane shall not spill out onto public streets;
 - (9) The drive-through stacking lane shall be clearly delineated from the user's parking lot and shall have a capacity as stated in Schedule 1143.B.5 of this Code;
 - (10) Each stacking space shall be a minimum of twenty (20) feet in length; stacking requirements shall be measured from the first point of contact with the drive-through facility;
 - (11) No ingress or egress points shall conflict with turning movements at street intersections;
 - (12) Pedestrian crossing of the drive-through lane shall be clearly delineated by crosswalks; and
 - (13) Drive-through banking facilities should also feature a walk-up window or self-service automatic teller.

14115 Detroit Ave,
Raising Cane's Chicken Fingers
Conditional Use- Drive Through

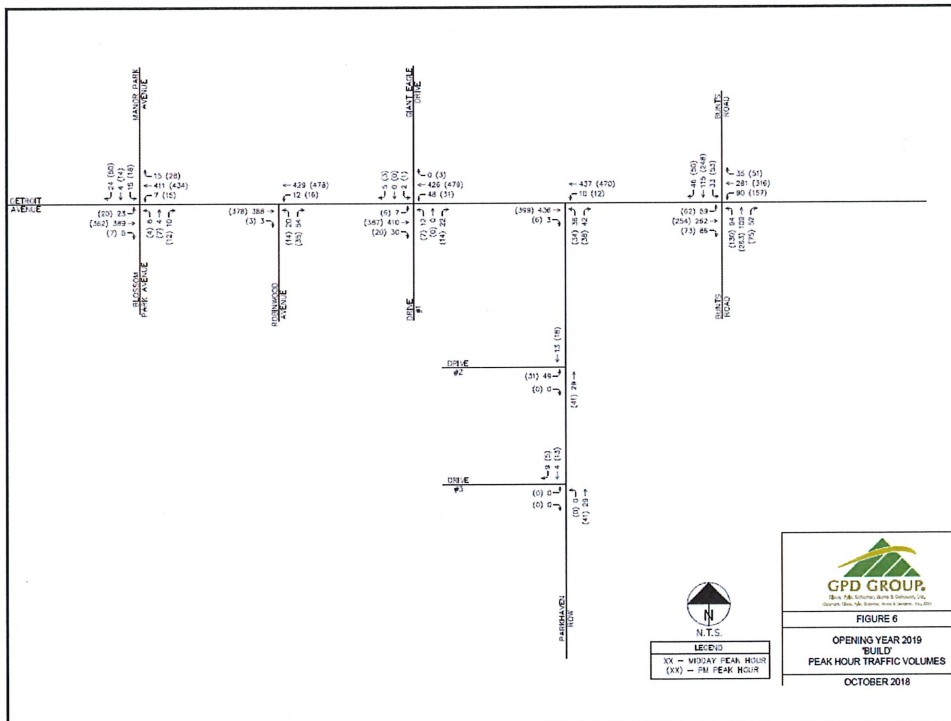
1161.03(y) - Summary

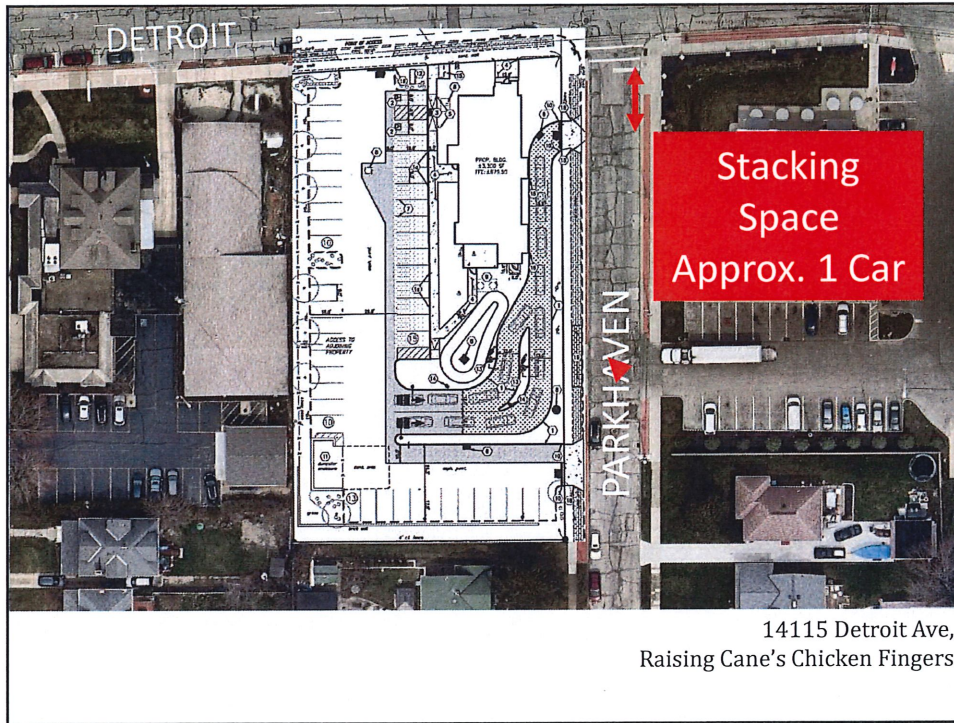
- Equipment shall not be located within 50 feet of a residence
- No drive-through facility abutting residential shall be operated between the hours of 10:00 p.m. and 6:00 a.m.
- Traffic Impact Analysis needed
- Insure acceptable flow of traffic
- Photometric Study needed
- 10' landscape buffer against residential
- 20' stacking spaces
- Turning movement must not conflict with intersections
- Pedestrian crossing delineated

1143.13 Stacking Space Requirements

Uses defined as commercial with a drive-through lane: 10' stacking spaces per drive through lane.

14115 Detroit Ave,
Raising Cane's Chicken Fingers
Conditional Use- Drive Through





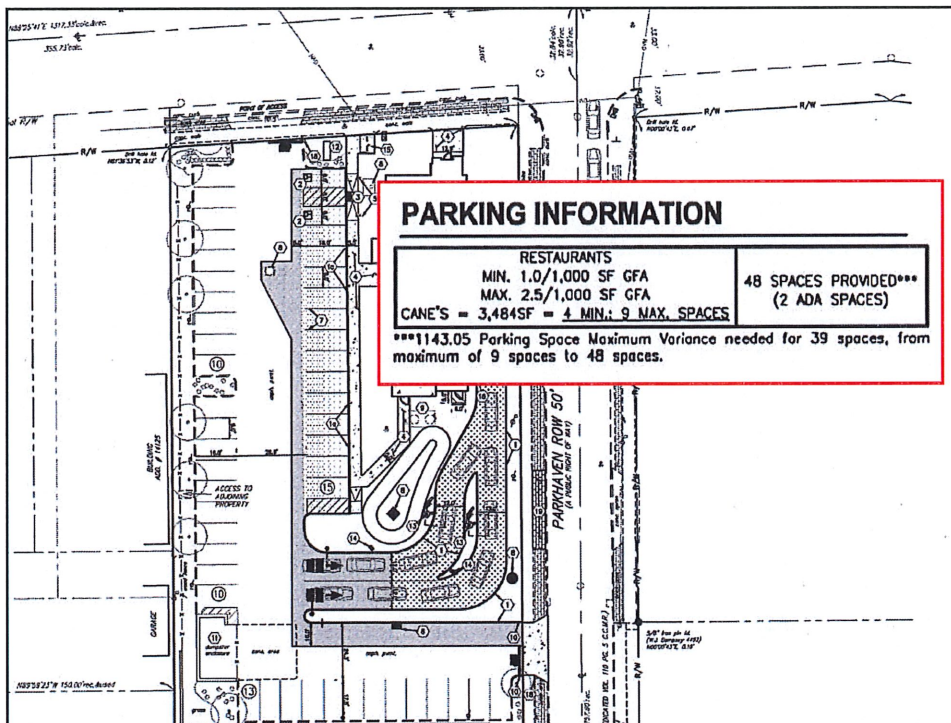
Request – Conditional Use for Drive-Through
The review and approval for drive-through service at the location of a new 3,340 square foot restaurant, pursuant to section 1129.02 - principal and conditional permitted uses and section 1161.03(y) – drive-through facility. The property is located in a C3, General Business district.

14115 Detroit Ave,
Raising Cane's Chicken Fingers
Conditional Use- Drive Through

Request - Parking Plan Review

The review and approval of a parking plan at the location of a new 3,340 square foot restaurant, pursuant to section 1143.09 - parking plan review.. The property is located in a C3, General Business district.

14115 Detroit Ave,
Raising Cane's Chicken Fingers
Parking Plan Review



Parking Plan

1143.01 PURPOSE.

The purpose of this chapter is to establish flexible vehicle parking requirements that **support the Vision** to provide safe, convenient, and integrated transportation options throughout the City. Parking requirements are based on the needs of the community and consider the context of the neighborhood, transit availability, on-street parking, density, mix of uses, walkability, and the use of alternative modes of transportation. **Parking requirements are designed to accommodate average day-to-day demand, as opposed to peak demand**, in order to reduce excessive off-street parking and free up land for more economically productive or environmentally conscious uses.

14115 Detroit Ave,
Raising Cane's Chicken Fingers
Parking Plan Review

Parking Plan

1143.09 PARKING PLAN REVIEW: PLANNING COMMISSION.

(a) The Commission shall review applications for parking plans that do not meet the set schedule in 1143.05.

- (1) Impact on central character of residential neighborhoods taking on overflow parking;
- (2) Available surface parking lots in the neighborhood that could be used for shared parking;
- (3) Similarly scaled projects throughout the City to compare parking footprint;
- (4) When a restaurant use is proposed, the **total number of tables to parking spaces**:
- (5) Total number of employees;
- (6) Alternative forms of transportation available in the neighborhood;
- (7) Implementation of bicycle facilities, including but not limited to, bicycle racks, covered bicycle parking, and shower facilities for employees;
- (8) Peak demand for parking spaces from all uses compared to the total supply of spaces;
- (9) Traffic impact analysis and/or a traffic demand study;

14115 Detroit Ave,
Raising Cane's Chicken Fingers
Parking Plan Review

Parking Plan

1143.11 EXCEPTIONS TO REQUIRED MAXIMUMS

The number of parking spaces provided may exceed the maximum specified per the following options as determined by the Commission

- (b) Implementation of additional measures that control the flow of stormwater runoff on the project site pursuant to BMPs by **treating or controlling an additional volume above the computed Water Quality Volume (WQv)**
- (c) Installation of a **streetscape improvement for public use** (transit waiting area, public art, pedestrian seating, decorative street lighting, etc.)
- (d) Implementation of an **innovative landscaping plan**, considered to be over and above the landscaping typically required by the Architectural Board of Review, with consideration given to plant, flower, and tree type, size, design, location and irrigation as part of the landscape plan.
- (e) Evidence that the property or business owner will **make its parking lot available for shared parking** with neighboring businesses.

14115 Detroit Ave,
Raising Cane's Chicken Fingers
Parking Plan Review

Request - Parking Plan Review

The review and approval of a parking plan at the location of a new 3,340 square foot restaurant, pursuant to section 1143.09 - parking plan review.. The property is located in a C3, General Business district.

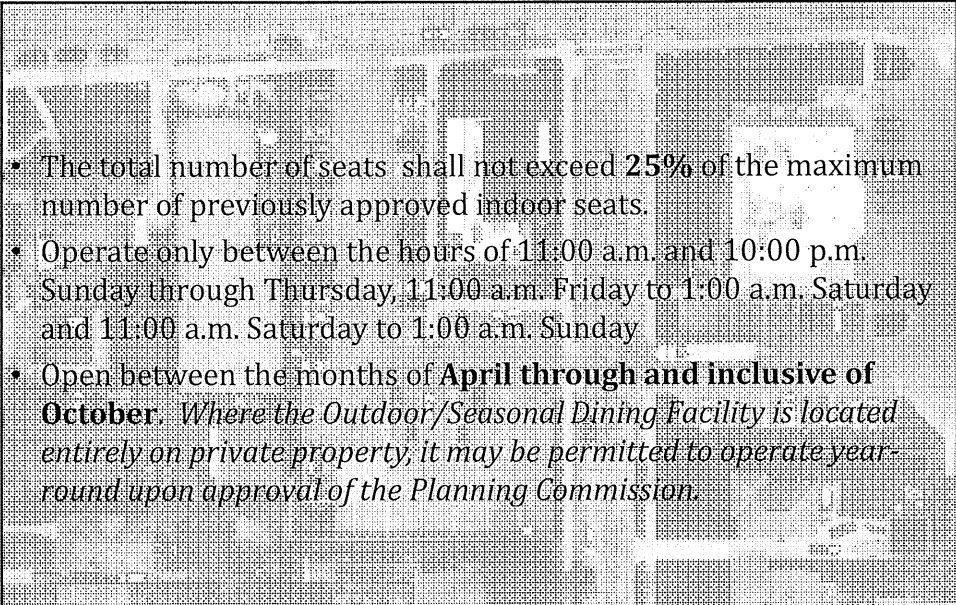
14115 Detroit Ave,
Raising Cane's Chicken Fingers
Parking Plan Review



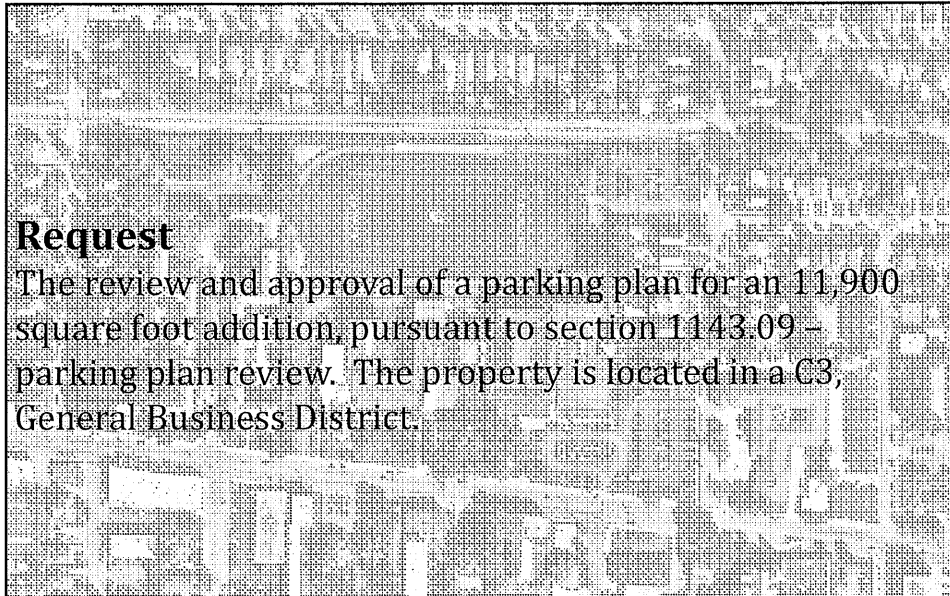
Request – Conditional Use Outdoor Dining

The review and approval for outdoor dining at the location of a new 3,340 square foot restaurant, pursuant to section 1129.02 – principal and conditional permitted uses and section 1161.03(t) – outdoor/seasonal dining facility. The property is located in a C3, General Business district.

14115 Detroit Ave,
Raising Cane's Chicken Fingers
Conditional Use-Outdoor Dining

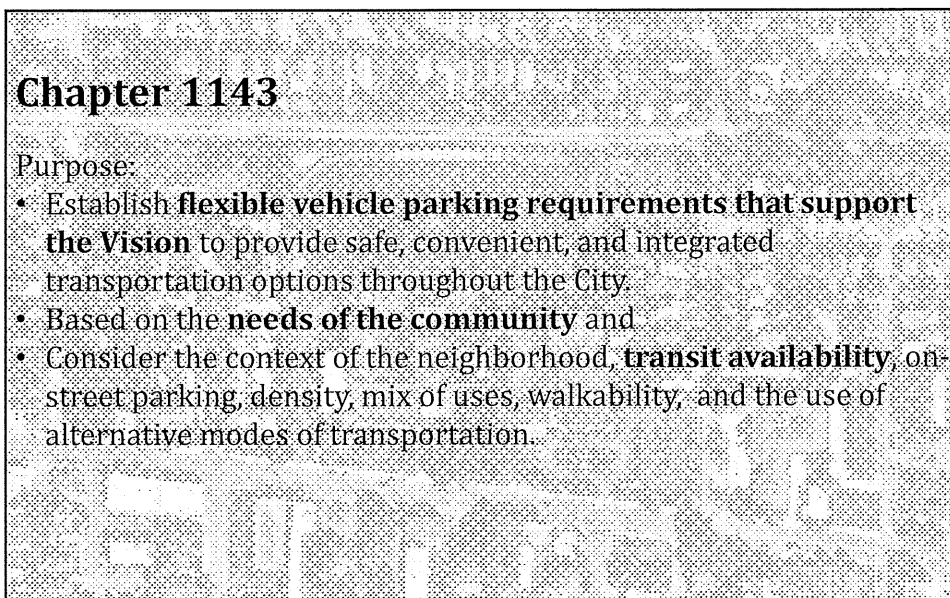
- 
- The total number of seats shall not exceed **25%** of the maximum number of previously approved indoor seats.
 - Operate only between the hours of 11:00 a.m. and 10:00 p.m. Sunday through Thursday, 11:00 a.m. Friday to 1:00 a.m. Saturday and 11:00 a.m. Saturday to 1:00 a.m. Sunday
 - Open between the months of **April through and inclusive of October**. *Where the Outdoor/Seasonal Dining Facility is located entirely on private property, it may be permitted to operate year-round upon approval of the Planning Commission.*

11801 Clifton Blvd
Diner on Clifton
Conditional Use Outdoor Dining



Request
The review and approval of a parking plan for an 11,900 square foot addition, pursuant to section 1143.09 – parking plan review. The property is located in a C3, General Business District.

13500 Detroit Avenue
St. Edward High School
Parking Plan Review



Chapter 1143

Purpose:

- Establish **flexible vehicle parking requirements that support the Vision** to provide safe, convenient, and integrated transportation options throughout the City.
- Based on the **needs of the community** and
- Consider the context of the neighborhood, **transit availability**, on-street parking, density, mix of uses, walkability, and the use of alternative modes of transportation.

13500 Detroit Avenue
St. Edward High School
Parking Plan Review

1143.05 Schedule of Uses

| <u>Institutional</u> | |
|---|--|
| Elementary, Secondary and High Schools, College, Trade School | As required by the Commission per Section <u>1143.09</u> |
| Church | As required by the Commission per Section <u>1143.09</u> |
| Hospital | As required by the Commission per Section <u>1143.09</u> |
| Public Recreation | As required by the Commission per Section <u>1143.09</u> |

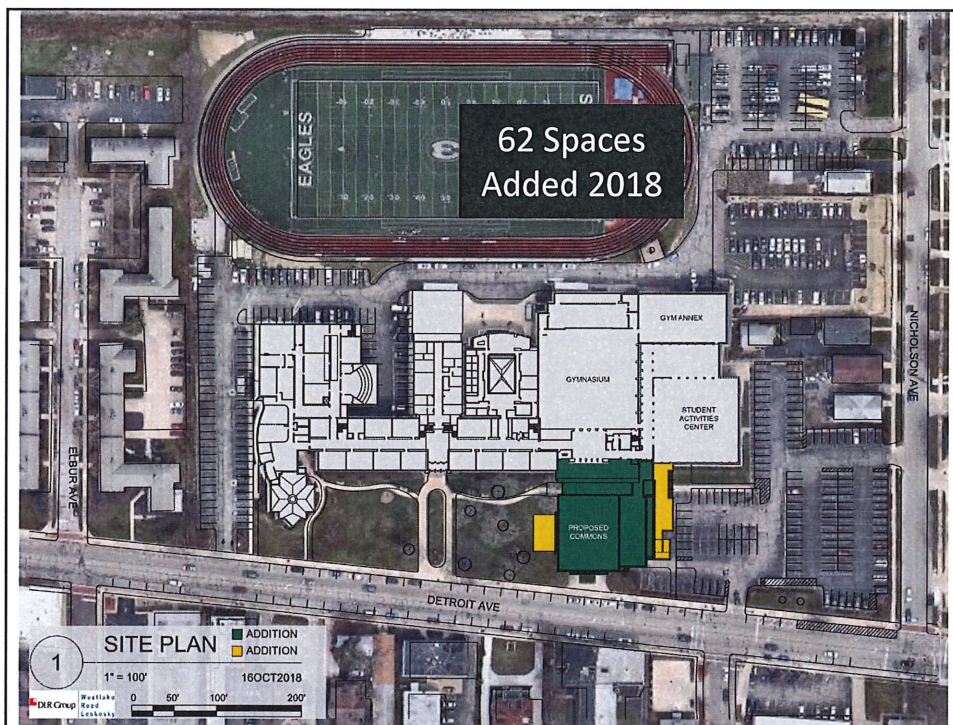
13500 Detroit Avenue
 St. Edward High School
 Parking Plan Review

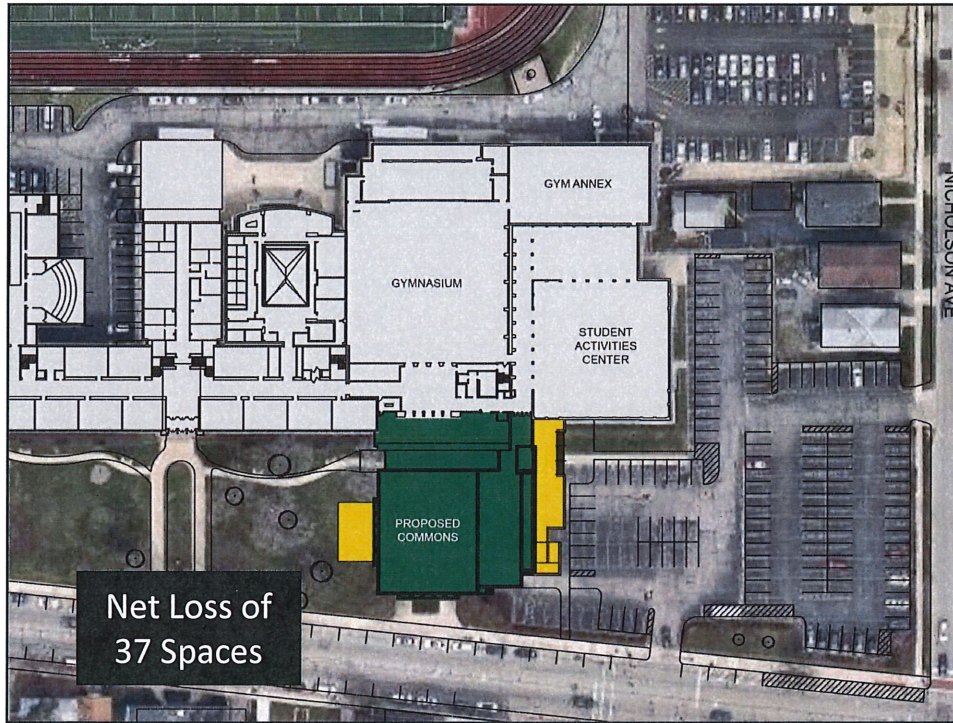
1143.09 PARKING PLAN REVIEW

(a) The Commission shall review applications for parking plans that do not meet the set schedule in 1143.05. In addition to Section 1143.09 and Section 1143.10, the Commission may consider the following when reviewing an application:

- (1) Impact on central character of residential neighborhoods taking on overflow parking;
- (2) Available surface parking lots in the neighborhood that could be used for shared parking;
- (3) Similarly scaled projects throughout the City to compare parking footprint;
- (4) When a restaurant use is proposed, the total number of tables to parking spaces;
- (5) Total number of employees;
- (6) Alternative forms of transportation available in the neighborhood;
- (7) Implementation of bicycle facilities, including but not limited to, bicycle racks, covered bicycle parking, and shower facilities for employees;
- (8) Peak demand for parking spaces from all uses compared to the total supply of spaces;
- (9) Traffic impact analysis and/or a traffic demand study;
- (10) For uses defined as Institutional or Public Assembly in Schedule 1143.05, the following guidelines:
 - A. One space for each 80 square feet of all auditoria and public assembly rooms; and
 - B. One space for each employee.

13500 Detroit Avenue
 St. Edward High School
 Parking Plan Review





Comparison to Lakewood High School

| | Students | Staff | Parking Spaces (including handicap) | Ratio (Parking Space/Person) | Zip Codes Represented |
|-----------------------------------|----------|-------|---|---------------------------------|--------------------------|
| St. Edward High School (Existing) | 963 | 137 | 400 | .363 | 71 |
| Lakewood High School | 1420 | 150 | 475 | .302 | 1 |

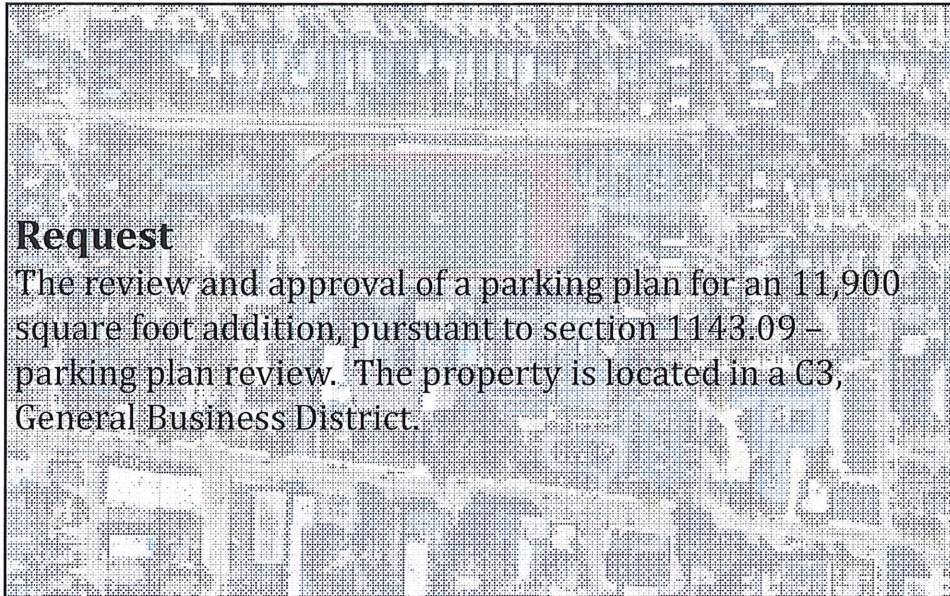
13500 Detroit Avenue
St. Edward High School
Parking Plan Review

Comparison to Lakewood High School

| | Students | Staff | Parking Spaces (including handicap) | Ratio (Parking Space/Person) | Zip Codes Represented |
|-----------------------------------|----------|-------|---|---------------------------------|--------------------------|
| St. Edward High School (Proposed) | 963 | 137 | 363 | .33 | 71 |
| Lakewood High School | 1420 | 150 | 475 | .302 | 1 |


13500 Detroit Avenue
St. Edward High School
Parking Plan Review





Request
The review and approval of a parking plan for an 11,900 square foot addition, pursuant to section 1143.09 – parking plan review. The property is located in a C3, General Business District.

13500 Detroit Avenue
St. Edward High School
Parking Plan Review



Light Up Lakewood
Outdoor Dining



Request

The review and approval of an exception to the Outdoor Dining Regulations in order to permit establishments with outdoor dining facilities within the event footprint to be open during Light Up Lakewood on December 1, 2018.

Light Up Lakewood
Outdoor Dining

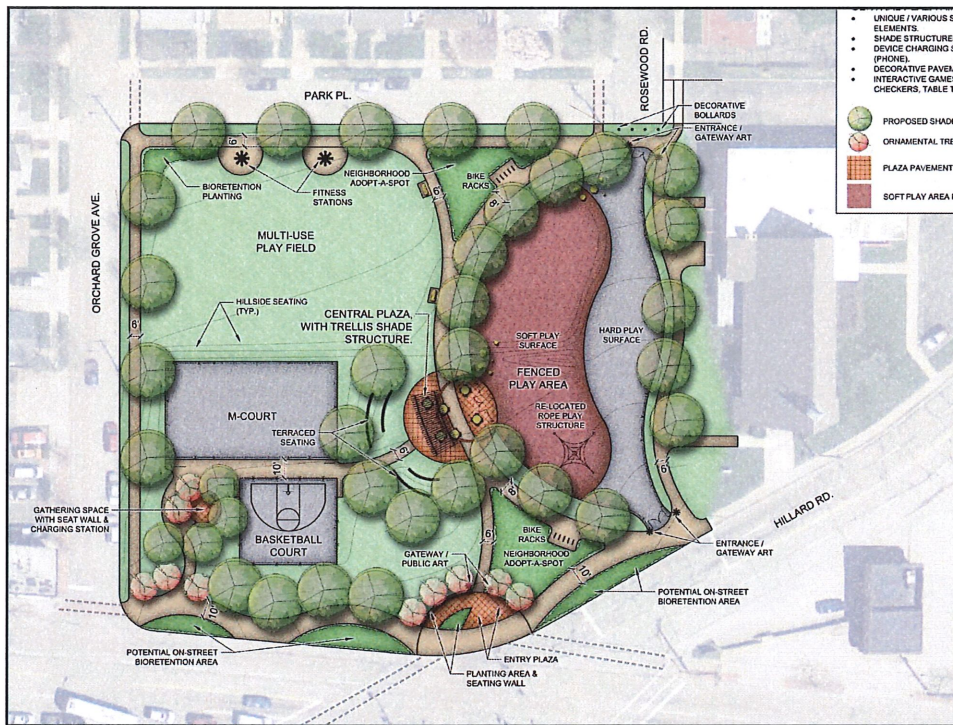


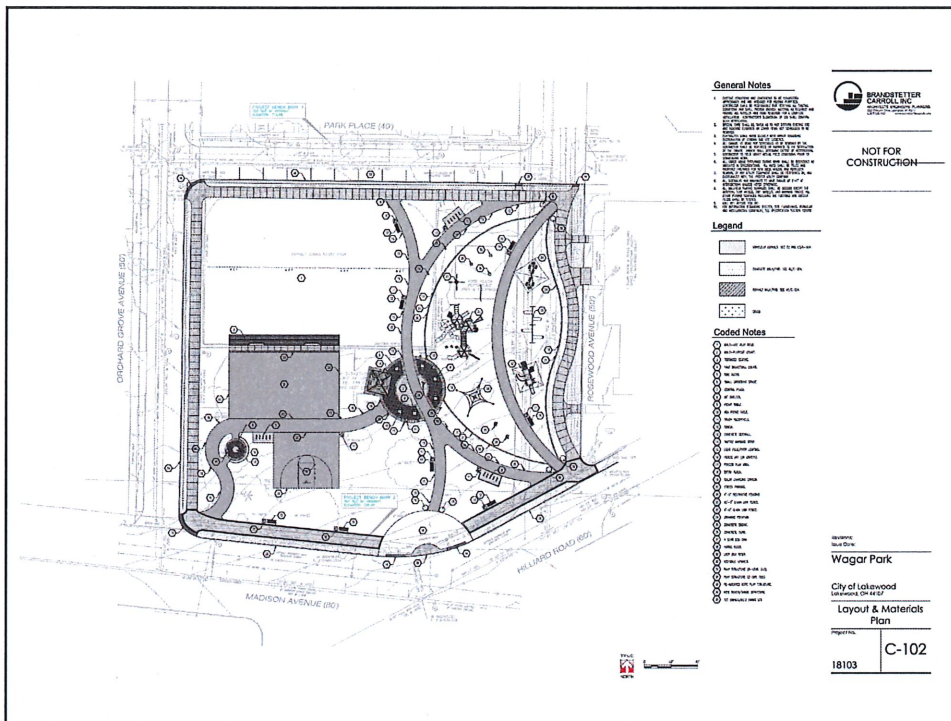
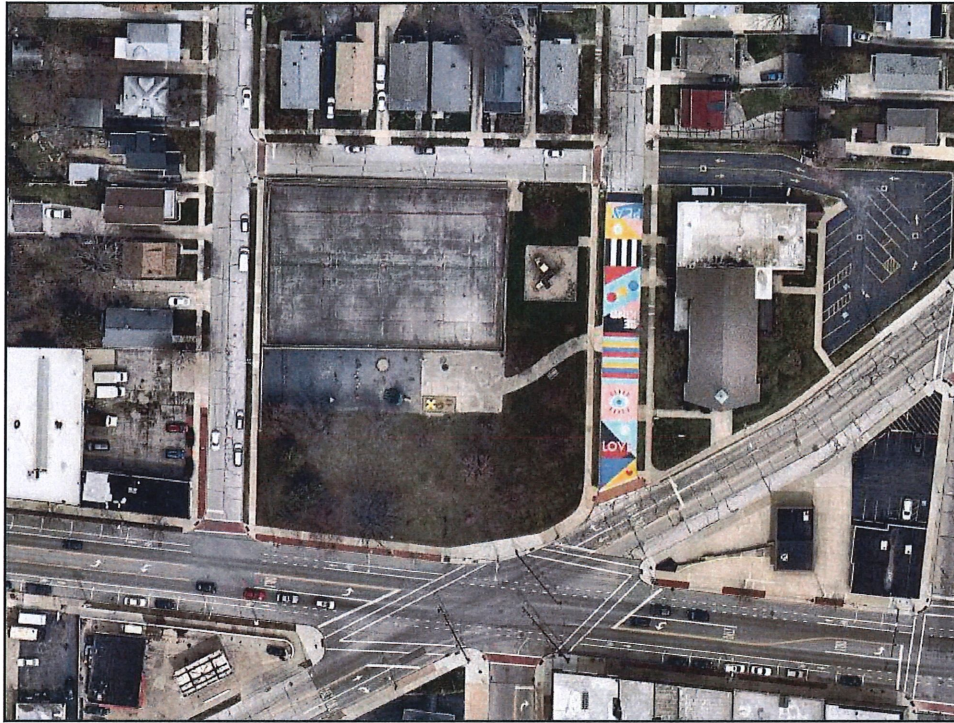
Communication

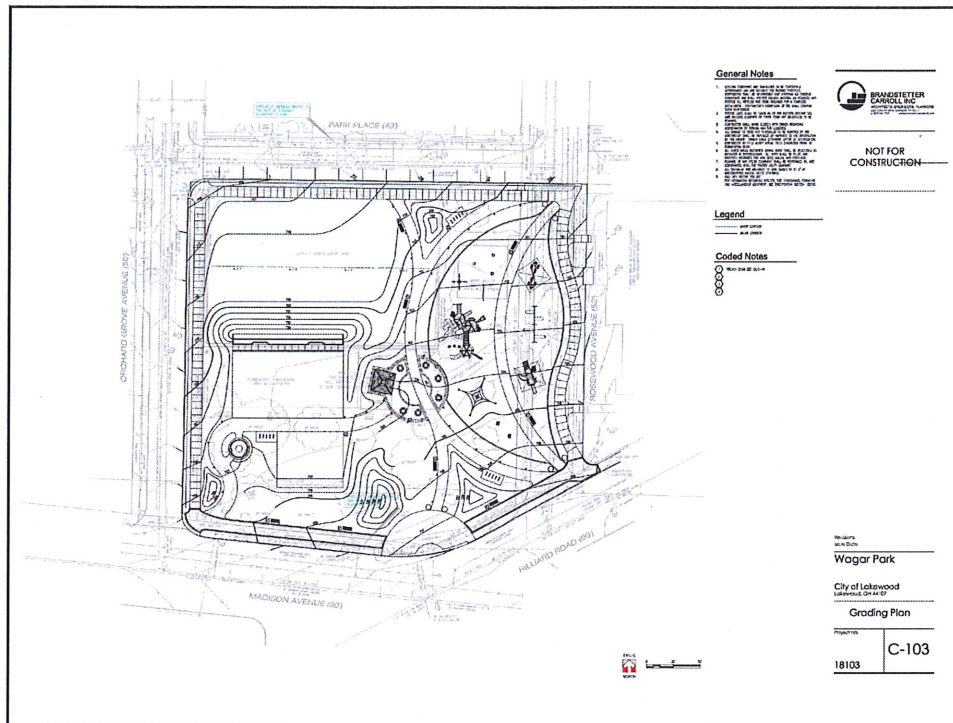
LakewoodAlive will present a communication about the Warren Road Beautification Phase 2 project. LakewoodAlive is applying for the Cuyahoga County Supplemental Grant Program to help cover the project costs.

Communication

The City will present a communication about the Wagar Park redesign that will take place in 2019. The City is applying for the Cuyahoga County Supplemental Grant Program to help cover up to \$50,000 of the project costs, which are estimated to be approximately \$865,000.







Communication

The City will present a communication about the Wagar Park redesign that will take place in 2019. The City is applying for the Cuyahoga County Supplemental Grant Program to help cover up to \$50,000 of the project costs, which are estimated to be approximately \$865,000.



Planning Commission
November 1, 2018