

**MINUTES
PLANNING COMMISSION
DECEMBER 6, 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 McMahon
Monica Rossiter

Others Present

Katelyn Milius, City Planner, Secretary
Bryce Sylvester, Director of Planning and Development
Kevin Butler, Law Director
Mark Papke, City Engineer

2. Approve the Minutes of the November 1, 2018 Meeting

A motion was made by Mr. Coyne, seconded by Mr. McMahon to **APPROVE** the minutes of the November 1, 2018 meeting as amended prior to the meeting. All of the members voting yea, 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 -

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, October, and November meetings. (Page 3)

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, October, and November meetings. (Page 8)

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, October, and November meetings. (Page 13)

The Chairman announced that the Docket Nos. 09-25-18, 09-26-18, 09-27-18 would be heard together.

Drew Gatliff, RCO Limited, applicant was to explain the amended proposals. Applicant presented data on the number of cars served per hour at the Strongsville location. The peak rate shown in a week's data was 70 cars/hour.

Regarding the drive-through service, administrative staff expanded on the applicant's comments. Members asked about directional signage for entry and exit from the site, landscaping and fencing to buffer the south property line, volume of dine-in patrons and on-site parking. Recommended curb design to force drivers exiting on Parkhaven to turn left.

Administrative staff elaborated on the parking plan. Applicant proposing landscaping, a bench on Detroit, shared parking agreement for 4 spaces with Hixon's, and increased stormwater management. Members asked about the impact of the storm water issue and the requirement of an electric vehicle charging station on Detroit as a streetscape improvement.

Administrative staff elaborated on the outdoor dining portion of the project.

Public comment was taken. Questions arose about construction time and noise, and the logistics required for approvals and permits. ABR and PC approvals would be required.

Mr. Gatliff said typical construction time was 8:00 A.M. to 4:00 or 5:00 P.M., expected length of construction would be four to five months, and additional landscaping was being planned.

Members were concerned about car stacking that could potentially block traffic onto and from Parkhaven Row – a dead-end street. Discussion ensued about conditional uses. The members said there were issues that needed to be addressed and shown on the site plan prior to the granting of approvals.

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 January 3, 2019 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, October, and November meetings. (Page 18)

Administrative staff detailed the processes that were necessary for preliminary plan approval prior to the applicant's presentation.

George Papandreas, Carnegie Management and Development Corp., Greg Soltis, RDL Architects, Marie Dowling, Behnke Associates, and Meg Kavourias, RDL Architects were present to explain the request and updated site plan.

The members liked the modifications that were made to the planned development, such as the scale and massing of the structures, improving the southern edge design, and setbacks. Administrative had no comments.

Public comment was taken. Questions were about a retaining wall, front setbacks in line with the existing homes, effect on the project by the proposed Bunts Road/Detroit Avenue development. Outlined by administrative staff for the members was the list of codes that applied to the approval (1156.04(c) and 1156.03).

A motion was made by Mr. Gaydos, seconded by Mr. McMahon to **APPROVE** the preliminary plan. All of the members voting yea, the motion passed.

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. This item was deferred from the November meeting. (Page 20)

Mykie Hrusovski, AIA, DLR Group, applicant and Marie Dowling were present to explain the request.

Administrative staff recapped the conversation from the last meeting (1143.09). The members liked the changes made to the drop-off area.

Public comment was taken. The members suggested the administrative staff should address the issues from the parking lot approval granted at the June 1, 2017 meeting.

A motion was made by Mr. Gaydos, seconded by Ms. Rossiter to **APPROVE** the request as presented. All of the members voting yea, the motion passed.

On behalf of the administrative staff and Planning Commission members, Mr. Sylvester thanked Mr. Gaydos for his six years as a member of the Planning Commission.

ADJOURN

A motion was made by Mr. Gaydos, seconded by Mr. Baker to **ADJOURN** the meeting at 10:00 P.M. All of the members voting yea, the motion passed.

Katelyn Milius
Signature
on behalf of chair

1/3/2019
Date



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. Autumn Lam
- 2. Drew Gatliff
- 3. Jesse Sheddler
- 4. Ben Humber
- 5. MYKIE H...
- 6. George O. ...
- 7. _____
- 8. _____
- 9. _____
- 10. _____
- 11. _____

- 1. [Signature]
- 2. [Signature]
- 3. _____
- 4. [Signature]
- 5. _____
- 6. _____
- 7. _____
- 8. _____
- 9. _____
- 10. _____
- 11. _____

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, December 6, 2018



Bill Hixson
Hixson's Inc.
14125 Detroit Ave
Lakewood, OH 44107

We would like to enter into a cross-parking agreement via this letter of understanding. We, Raising Cane's Ohio, will allow Hixson's Inc. to utilize up to four (4) parking spaces of our parking lot for use by your patrons after completion of construction. Our lot will be closed during construction. The existing pedestrian access from the Raising Cane's parking lot to the Hixson's Inc. building will remain.

By signing below, this is your acceptance of the agreement between Raising Cane's Ohio and Hixson's Inc. to allow Hixson's to utilize up to four (4) parking spaces on the Raising Cane's lot.

Signature: Hixson's Wm E Hixson
Hixson's Inc.

Date: Dec 4 2016

Printed Name: HIXSON Wm E HIXSON
Hixson's Inc.

Signature: [Signature]
Raising Cane's Ohio

Date: Dec, 6 2018

Printed Name: Drew Gatliff
Raising Cane's Ohio



Code Section 1143.11

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 when reviewing an application to exceed the maximum number of parking spaces allowed per Section 1143.05.

- (a) One space increase for each space located in a parking structure.
- ✓ (b) Implementation of additional measures that control the flow of stormwater runoff on the project site pursuant to BMPs by:
 - ✓ (1) Providing and treating or controlling an additional volume above the computed Water Quality Volume (WQv) as determined by Chapter 1339. Post-Construction BMP exemptions mentioned in Chapter 1339 shall not apply to this section.
 - (2) Projects that disturb an area less than 8,000 square feet may use this exception.
- ✓ (c) Installation of a streetscape improvement for public use, which streetscape improvement shall require approval by the Architectural Board of Review, including, but not limited to:
 - (1) A transit waiting environment along an existing bus route:
 - A. The transit waiting environment shall take into consideration design guidelines for transit waiting environments produced by the local transit authority, and any other design guidelines or standards as recommended by the administration or City Council;
 - B. The location of the transit waiting environment is to be determined by the Director or such other persons as the Director may designate.
 - (2) Public art installation;
 - (3) Public pedestrian seating, street trees or decorative street lighting.
- ✓ (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.
(Ord. 86-14. Passed 1-20-2015.)



A Franchise of Raising Cane's
 1062 Ridge St. | Columbus, OH | 43215
 PH: 614.586.4348
 FX: 614.559.3989



Existing Site

- Former Bob Evans
 - A. 67 parking spaces
 - B. 79% impervious surface area
 - C. 13 trees on site
 - 1 along Detroit
 - 5 along Parkhaven
 - D. Parking spaces within 10' of Detroit
 - E. Pedestrian access to Hixson's

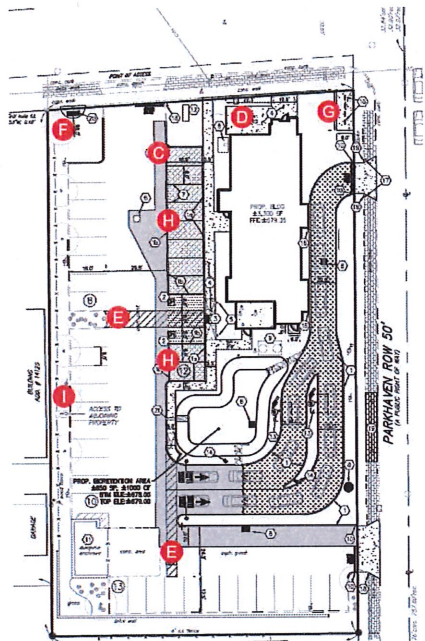


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Proposed Site Plan

- Raising Cane's Chicken Fingers
 - A. 43 parking spaces (35% reduction)
 - B. 66% impervious surface area (>5,000sf increase)
 - C. Parking spaces set back 22' (min) from Detroit
 - D. Patio seating along Detroit
 - E. Pedestrian connectivity from all parking areas
 - F. Public bench on Detroit
 - G. 4 additional bike racks
 - H. Pervious paving @ parking stalls
 - I. Pedestrian access to Hixson's

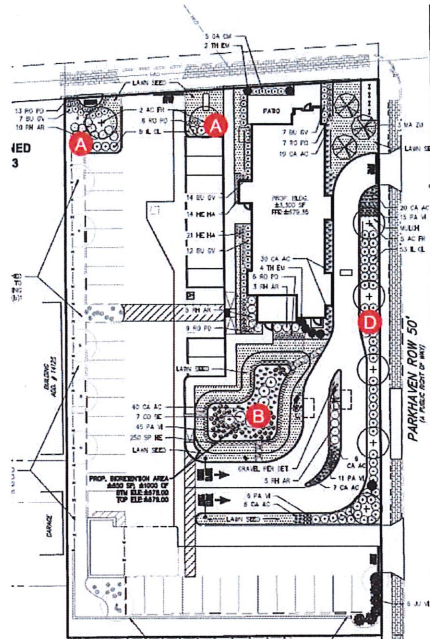


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Proposed Landscape Plan

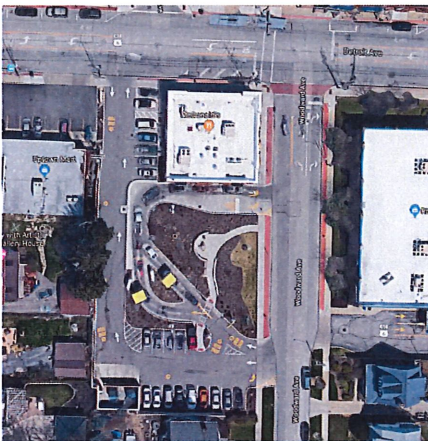
- Raising Cane's Chicken Fingers
 - A. Increased landscaping between parking lot and Detroit
 - B. Bioswale in drive-thru area (5x required water quality)
 - C. 18 trees on site (Increase of 5)
 - 4 along Detroit
 - 8 along Parkhaven
 - D. Increased landscaping along Parkhaven



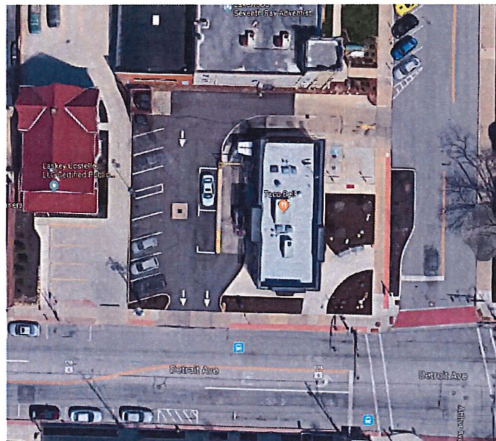
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Comparables



McDonald's



Taco Bell



A Franchise of Raising Cane's
 1062 Ridge St. | Columbus, OH | 43215
 PH: 614.586.4348
 FX: 614.559.3989



Comparables



Dunkin Donuts



A Franchise of Raising Cane's
1062 Ridge St. | Columbus, OH | 43215
PH: 614.586.4348
FX: 614.559.3989



Comparables



A Franchise of Raising Cane's
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FX: 614.559.3989



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

Revised November 2018

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Revised November 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
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Date



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Appendix B: ITE Trip Generation Calculations

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I. Purpose:

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.

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 aerial.

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

Typically, trip generation calculations are 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. However for this particular study, trip generation information was provided by Raising Cane’s Chicken Fingers based on data from similar restaurants.

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. However, as previously mentioned, these numbers were not utilized for the purposes of this study as they were determined to be too low based on the numbers provided by the restaurant.

Officials from Raising Cane’s Restaurant provided information that approximately 70% of their business during peak hours of operation is conducted via the Drive-Through, which they estimated to be approximately 100 vehicles. The remaining 30% of restaurant patrons (approximately 43 vehicles), will be dining-in or carrying out. It was assumed that all vehicles entering the site during the peak hours would also exit during the peak hour.

Based on the information in the paragraph above, the proposed Raising Cane’s Restaurant is anticipated to generate the following trip ends once constructed:

Raising Cane’s Chicken Fingers Fast-Food Restaurant with Drive-Through Window

- iii. Weekday Mid-day Peak Hour (i.e. lunch time rush hour):
= 286 trip ends (143 enter and 143 exit)
- iv. Weekday Peak Hour (i.e. evening rush hour):
= 286 trip ends (143 enter and 143 exit)

Since 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

- v. Weekday AM Peak Hour (i.e. morning rush hour):
= 52 trip ends (29 enter and 23 exit)
- vi. 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.

Given that the proposed Raising Cane’s restaurant is a fast food restaurant with a drive through window, it is expected that it will generate a significant amount more traffic than the Bob Evan’s restaurant it will be replacing since fast food restaurants are setup to handle larger numbers of customers more quickly. Directly comparing the PM peak hour trip generation shown in the preceding paragraphs, it can be noted that the Raising Cane’s will be expected to generate 286 trip ends during the PM peak, where the Bob Evan’s was only expected to generate 51 trip ends. This means that the Raising Cane’s will generate 235 more trips than Bob Evans.

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 70% of the traffic entering the restaurant site will be utilizing the drive-thru while the remaining 30% will dine-in or carry out. With that in mind, 70% of the traffic exiting from the site is shown exiting via Drive # 2 (the drive-thru exit), and the other 30% 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 HCSZ 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 below 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.

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	8.4	A	8.6
Eastbound Approach	A	0.5	A	0.4	A	0.4
Westbound Left	A	8.2	A	8.1	A	8.2
Westbound Approach	A	0.1	A	0.3	A	0.2
Northbound Left-Thru-Right	C	15.7	C	16.1	C	17.5
Northbound Approach	C	15.7	C	16.1	C	17.5
Southbound Left-Thru-Right	C	15.2	C	17.0	C	20.3
Southbound Approach	C	15.2	C	17.0	C	20.3
Detroit Avenue / Robinwood Avenue						
Westbound Left	A	6.2	A	8.2	A	8.3
Westbound Approach	A	0.2	A	0.2	A	0.3
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	8.5	A	8.6
Eastbound Approach	A	0.1	A	0.1	A	0.1
Westbound Left	A	8.7	A	8.7	A	8.6
Westbound Approach	A	1.3	A	1.3	A	1.2
Northbound Left-Right	B	12.4	B	12.4	B	12.3
Northbound Approach	B	12.4	B	12.4	B	12.3
Southbound Left-Right	B	10.5	B	10.7	B	12.0
Southbound Approach	B	10.5	B	10.7	B	12.0

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 / Parkhaven Row						
Westbound Left	A	8.3	A	8.2	A	8.4
Westbound Approach	A	0.0	A	0.1	A	0.3
Northbound Left-Right	B	11.9	B	11.7	B	13.3
Northbound Approach	B	11.9	B	11.7	B	13.3
Detroit Avenue / Bunte Road						
Eastbound Left	C	23.5	B	19.3	C	25.1
Eastbound Thru	B	19.0	B	14.5	B	19.3
Eastbound Right	B	17.2	B	13.1	B	17.3
Eastbound Approach	B	19.2	B	15.0	B	19.7
Westbound Left	C	24.0	B	19.8	C	25.1
Westbound Thru	B	19.2	B	15.2	B	19.5
Westbound Right	B	16.8	B	13.0	B	16.5
Westbound Approach	C	20.1	B	16.4	C	20.4
Northbound Left	C	21.1	C	29.9	C	22.9
Northbound Thru-Right	B	18.2	C	22.7	B	18.5
Northbound Approach	B	19.1	C	24.6	C	20.2
Southbound Left	C	20.7	C	30.0	C	21.1
Southbound Thru-Right	B	18.0	C	21.8	B	18.6
Southbound Approach	B	18.5	C	23.1	B	19.0
Intersection Total	B	19.4	B	19.7	B	19.9
Parkhaven Row / Drive #2						
Eastbound Left-Right						
Eastbound Approach						
Parkhaven Row / Drive #3						
Northbound Left-Thru						
Southbound Approach						

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 Delay (sec)	PM Peak Delay (sec)	PM Peak LOS
Detroit Avenue / Blossom Park Avenue / Manor Park Avenue						
Eastbound Left	A	8.3	A	8.5	A	8.6
Eastbound Approach	A	0.5	A	0.5	A	0.4
Westbound Left	A	8.2	A	8.3	A	8.3
Westbound Approach	A	0.1	A	0.3	A	0.2
Northbound Left-Thru-Right	C	16.3	C	16.8	C	18.2
Northbound Approach	C	16.3	C	16.8	C	16.2
Southbound Left-Thru-Right	C	15.6	C	18.1	C	21.7
Southbound Approach	C	15.6	C	18.1	C	21.7
Detroit Avenue / Robinwood Avenue						
Westbound Left	A	8.2	A	8.2	A	8.4
Westbound Approach	A	0.2	A	0.2	A	0.3
Northbound Left-Thru-Right	B	12.5	B	12.3	B	12.9
Northbound Approach	B	12.5	B	12.3	B	12.9
Detroit Avenue / Giant Eagle Drive / Drive #1						
Eastbound Left	A	8.3	A	8.5	A	8.7
Eastbound Approach	A	0.1	A	0.1	A	0.1
Westbound Left	A	8.8	A	8.8	A	8.7
Westbound Approach	A	1.3	A	1.3	A	1.1
Northbound Left-Right	B	12.5	B	12.5	B	12.5
Northbound Approach	B	12.5	B	12.5	B	12.5
Southbound Left-Right	B	10.6	B	10.8	B	12.2
Southbound Approach	B	10.6	B	10.8	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 Delay (sec)	PM Peak Delay (sec)	PM Peak LOS
Detroit Avenue / Parkhaven Row						
Westbound Left	A	8.3	A	8.3	A	8.4
Westbound Approach	A	0.0	A	0.1	A	0.3
Northbound Left-Right	B	12.1	B	11.9	B	13.6
Northbound Approach	B	12.1	B	11.9	B	13.6
Detroit Avenue / Burns Road						
Eastbound Left	C	23.9	B	19.7	C	26.0
Eastbound Thru	B	19.1	B	14.6	B	18.2
Eastbound Right	B	17.2	B	13.1	B	16.2
Eastbound Approach	B	19.4	B	15.1	C	19.1
Westbound Left	C	24.4	C	20.3	C	26.3
Westbound Thru	B	19.4	B	15.3	B	19.1
Westbound Right	B	16.8	B	13.0	B	15.7
Westbound Approach	C	20.3	B	16.6	C	20.8
Northbound Left	C	21.4	C	30.7	C	27.2
Northbound Thru-Right	B	18.3	C	23.1	B	19.3
Northbound Approach	B	19.3	C	25.1	C	21.7
Southbound Left	C	20.9	C	30.7	C	26.1
Southbound Thru-Right	B	18.1	C	22.0	B	18.7
Southbound Approach	B	18.6	C	23.4	B	19.9
Intersection Total	B	19.5	C	20.0	C	20.5
Parkhaven Row / Drive #2						
Eastbound Left-Right					A	9.3
Eastbound Approach					A	9.3
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	13.4	+1.3
PM Peak	11.9	13.6	+1.7

As shown in Table 3, the highest increase in delay experienced by the northbound movement at this intersection occurs during the PM peak hour, during which time vehicles are expected to experience an additional 1.7 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 both the PM peak hour of the Design Year 2039 ‘Build’ condition, 100 vehicles are expected to exit from the drive-thru while 43 vehicles will come from the south on Parkhaven Row, for a total of 143 vehicles in the hour. Based on the information previously presented, each of these vehicles are expected to wait 13.6 seconds on average to exit Parkhaven Row onto Detroit Avenue.

The 43 vehicles from the south on Parkhaven Row will arrive approximately one every 85 seconds on average. The 100 vehicles exiting the drive-thru will arrive one every 36 seconds on average. Combined, this will result in one vehicle arriving every 26 seconds. As previously stated, the intersection has the ability to release a vehicle every 12.5 seconds, which is 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 13.6 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. Being that less than 3 vehicles per minute and roughly one pedestrian every minute and a half 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 stop signs is not going to provide a ‘faster’ way out.

As a precautionary measure, it is recommended that ‘Left Turn Only’ sign be posted at the exit of the Drive-Thru Drive # 2 onto Parkhaven Row. While this sign would be difficult to enforce, it 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 provided by Raising Cane’s Chicken Fingers, the proposed development is expected to generate the following trip ends once constructed:

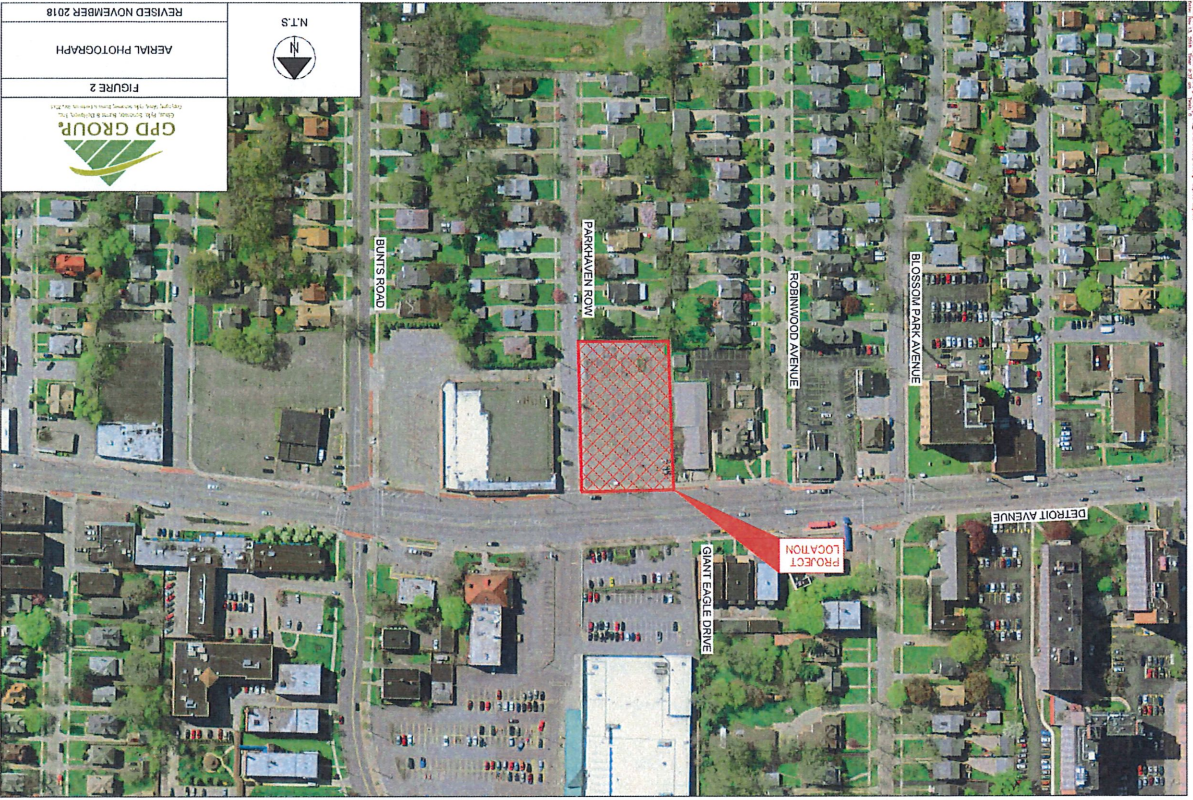
Raising Cane’s Chicken Fingers Fast-Food Restaurant with Drive-Through Window

- i. Weekday Mid-day Peak Hour (i.e. lunch time rush hour):
= 286 trip ends (143 enter and 143 exit)
 - ii. Weekday Peak Hour (i.e. evening rush hour):
= 286 trip ends (143 enter and 143 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



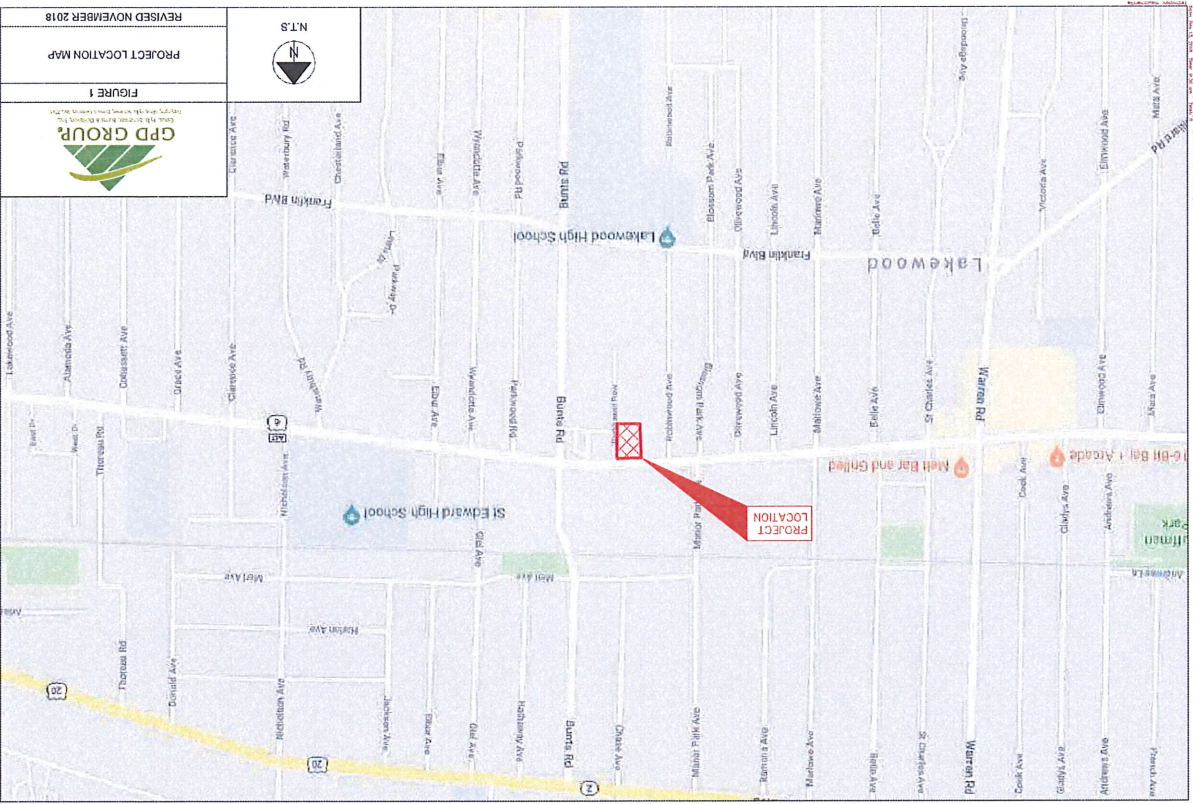
REVISED NOVEMBER 2018

AERIAL PHOTOGRAPH

FIGURE 2

GPD GROUP

Call, We Listen, You Decide
10000 Park Ave, Suite 200, Detroit, MI 48202
313.963.1100



REVISED NOVEMBER 2018

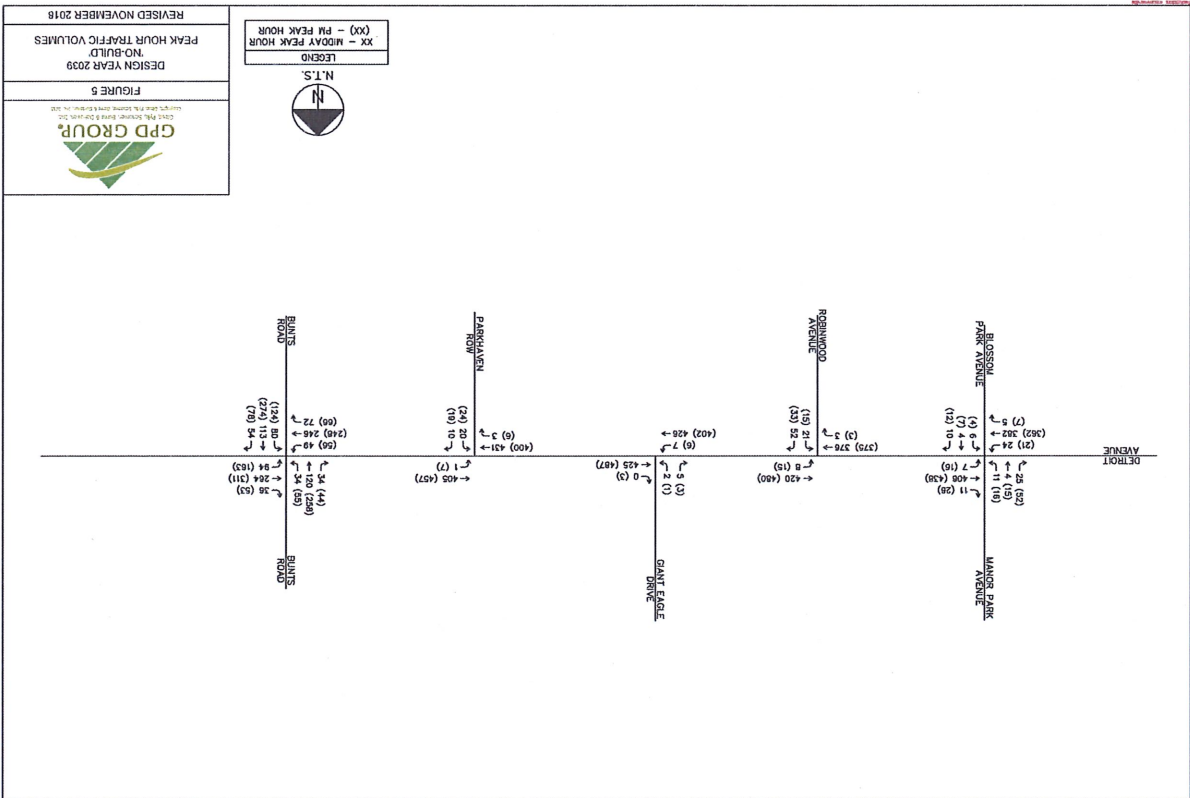
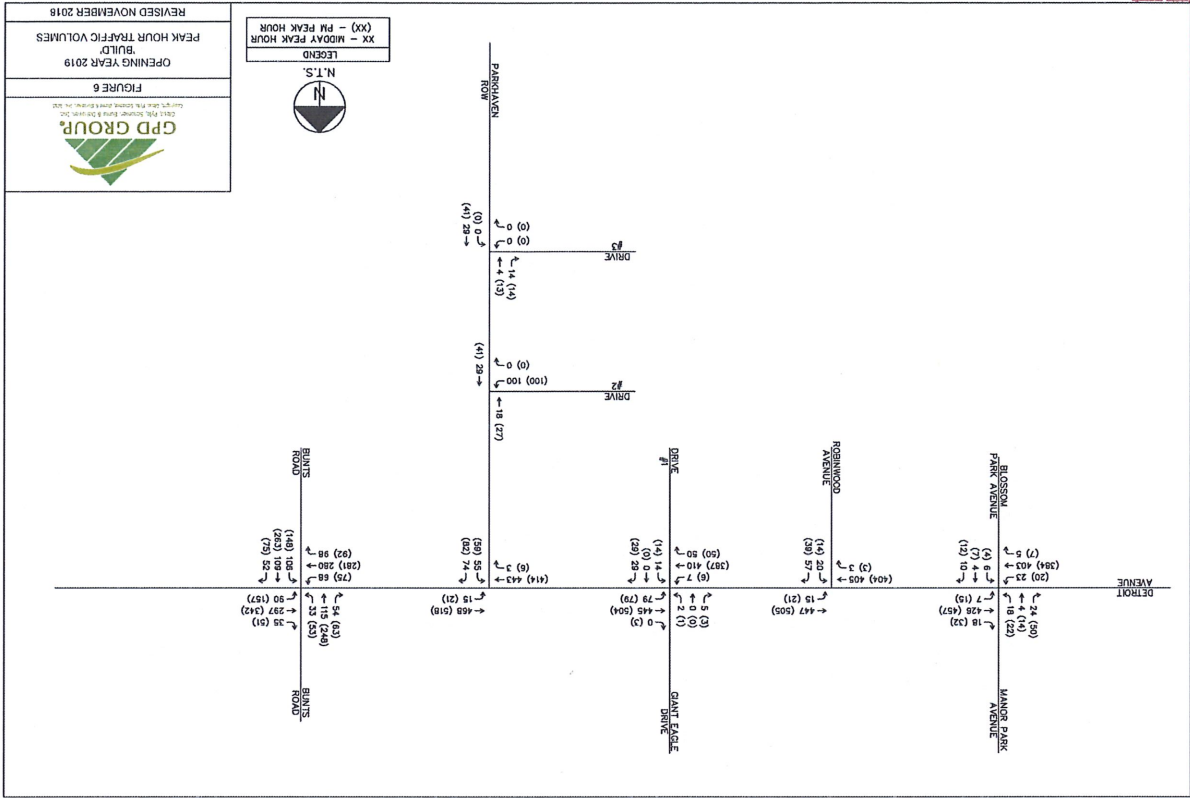
PROJECT LOCATION MAP

FIGURE 1

GPD GROUP

Call, We Listen, You Decide
10000 Park Ave, Suite 200, Detroit, MI 48202
313.963.1100





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

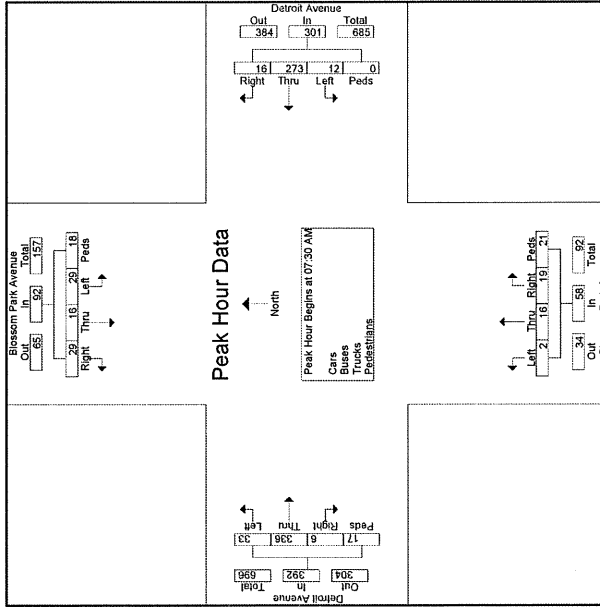
Partly Sunny - 80 Degrees
 Schools in Session

Start Time	Blossom Park Avenue								Detroit Avenue								Blossom Park Avenue								Detroit Avenue							
	From North				From South				From East				From West				From North				From South				From East				From West			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
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07:15 AM	4	1	2	6	13	33	1	0	35	0	0	0	6	7	15	5	66	1	3	75	138	0	0	0	0	0	0	0	0	0	0	
07:30 AM	12	7	3	7	29	4	66	3	0	0	0	0	4	6	7	18	6	110	1	5	122	242	0	0	0	0	0	0	0	0		
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Total	27	14	21	19	81	10	204	9	0	223	2	21	19	24	66	27	334	5	15	381	751	0	0	0	0	0	0	0	0			
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Total	17	9	37	19	82	8	256	11	0	275	2	11	15	17	45	30	234	2	6	282	694	0	0	0	0	0	0					
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Total	10	8	20	22	60	3	283	9	0	295	1	3	11	13	28	17	226	6	5	254	637	0	0	0	0	0	0					
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10:30 AM	2	0	3	4	11	1	70	2	0	73	1	3	2	9	4	81	1	1	87	180	0	0	0	0	0	0	0	0				
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Total	7	3	14	9	33	8	267	4	0	279	6	4	7	20	37	10	289	5	8	312	661	0	0	0	0	0	0					
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Total	11	4	20	19	54	6	323	8	0	337	4	3	8	33	48	12	352	5	6	375	814	0	0	0	0	0	0					
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01:45 PM	7	7	20	38	72	6	328	13	0	345	2	4	20	25	51	26	311	6	365	833	0	0	0	0	0	0	0	0				
Total	12	12	38	68	126	10	483	21	0	500	4	8	34	44	81	48	391	11	493	1212	0	0	0	0	0	0						
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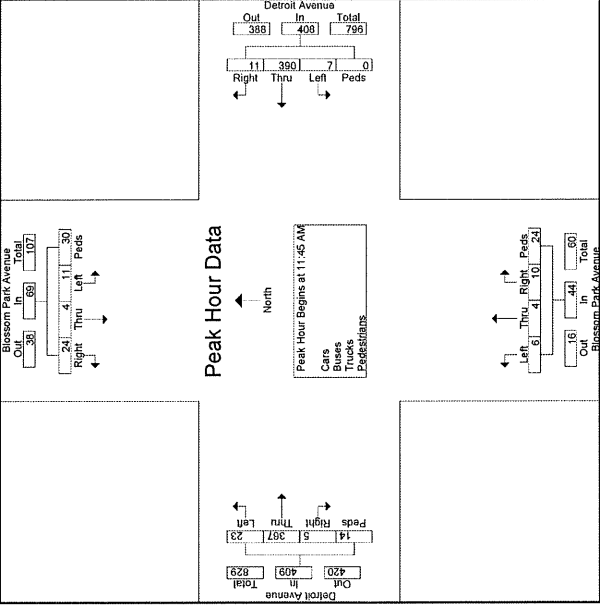
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 Site Code : Site 1 - Tues
 Start Date : 9/18/2018
 Page No : 2

Start Time	Blossom Park Avenue								Detroit Avenue								Blossom Park Avenue								Detroit Avenue							
	From North				From South				From East				From West				From North				From South				From East				From West			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
05:00 PM	0	4	11	9	24	1	117	2	0	109	2	3	18	26	6	88	1	4	99	289	0	0	0	0	0	0	0	0	0	0		
05:15 PM	3	4	11	7	25	4	101	4	0	120	4	3	3	8	15	6	4	0	96	235	0	0	0	0	0	0	0	0	0	0		
05:30 PM	6	3	11	9	31	5	108	6	0	119	2	0	2	10	2	89	1	4	158	265	0	0	0	0	0	0	0	0	0	0		
05:45 PM	1	16	5	18	5	73	10	13	0	461	6	8	11	44	68	21	35	7	386	1035	0	0	0	0	0	0	0	0	0	0		
Total	12	18	4																													

Start Time	Blossom Park Avenue From North			Detroit Avenue From East			Blossom Park Avenue From South			Detroit Avenue From West			App. Total	App. Total	Incl. Total					
	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right								
07:30 AM	12	7	3	4	66	3	0	73	1	4	6	7	18	6	110	1	5	122		
07:45 AM	8	5	11	4	28	4	87	5	0	96	1	4	7	19	11	112	3	6	132	
08:00 AM	6	2	10	2	20	1	65	5	0	71	0	4	3	9	7	53	0	3	63	
08:15 AM	3	2	5	5	15	3	55	3	0	61	0	4	3	5	12	9	61	2	3	75
Total Volume	29	16	29	18	92	12	273	16	0	301	2	16	19	21	58	33	398	6	17	382
% App. Total	21.9	11.4	21.5	13.6	68.9	8.4	94.7	5.3	0	67.6	0.6	12.8	15.2	16.3	17.6	24.8	39.2	1.5	4.3	44.5
PHF	.571	.689	.571	.783	.750	.784	.590	.784	.590	.784	.590	.750	.750	.763	.750	.750	.590	.763	.742	.766

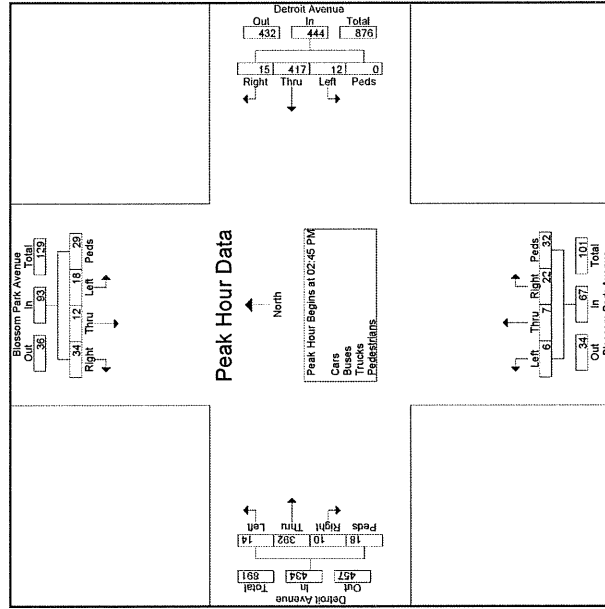


Start Time	Blossom Park Avenue From North			Detroit Avenue From East			Blossom Park Avenue From South			Detroit Avenue From West			App. Total	App. Total	Incl. Total					
	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right								
11:45 AM	4	0	6	4	11	1	88	3	0	92	3	1	14	19	2	95	0	3	100	
12:00 PM	4	1	14	23	1	192	5	8	195	2	1	4	4	7	5	97	0	4	100	
12:15 PM	5	2	6	8	21	1	93	2	0	96	1	3	2	7	7	8	4	1	110	
12:30 PM	1	1	6	4	12	2	97	1	0	100	0	1	2	4	7	8	89	1	99	
Total Volume	11	4	24	30	69	7	390	11	0	408	6	4	10	24	44	23	367	5	14	409
% App. Total	15.9	5.8	34.8	43.5	17.7	96.6	2.7	0	13.6	9.1	22.7	54.5	5.6	86.7	1.2	3.4	4.09	3.4	930	
PHF	.550	.500	1.00	.536	.690	.593	.871	.550	.000	.850	.500	1.00	.625	.429	.579	.719	.946	.313	.583	.930



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	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	
02:45 PM	4	6	3	0	0	0	4	101	4	5	114	243	
03:15 PM	6	1	26	0	0	0	5	107	2	5	103	263	
03:30 PM	3	1	14	0	0	0	8	3	2	0	94	218	
Total	13	7	53	0	0	0	17	211	8	10	311	724	
% App. Total	19.4	12.9	36.6	0.0	0.0	0.0	25.2	30.3	1.2	1.5	44.5	88.2	



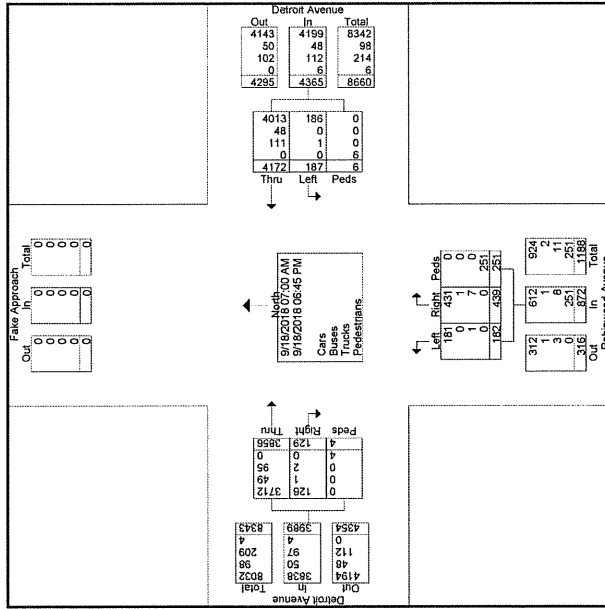
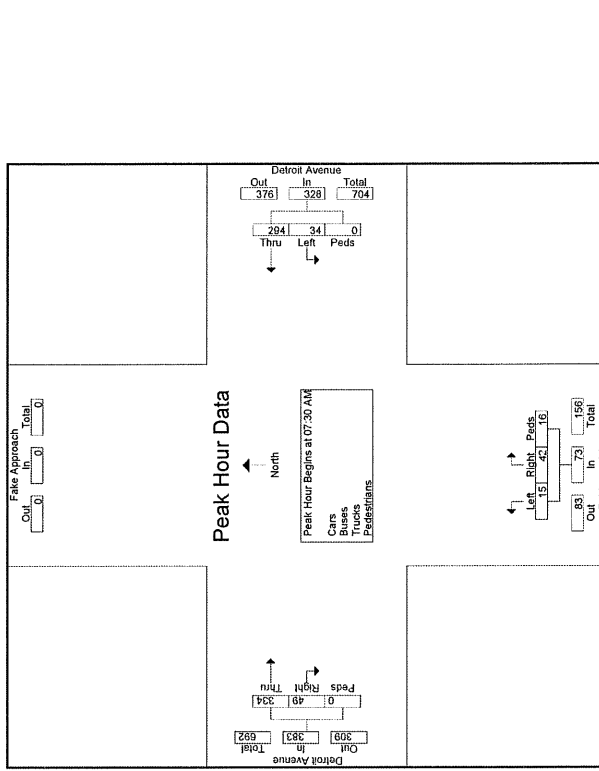
File Name : Detroit_Avenue_at_Robinwood_Avenue_565783_09-18-2018
 Site Code : Site 2 - Tues
 Start Date : 9/18/2018
 Page No : 1

Partly Sunny - 80 Degrees
 Schools in Session

Start Time	Detroit Avenue From East			Robinson Avenue From South			Detroit Avenue From West			Int. Total	
	Left	Thru	Right	Left	Right	Peds	Left	Right	Peds		
07:00 AM	0	19	0	0	8	4	12	43	4	0	47
07:15 AM	2	35	1	7	2	10	70	2	0	0	72
07:30 AM	11	73	0	84	3	13	5	21	110	19	129
07:45 AM	19	91	0	110	9	15	6	30	94	27	261
Total	32	218	1	251	13	43	17	73	317	52	689
08:00 AM	2	71	0	73	3	8	1	12	60	3	63
08:15 AM	2	59	0	61	0	6	4	10	70	0	70
08:30 AM	4	71	0	75	1	12	5	18	59	4	63
08:45 AM	2	73	0	75	4	4	4	12	90	0	90
Total	10	274	0	284	8	30	14	52	279	7	286
09:00 AM	1	89	0	90	1	6	3	10	55	1	56
09:15 AM	2	57	0	59	6	2	14	53	1	0	54
09:30 AM	6	80	0	86	4	12	6	14	53	1	65
09:45 AM	6	80	0	86	1	7	6	14	53	1	65
Total	12	294	0	306	12	31	13	56	227	4	232
10:00 AM	4	67	0	71	0	9	3	12	42	4	46
10:15 AM	4	66	0	70	5	9	5	19	71	2	62
10:30 AM	3	70	0	73	3	7	4	14	74	4	78
10:45 AM	6	73	0	79	4	11	5	20	86	5	91
Total	17	276	0	293	12	36	17	65	273	15	288
11:00 AM	0	80	0	80	3	5	8	16	67	0	67
11:15 AM	4	79	0	83	5	10	6	21	103	0	103
11:30 AM	2	89	0	91	5	7	6	18	88	1	89
11:45 AM	3	87	0	90	6	11	9	26	92	0	92
Total	9	335	0	344	19	33	29	81	350	1	351
12:00 PM	1	114	2	117	8	16	5	29	85	1	86
12:15 PM	1	103	0	104	4	16	3	23	97	0	97
12:30 PM	3	100	0	103	2	7	5	14	88	2	90
12:45 PM	3	80	0	83	1	9	2	12	76	1	77
Total	8	407	2	417	15	48	15	78	386	4	370
01:00 PM	5	86	0	91	4	4	5	13	73	2	76
01:15 PM	1	82	0	83	4	12	7	23	94	2	94
01:30 PM	1	94	0	95	7	6	5	21	75	2	77
01:45 PM	4	79	0	83	4	12	3	19	75	1	76
Total	11	341	0	352	19	37	20	76	317	5	323
02:00 PM	3	68	0	71	6	7	7	20	78	3	81
02:15 PM	2	82	0	84	6	11	3	20	82	0	82
02:30 PM	2	95	0	97	4	8	2	14	74	2	76
02:45 PM	3	87	0	90	10	7	4	21	100	8	109
Total	10	332	0	342	26	33	16	75	334	13	348
03:00 PM	17	129	0	146	11	17	9	37	103	8	111
03:15 PM	4	110	0	114	6	7	11	24	101	1	102
03:30 PM	6	103	0	109	5	12	3	20	95	2	97
03:45 PM	2	85	0	87	5	9	4	18	83	2	85
Total	29	427	0	456	27	45	27	98	382	13	405
04:00 PM	6	91	1	98	2	12	4	18	95	2	97
04:15 PM	1	105	0	106	1	8	2	11	85	0	86
04:30 PM	5	108	0	113	4	8	2	20	90	3	93
04:45 PM	5	108	0	113	4	8	2	20	90	3	93
Total	15	399	1	415	7	37	23	67	345	6	351

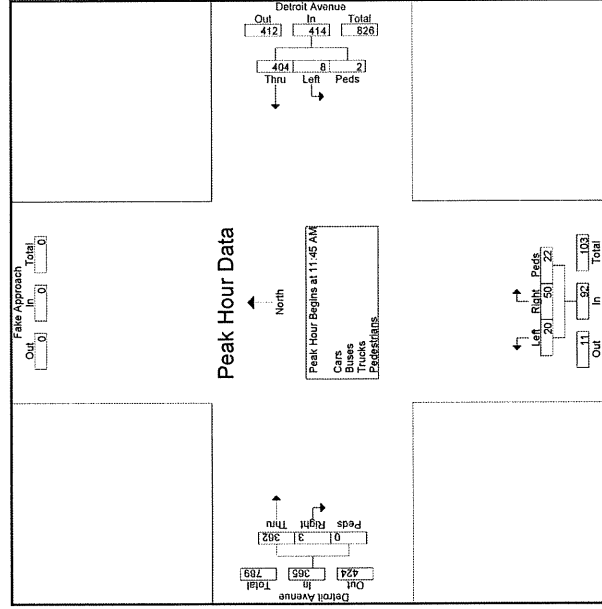
Start Time	Detroit Avenue From East			Detroit Avenue From South			Detroit Avenue From West			Int. Total			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
05:00 PM	5	122	1	0	12	6	18	80	2	1	83	229	
05:15 PM	4	112	0	0	116	3	7	83	1	0	84	216	
05:30 PM	2	117	0	0	119	5	6	102	1	0	103	243	
05:45 PM	2	113	0	0	118	5	10	99	1	0	99	242	
Total	13	464	2	479	9	31	71	384	5	1	380	910	
06:00 PM	6	120	0	126	5	13	11	29	87	0	87	242	
06:15 PM	9	104	0	113	3	9	6	18	66	1	67	198	
06:30 PM	4	97	0	101	3	8	7	18	71	2	73	192	
06:45 PM	2	84	0	86	4	5	5	14	78	1	79	179	
Total	21	405	0	426	15	35	29	79	302	4	306	811	
Grand Total	187	4172	6	4365	182	439	251	872	3856	129	4	3889	9226
Approach %	4.3	95.6	0.1	20.9	50.3	28.8	96.7	3.2	0.1	0	0	43.2	
Total %	2	45.2	0.1	47.3	2	4.8	2.7	9.5	41.8	1.4	0	43.2	
Cars	186	4013	0	4199	181	431	0	612	3712	126	0	3838	8649
% Cars	99.5	96.2	0	96.2	99.5	98.2	0	70.2	96.3	97.7	0	96.2	
Buses	0	48	0	48	0	1	0	1	49	1	0	50	
% Buses	0	1.2	0	1.1	0	0.2	0	0.1	1.3	0.8	0	1.3	
Trucks	1	111	0	112	1	7	0	8	95	2	0	97	
% Trucks	0.5	2.7	0	2.6	0.5	1.6	0	0.9	2.5	1.6	0	2.4	
Pedestrians	0	0	0	0	0	0	0	251	0	0	4	261	
% Pedestrians	0	0	0	0	0	0	0	28.8	0	0	100	0.1	

Start Time	Detroit Avenue From East			Detroit Avenue From South			Detroit Avenue From West			Int. Total		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right			
07:00 AM	11	73	0	84	3	13	5	21	110	19	0	129
07:15 AM	19	91	0	110	9	15	6	30	94	27	0	121
07:30 AM	2	71	0	73	3	8	1	12	60	3	0	63
07:45 AM	2	59	0	61	0	6	4	10	70	0	0	70
08:00 AM	34	294	0	328	15	42	16	73	334	49	0	383
08:15 AM	10.4	89.6	0	20.5	57.5	21.9	87.2	12.8	87.2	12.8	0	784
% App. Total	10.4	89.6	0	20.5	57.5	21.9	87.2	12.8	87.2	12.8	0	784
PHF	.447	.308	.000	.745	.417	.700	.667	.608	.759	.454	.000	.742



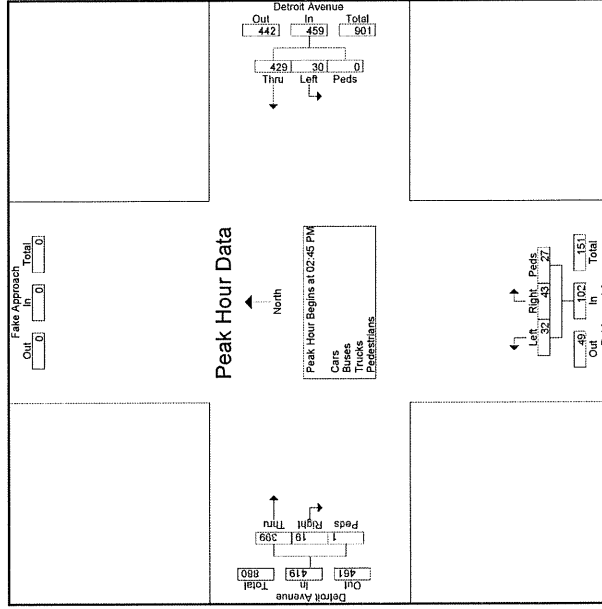
File Name : Detroit_Avenue_at_Robinwood_Avenue_565783_09-18-2018
 Site Code : Site 2 - Tues
 Start Date : 9/18/2018
 Page No : 4

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	
11:45 AM	3	87	0	6	11	9	26	0	0	92
12:00 PM	1	114	2	8	16	5	29	1	0	86
12:15 PM	1	103	0	4	16	3	23	0	0	97
12:30 PM	3	100	0	2	7	5	14	88	2	90
Total Volume	8	404	2	20	50	22	92	3	0	365
% App. Total	1.9	97.6	0.5	2.17	54.3	23.9	21.2	0.6	0.0	84.1
PHF	.667	.885	.250	.625	.761	.611	.793	.375	.000	.941



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	
02:45 PM	3	87	0	10	7	4	21	8	1	109
03:00 PM	17	129	0	11	17	9	37	8	0	111
03:15 PM	4	110	0	6	7	11	24	1	0	102
03:30 PM	6	103	0	5	12	27	102	16	1	93
Total Volume	30	429	0	32	43	51	265.5	45	2	419
% App. Total	6.5	83.5	0.000	31.4	42.2	26.5	68.9	5.4	0.2	83.3
PHF	.441	.831	.000	.786	.727	.614	.689	.594	.250	.944



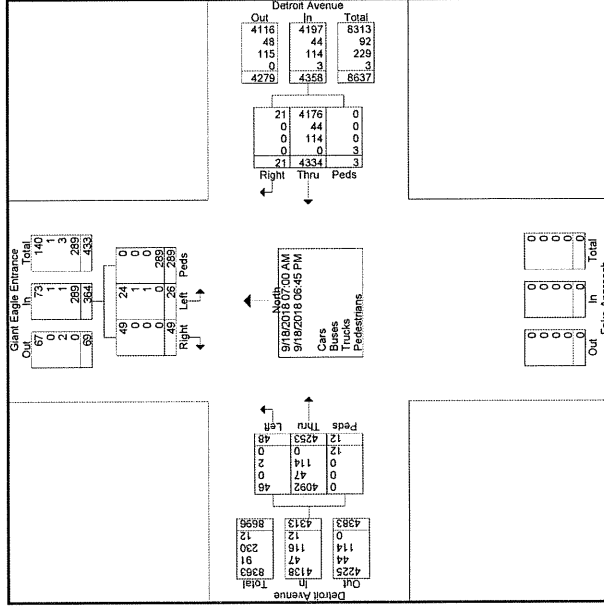
Partly Sunny - 80 Degrees
 Schools in Session

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 From East				Detroit Avenue From West				Int. Total	
	Left	Right	Peds	App. Total	Thru	Left	Thru	Peds	App. Total	Left	Thru	Peds		App. Total
07:00 AM	0	0	0	0	6	37	0	20	51	50	0	0	51	77
07:15 AM	0	0	4	4	37	1	74	0	116	74	0	0	116	116
07:30 AM	0	0	15	15	83	1	84	0	127	126	0	0	127	228
07:45 AM	1	1	4	6	109	0	109	0	113	363	0	0	363	647
Total	1	1	29	31	248	2	250	3	363	0	0	0	363	1145
08:00 AM	0	0	3	3	74	0	74	0	68	68	0	0	68	145
08:15 AM	0	0	2	2	60	0	61	0	75	75	0	0	75	138
08:30 AM	1	1	4	6	74	1	75	0	69	69	0	0	69	150
08:45 AM	1	1	7	9	75	1	76	2	94	92	0	0	94	179
Total	2	2	16	20	283	2	286	2	304	0	0	0	306	612
09:00 AM	0	0	7	7	90	0	90	0	57	57	2	0	59	156
09:15 AM	0	1	4	5	89	0	89	0	68	68	0	0	68	142
09:30 AM	0	1	3	4	61	0	61	0	66	66	0	0	66	133
09:45 AM	0	2	8	10	86	0	86	0	67	67	0	0	67	164
Total	0	3	20	23	306	0	306	0	266	2	0	0	268	595
10:00 AM	2	0	4	6	72	1	73	0	51	51	0	0	51	128
10:15 AM	0	0	4	4	71	0	71	0	82	82	0	0	82	157
10:30 AM	0	0	5	5	75	0	75	0	81	81	2	0	83	163
10:45 AM	0	0	1	1	77	0	77	0	90	90	0	0	90	168
Total	2	0	12	14	295	1	296	0	304	2	0	0	306	616
11:00 AM	0	0	2	2	79	0	79	0	75	75	0	0	75	150
11:15 AM	0	2	10	12	83	0	83	2	112	112	2	0	116	211
11:30 AM	1	2	6	9	89	0	89	0	93	93	0	0	93	191
11:45 AM	1	2	5	8	88	0	88	0	106	102	2	0	106	203
Total	2	6	23	31	339	0	340	4	382	4	0	0	390	781
12:00 PM	0	1	15	16	114	0	115	1	101	101	0	0	102	233
12:15 PM	1	1	4	6	104	0	104	2	112	112	0	0	114	224
12:30 PM	0	1	3	4	103	0	103	2	95	95	0	0	97	204
12:45 PM	1	1	8	10	92	1	93	3	97	97	0	0	100	203
Total	2	4	30	36	413	1	415	8	405	0	0	0	413	864
01:00 PM	0	1	4	5	87	0	87	2	78	78	0	0	80	172
01:15 PM	0	1	10	11	83	0	83	0	101	101	0	0	101	185
01:30 PM	0	2	7	9	93	0	93	1	80	80	0	0	81	173
01:45 PM	0	0	2	2	85	0	85	0	85	85	0	0	85	172
Total	0	4	23	27	346	0	346	3	354	0	0	0	357	732
02:00 PM	0	2	9	11	71	1	72	0	85	85	1	0	86	189
02:15 PM	2	0	5	7	83	0	83	1	93	93	0	0	94	184
02:30 PM	0	0	5	5	97	1	98	1	80	80	0	0	81	184
02:45 PM	1	1	4	6	91	1	92	0	113	113	0	0	113	211
Total	3	3	23	29	342	3	345	2	371	1	0	0	374	748
03:00 PM	2	2	6	10	144	0	144	1	116	116	1	0	118	272
03:15 PM	1	1	9	11	112	1	113	1	110	110	0	0	111	235
03:30 PM	3	4	5	12	107	0	107	3	102	102	1	0	106	225
03:45 PM	2	1	7	10	89	1	90	0	100	100	1	0	101	201
Total	8	8	27	43	452	2	454	5	428	3	0	0	436	933
04:00 PM	0	0	3	3	98	1	99	0	99	3	109	0	112	214
04:15 PM	0	3	4	7	95	2	97	4	78	78	0	0	82	186
04:30 PM	1	2	5	8	107	1	108	0	93	93	0	0	93	209
04:45 PM	0	2	10	12	109	2	111	1	95	95	0	0	96	219
Total	1	7	22	30	409	6	415	8	375	0	0	0	383	826

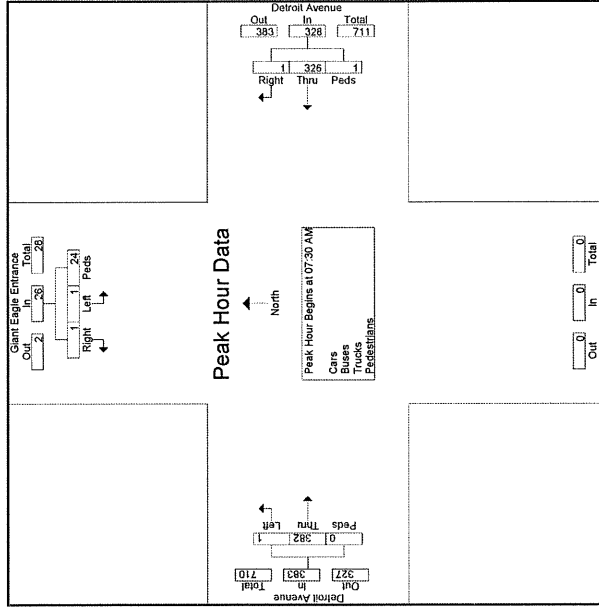
File Name : Detroit_Avenue_at_Giant_Eagle_565788_09-18-2018
 Site Code : Site 3 - Tues
 Start Date : 9/18/2018
 Page No : 2

Start Time	Giant Eagle Entrance				Detroit Avenue From East				Detroit Avenue From West				Int. Total	
	Left	Right	Peds	App. Total	Thru	Left	Thru	Peds	App. Total	Left	Thru	Peds		App. Total
05:00 PM	1	1	3	5	130	1	131	0	91	91	0	0	92	226
05:15 PM	0	1	13	14	114	1	115	1	84	84	0	0	85	214
05:30 PM	0	1	11	12	115	1	116	1	105	105	0	0	106	234
05:45 PM	1	1	9	11	117	0	117	1	98	98	0	0	99	227
Total	2	4	34	40	476	3	479	4	378	0	0	0	382	901
06:00 PM	0	0	6	6	122	1	123	0	100	100	0	0	103	232
06:15 PM	2	3	12	17	112	0	112	0	112	1	71	0	72	201
06:30 PM	1	1	8	10	103	0	103	0	76	76	0	0	77	180
06:45 PM	0	3	4	7	86	0	86	0	82	82	0	0	82	175
Total	3	7	30	40	423	1	424	0	329	0	0	0	334	788
Grand Total	26	49	289	364	4334	21	4358	48	4253	12	4313	0	4331	9035
Approach %	7.1	13.5	79.4	0.5	0.1	0.1	98.6	0.3	48.2	0.5	47.1	0.1	47.7	8408
% Cars	24	49	0	73	4176	21	0	4197	46	4092	0	4138	8408	
% Trucks	1	0	0	1	44	0	0	44	0	47	0	47	92	
% Buses	3.8	0	0	0.3	1	0	0	1	0	1.1	0	1.1	1	
% Trucks	1	0	0	0.3	2.6	0	0	2.6	4.2	2.7	0	2.7	2.6	
% Pedestrians	0	0	289	79.4	0	0	3	3	0	0	12	12	3.4	
% Pedestrians	0	0	100	0.1	0	0	100	0.1	0	0	100	0.3	0.3	



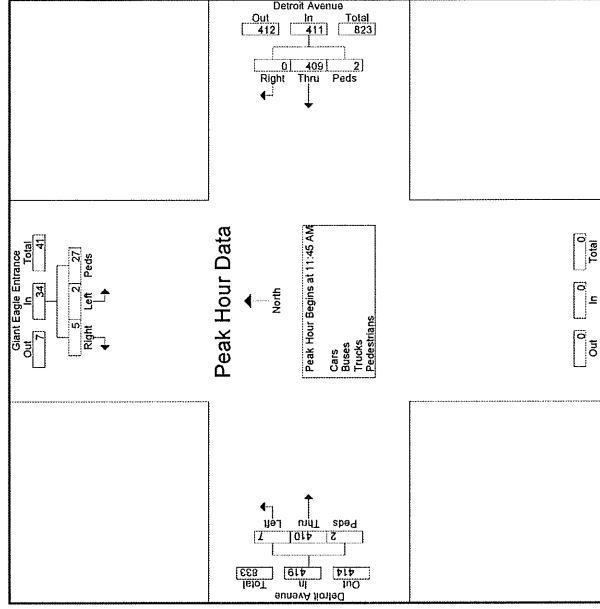
File Name : Detroit_Avenue_at_Giant_Eagle_565788_09-18-2018
 Site Code : Site 3 - Tues
 Start Date : 9/18/2018
 Page No : 3

Start Time	Giant Eagle Entrance				Detroit Avenue From East				Detroit Avenue From West				Int. Total
	Left	Right	Thru	Total	Left	Right	Thru	Total	Left	Right	Thru	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	0	15	83	109	0	0	84	127	0	0	126	0	226
07:45 AM	1	4	6	109	0	0	109	113	0	0	113	0	228
08:00 AM	0	3	74	77	0	0	74	68	0	0	68	0	145
08:15 AM	0	2	60	62	0	1	61	75	0	0	75	0	138
Total Volume	1	24	26	328	1	328	329	383	0	0	383	0	737
% App. Total	3.8	92.3	96.1	99.9	0.3	0.3	0.3	0.3	0.3	99.7	0.3	0.0	808
PHF	.250	.400	.433	.748	.250	.250	.752	.754	.000	.758	.000	.754	.808



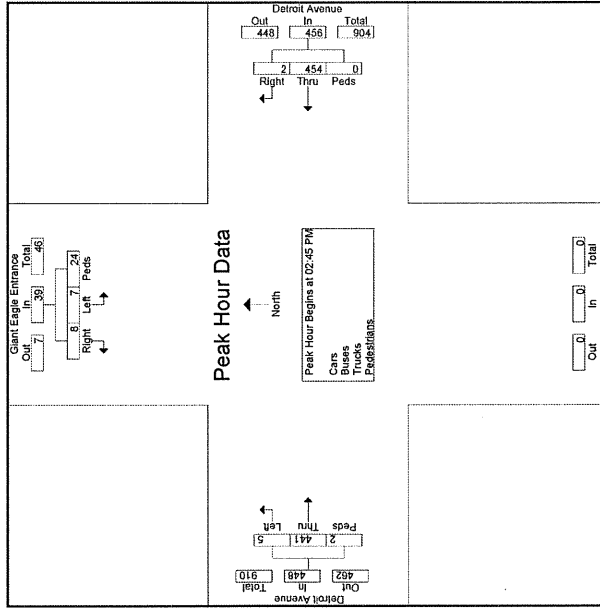
File Name : Detroit_Avenue_at_Giant_Eagle_565788_09-18-2018
 Site Code : Site 3 - Tues
 Start Date : 9/18/2018
 Page No : 4

Start Time	Giant Eagle Entrance				Detroit Avenue From East				Detroit Avenue From West				Int. Total
	Left	Right	Thru	Total	Left	Right	Thru	Total	Left	Right	Thru	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	2	5	8	0	1	88	91	0	0	102	2	203
12:00 PM	0	1	15	16	0	1	114	116	1	101	0	102	233
12:15 PM	1	1	4	6	0	0	104	104	2	112	0	114	224
12:30 PM	2	5	27	34	0	0	103	103	2	95	0	97	204
Total Volume	4	14	73	91	0	2	411	413	7	495	2	497	864
% App. Total	5.8	14.7	79.4	89.9	0.5	0.5	89.5	89.5	1.7	97.0	0.5	97.0	927
PHF	.500	.625	.450	.531	.000	.500	.893	.875	.875	.915	.250	.919	.927



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	0	116	1	116	0	226
03:30 PM	3	4	12	107	0	102	3	102	1	225
Total Volume	7	8	39	456	2	444	5	444	2	943
% App. Total	17.9	20.5	61.5	99.6	0.4	98.4	1.1	98.4	0.4	98.7
PHF	.583	.500	.667	.792	.000	.792	.417	.950	.500	.867

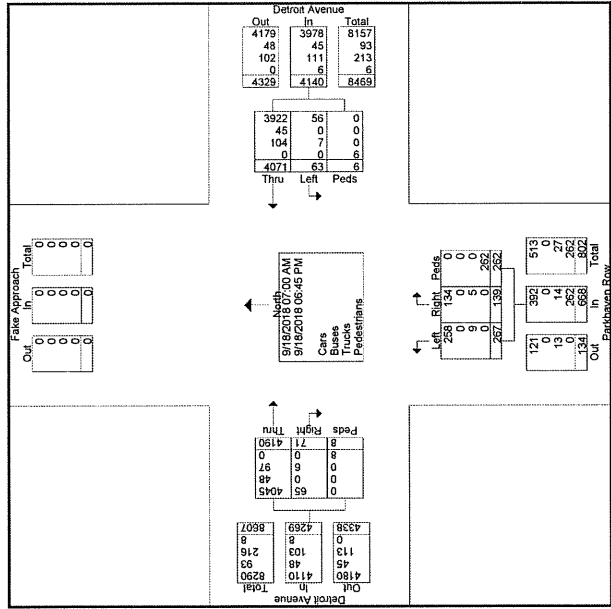
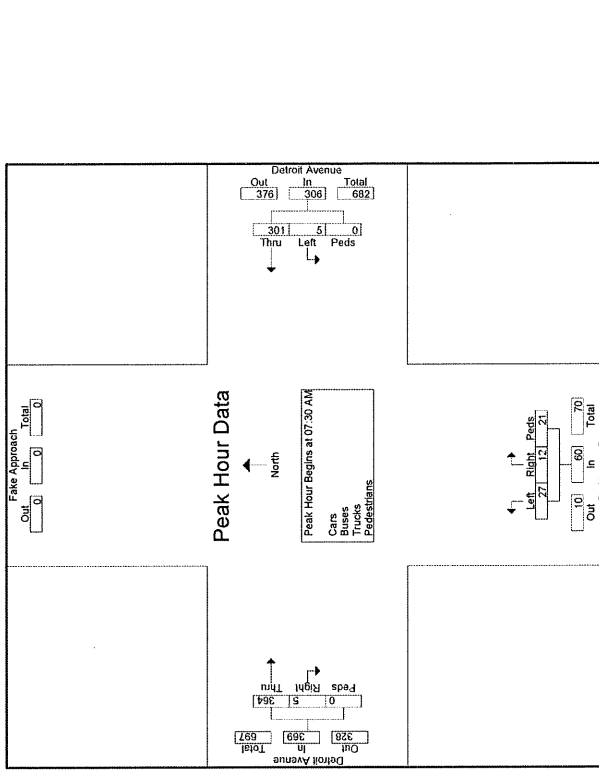


File Name : Detroit_Avenue_at_Parkhaven_565793_09-18-2018
 Site Code : Site 4 - Tues
 Start Date : 9/18/2018
 Page No : 1

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	25	0	3	4	48	1	0	49
07:15 AM	1	31	32	6	2	10	70	4	0	74
07:30 AM	3	74	77	10	6	23	121	3	0	124
07:45 AM	2	99	101	0	7	17	111	0	0	111
Total	10	225	235	26	9	54	350	8	0	358
08:00 AM	0	69	69	5	3	10	64	0	0	64
08:15 AM	0	59	59	2	3	10	68	2	0	70
08:30 AM	2	68	70	5	4	15	68	0	0	68
08:45 AM	2	71	73	7	1	13	92	1	1	94
Total	4	267	271	19	11	48	292	3	1	296
09:00 AM	0	87	87	3	1	6	56	2	0	58
09:15 AM	1	82	83	7	5	19	61	5	0	66
09:30 AM	1	51	52	6	1	9	64	1	0	65
09:45 AM	2	86	88	3	5	10	64	0	0	67
Total	7	289	296	18	10	44	248	11	0	259
10:00 AM	0	74	74	2	4	7	13	54	2	56
10:15 AM	1	64	65	3	1	6	80	0	0	80
10:30 AM	0	66	66	6	2	1	78	2	0	80
10:45 AM	1	69	70	8	1	4	87	4	0	91
Total	2	269	271	19	8	14	299	8	0	307
11:00 AM	2	74	76	5	3	9	17	76	0	76
11:15 AM	2	75	77	10	6	22	110	2	0	112
11:30 AM	0	82	82	6	4	14	92	2	0	94
11:45 AM	0	87	87	1	3	5	102	1	0	103
Total	4	318	324	22	16	25	380	5	0	385
12:00 PM	0	103	103	10	1	3	14	105	0	106
12:15 PM	1	101	102	3	3	9	113	1	2	116
12:30 PM	0	88	88	5	3	6	94	1	0	95
12:45 PM	0	89	89	4	2	2	93	0	0	95
Total	1	391	392	22	10	20	410	2	3	415
01:00 PM	1	82	83	7	1	4	12	75	2	77
01:15 PM	1	79	80	3	5	7	15	94	1	95
01:30 PM	1	88	89	4	6	16	87	2	0	89
01:45 PM	1	85	86	1	2	4	83	0	1	84
Total	4	334	340	15	14	21	50	339	5	345
02:00 PM	1	66	67	6	3	7	16	81	3	84
02:15 PM	0	83	83	2	4	3	9	92	2	94
02:30 PM	3	89	92	8	3	1	12	82	1	83
02:45 PM	0	84	84	2	2	5	14	110	1	111
Total	4	322	326	23	12	16	51	365	7	372
03:00 PM	2	138	140	9	2	6	17	117	1	118
03:15 PM	4	102	106	12	3	16	31	111	2	114
03:30 PM	1	101	102	5	3	5	13	104	1	105
03:45 PM	2	84	86	7	3	3	13	101	3	104
Total	9	425	434	33	11	30	74	433	7	441
04:00 PM	0	84	84	6	2	4	12	108	0	108
04:15 PM	0	89	89	4	3	9	12	78	0	77
04:30 PM	1	106	107	6	3	9	12	95	0	96
04:45 PM	1	105	106	6	1	5	12	94	0	94
Total	5	398	403	20	8	18	46	375	2	378

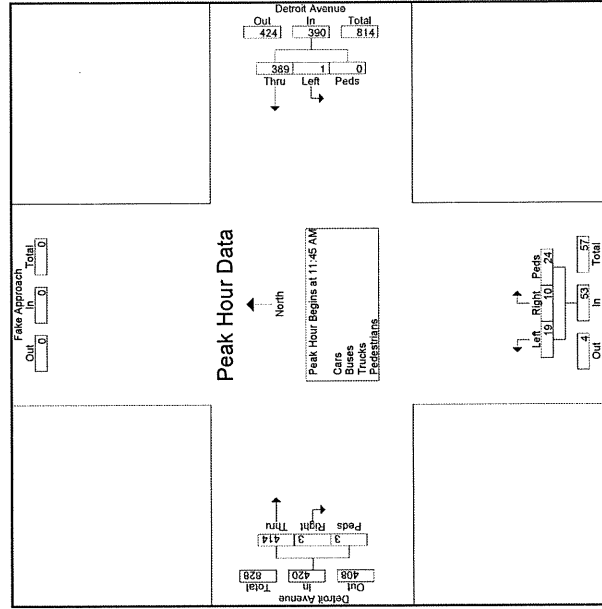
Start Time	Detroit Avenue From East			Parkhaven Row From South			Detroit Avenue From West			Int. Total	
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
05:00 PM	0	114	0	9	21	0	95	0	0	230	
05:15 PM	4	103	0	3	17	85	1	86	1	210	
05:30 PM	1	112	0	3	16	103	4	107	0	236	
05:45 PM	0	109	0	6	11	23	1	37	0	229	
Total	5	438	0	24	77	378	7	385	0	905	
06:00 PM	2	115	0	4	10	22	101	0	1	241	
06:15 PM	2	105	0	2	8	16	71	2	0	196	
06:30 PM	3	97	2	10	16	74	2	76	0	184	
06:45 PM	1	78	0	3	14	75	2	77	0	170	
Total	8	395	2	26	68	321	6	328	1	801	
Grand Total	63	4071	6	4140	267	139	262	688	4190	8	4269
Approach %	1.5	98.3	0.1	40	20.8	39.2	98.1	1.7	0.2	0.1	47
Total %	0.7	44.8	0.1	45.6	2.9	1.5	2.9	7.4	46.2	0.8	0.1
% Cars	56	3922	0	3978	258	134	0	392	4045	65	0
% Buses	88.9	96.3	0	96.1	96.4	0	58.7	96.5	91.5	0	96.3
% Trucks	0	45	0	0	0	0	48	0	0	48	0
% Pedestrians	0	1.1	0	0	0	0	1.1	0	0	1.1	0
% Total	7	104	0	11	9	5	14	97	6	103	228
% Trucks	11.1	2.6	0	2.7	3.4	3.6	0	2.1	2.3	8.5	0
% Pedestrians	0	0	0	6	0	0	262	262	0	8	276
% Total	0	0	0	100	0	100	39.2	0	0	100	0.2

Start Time	Detroit Avenue From East			Parkhaven Row From South			Detroit Avenue From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	3	74	0	10	6	7	23	121	3	0
07:15 AM	0	69	0	5	3	2	10	64	0	0
07:30 AM	0	69	0	2	3	5	10	68	2	0
07:45 AM	0	59	0	27	12	21	60	364	5	0
08:00 AM	5	93.4	0	45	20	35	98.6	1.4	0	0
08:15 AM	1.6	98.4	0	67.5	500	750	652	752	417	0.000
Total	417	760	0	757	500	750	652	986	17	0
% App. Total	1.6	98.4	0	67.5	500	750	652	752	417	0.000
% Pedestrians	0	0	0	0	0	0	0	0	0	0



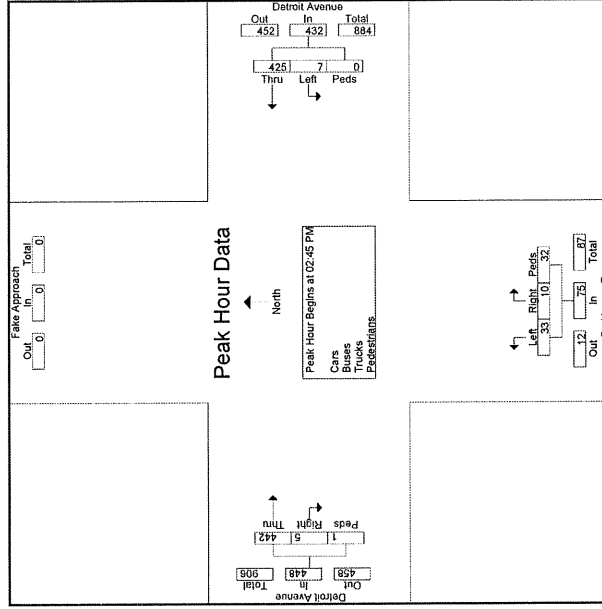
File Name : Detroit_Avenue_at_Parkhaven_565793_09-18-2018
 Site Code : Site 4 - Tues
 Start Date : 9/18/2018
 Page No : 4

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	
11:45 AM	0	87	0	3	6	10	102	1	0	200
12:00 PM	0	103	0	10	14	105	106	1	0	223
12:15 PM	1	101	0	3	9	15	113	1	2	233
12:30 PM	0	98	0	5	3	14	94	1	0	207
Total Volume	1	389	0	19	10	24	414	3	2	863
% App. Total	0.3	99.7	0	35.8	19.9	45.3	99.8	0.7	0.7	99.6
PHF	.290	.944	.000	.475	.883	.883	.316	.750	.375	.926



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	
02:45 PM	0	84	0	7	2	5	14	110	0	111
03:00 PM	2	138	0	9	2	6	17	117	1	118
03:15 PM	4	102	0	12	3	16	31	111	2	114
03:30 PM	7	91	0	5	0	3	13	103	1	103
Total Volume	13	315	0	33	5	20	77	443	4	460
% App. Total	1.6	98.3	0	4.1	1.3	4.2	10.0	94.4	0.2	96.8
PHF	.438	.770	.000	.771	.833	.500	.605	.944	.250	.868



Cummins Consulting Services
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File Name : Detroit_Avenue_at_Bunts_Road_565794_09-18-2018
 Site Code : Site 5 - Tues
 Start Date : 9/18/2018
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Partly Sunny - 80 Degrees
 Schools in Session

Start Time	Bunts Road From North				Detroit Avenue From East				Bunts Road From South				Detroit Avenue From West				Int. Total				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds					
07:00 AM	3	29	0	38	21	13	7	0	41	8	25	18	5	56	10	35	8	1	54	189	
07:15 AM	6	36	5	4	51	24	25	4	4	57	10	25	26	3	64	17	50	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	410	
07:45 AM	12	59	8	5	84	46	79	14	2	141	14	45	26	6	91	19	77	15	112	428	
Total	34	174	21	23	252	131	171	37	12	337	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	60	8	0	75	22	26	13	0	61	11	23	8	0	42	232
09:15 AM	3	21	7	6	18	42	2	3	65	17	26	12	5	60	11	41	8	2	62	241	
09:30 AM	3	21	7	4	35	17	37	7	0	56	14	19	14	2	49	3	44	10	1	58	198
09:45 AM	2	24	8	3	37	14	51	6	0	74	21	22	9	4	56	8	40	17	1	66	233
Total	19	113	31	17	180	66	180	21	3	270	74	93	48	11	226	33	148	43	4	228	904
10:00 AM	6	31	3	3	43	22	43	1	0	72	25	13	7	0	45	9	39	6	7	61	221
10:15 AM	2	27	4	3	36	17	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	47	8	50	8	2	68	234
10:45 AM	8	18	6	7	39	20	46	6	0	72	17	27	13	5	62	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	10	26	19	3	70	8	45	8	1	62	256
11:15 AM	4	38	6	5	52	17	49	9	0	65	12	25	14	4	56	11	70	10	3	96	284
11:30 AM	7	31	4	5	47	27	63	8	1	99	23	26	16	6	70	14	67	16	10	107	323
Total	26	132	24	24	208	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	68	12	3	103	26	25	7	7	65	6	50	22	2	80	286
12:15 PM	8	29	11	6	54	23	69	9	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	282
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	60	8	63	14	3	86	292
01:45 PM	9	23	7	1	40	12	57	4	2	75	12	29	11	5	57	39	38	12	3	86	292
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	61	2	1	84	17	32	13	3	65	9	60	16	0	85	279
02:30 PM	8	25	4	1	38	25	61	3	1	90	24	22	19	0	65	11	48	11	1	71	264
02:45 PM	12	38	10	15	75	28	52	8	2	90	11	44	22	5	82	12	66	14	5	97	344
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	157	26	48	24	23	121	11	64	21	15	111	482
03:15 PM	11	30	15	10	66	32	74	11	8	125	15	37	20	23	85	7	81	22	17	127	403
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	18	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	6	82	20	61	11	4	92	26	46	10	5	87	6	52	24	4	86	353
04:15 PM	13	49	11	9	78	19	84	14	1	118	22	51	21	3	97	10	62	17	2	78	332
04:30 PM	9	41	13	7	70	30	67	11	1	109	26	57	19	3	108	9	63	13	13	88	385
04:45 PM	46	190	44	29	309	92	272	40	6	410	99	200	69	15	383	35	230	67	30	362	1464

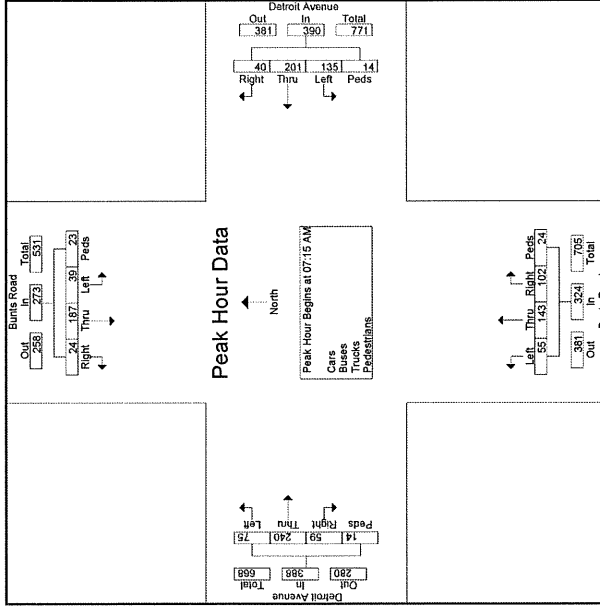
Cummins Consulting Services
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File Name : Detroit_Avenue_at_Bunts_Road_565794_09-18-2018
 Site Code : Site 5 - Tues
 Start Date : 9/18/2018
 Page No : 2

Start Time	Detroit Avenue From East				Bunts Road From North				Detroit Avenue From West				Bunts Road From South				Int. 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	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	65	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	98	437	
05:45 PM	13	60	12	6	91	44	67	13	1	125	39	70	21	5	135	7	65	19	95	447	
Total	50	251	49	17	367	143	292	61	7	547	110	237	60	19	446	50	231	70	24	375	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	11	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	22	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	3811	531	2693	660	204	4058	14967
Approach %	14.4	62.4	13.9	9.2	26.6	62.9	9	1.8	25.2	47.4	20.9	6.5	13.1	65.6	16.3	5	27.1	4.4	1.4	27.1	100
Total %	2.8	12.1	2.7	1.8	19.4	7.8	18.4	2.7	0.5	29.4	6.1	11.4	5	1.6	24.1	3.5	17.8	4.4	1.4	27.1	100
Cars	409	1777	389	0	2575	1145	2633	384	0	4162	893	1676	732	0	3301	522	254				

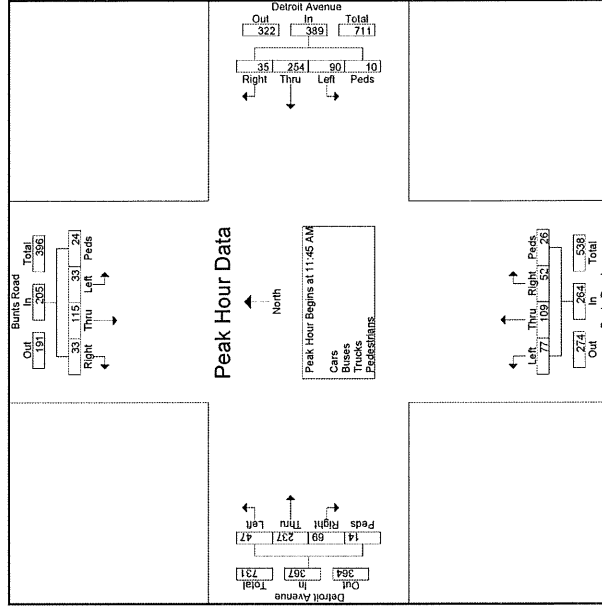
File Name : Detroit_Avenue_at_Bunts_Road_565794_09-18-2018
 Site Code : Site 5 - Tues
 Start Date : 9/18/2018
 Page No : 3

Start Time	Bunts Road From North			Detroit Avenue From East			Bunts Road From South			Detroit Avenue From West			App Total	In Total	Out Total							
	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right										
07:15 AM	6	36	5	4	57	4	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	36	13	96	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 Volume	39	187	24	23	273	135	201	40	14	390	55	143	102	24	324	49	240	59	14	388	1375	
% App. Total	14.3	69.5	8.8	8.4	98.3	46.5	69.3	15.1	4.1	108	46.2	82.7	75.0	34.1	84.1	35.0	74.6	80.3				
PHF	.750	.782	.750	.659	.813	.734	.669	.714	.583	.691	.659	.704	.708	.462	.827	.750	.719	.641	.350	.350	.746	.803



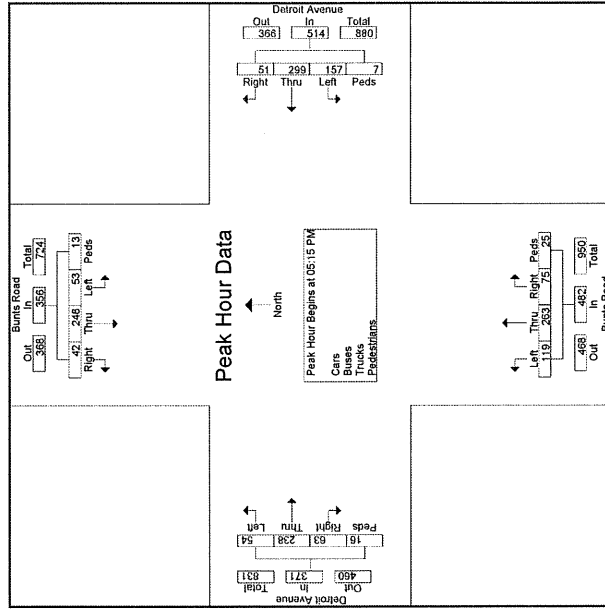
File Name : Detroit_Avenue_at_Bunts_Road_565794_09-18-2018
 Site Code : Site 5 - Tues
 Start Date : 9/18/2018
 Page No : 4

Start Time	Bunts Road From North			Detroit Avenue From East			Bunts Road From South			Detroit Avenue From West			App Total	In Total	Out Total						
	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right									
11:45 AM	6	36	5	8	17	63	8	1	89	22	26	16	6	70	14	67	16	10	107	323	
12:00 PM	10	28	7	6	51	17	58	12	3	80	26	25	7	65	16	50	22	2	80	286	
12:15 PM	8	29	11	6	54	23	69	9	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
Total Volume	33	115	33	24	205	90	254	35	10	389	77	109	52	26	264	47	237	69	14	367	1225
% App. Total	16.1	56.1	16.1	11.7	73.1	23.1	65.3	9	2.6	29.2	41.3	18.7	9.8	12.8	64.6	18.8	3.8				
PHF	.625	.658	.750	.857	.949	.833	.820	.729	.625	.944	.740	.801	.722	.929	.846	.734	.812	.784	.350	.857	.948



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			Detroit Avenue From East			Bunts Road From South			Detroit Avenue From West			App Total	Obs Total	Int Total		
	Thru	Right	Peds	Thru	Right	Peds	Thru	Right	Peds	Thru	Right	Peds					
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
05:15 PM	16	62	18	4	105	23	65	16	5	109	11	63	18	8	90		
05:30 PM	0	62	18	0	127	22	57	24	7	110	20	60	17	1	98		
05:45 PM	13	60	12	1	125	39	70	21	5	135	7	65	19	5	95		
06:00 PM	14	57	3	2	147	49	83	14	8	128	16	60	9	2	87		
Total Volume	53	248	42	7	514	119	263	75	25	482	54	238	63	16	371		
% App. Total	14.9	69.7	11.8	3.7	30.5	59.2	9.9	1.4	24.7	54.6	15.6	5.2	14.6	64.2	17	4.3	
PHF	.628	.689	.553	.542	.818	.801	.901	.911	.439	.874	.763	.926	.781	.781	.893	.915	.629



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: $T = 470.95 \cdot X$
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: $T = 51.38 \cdot X$
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: $T = 32.67 \cdot X$
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: $T = 112.18 \cdot X$
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: 594

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: $T = 9.94 \cdot X$
Total Trip Ends in the AM Peak Hour: 52

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

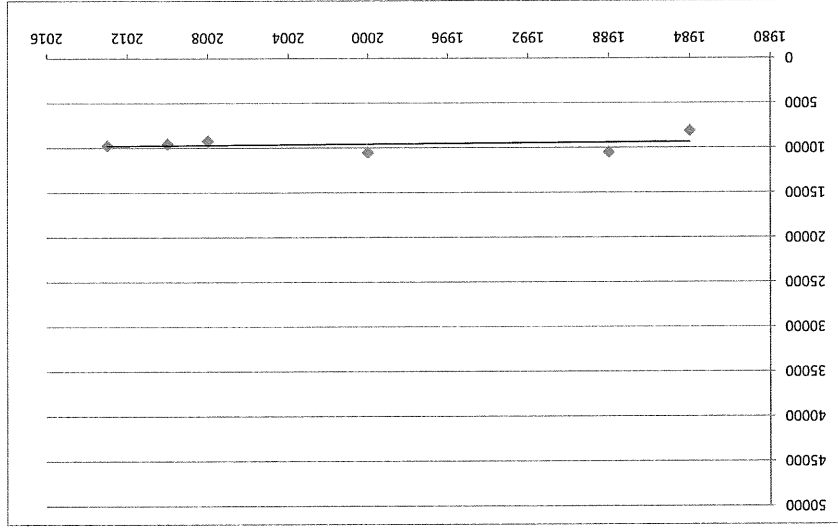
Entering Trip Percentage: 55%
Exiting Trip Percentage: 45%
Entering Primary Trips: 29
Exiting Primary Trips: 23

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

Trip Generation Formula: $T = 9.77 \cdot X$
Total Trip Ends in the PM Peak Hour: 51

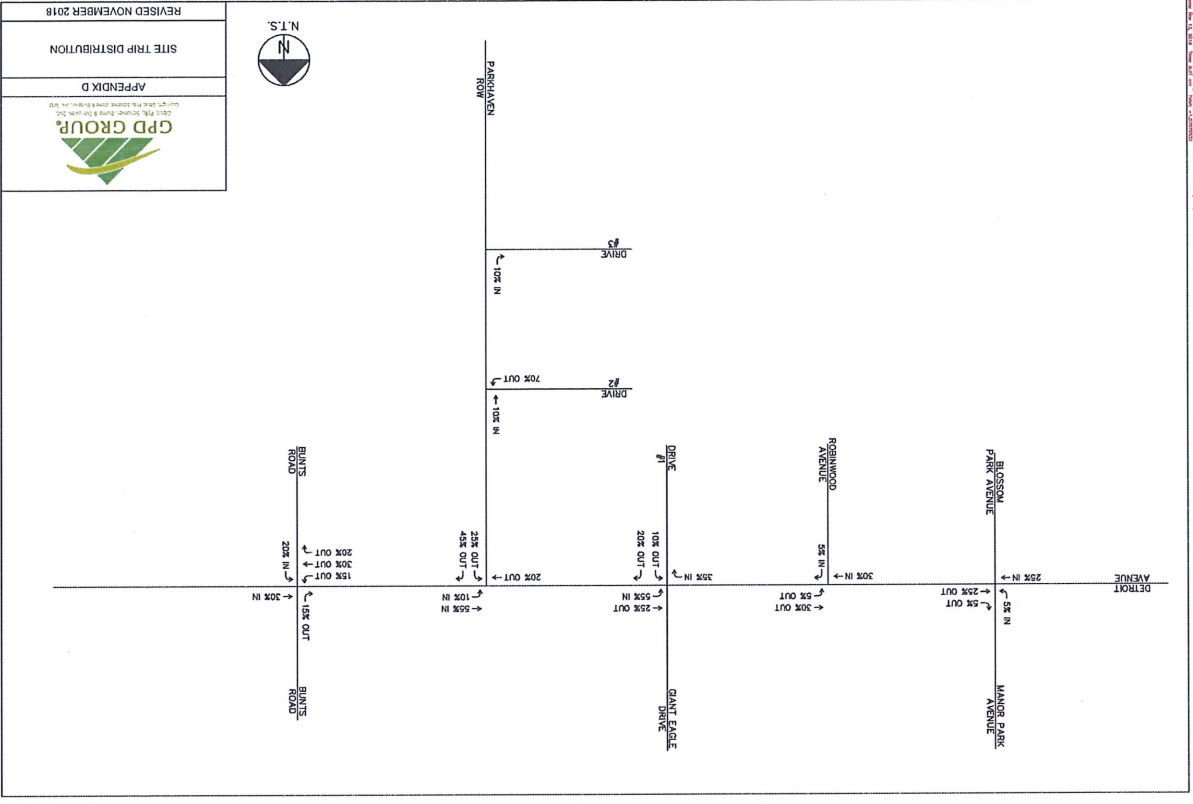
Distribution Percentages of Entering and Exiting Trips. From ITE Trip Generation Manual, 10th Edition

Entering Trip Percentage: 62%
Exiting Trip Percentage: 38%
Entering Primary Trips: 32
Exiting Primary Trips: 18



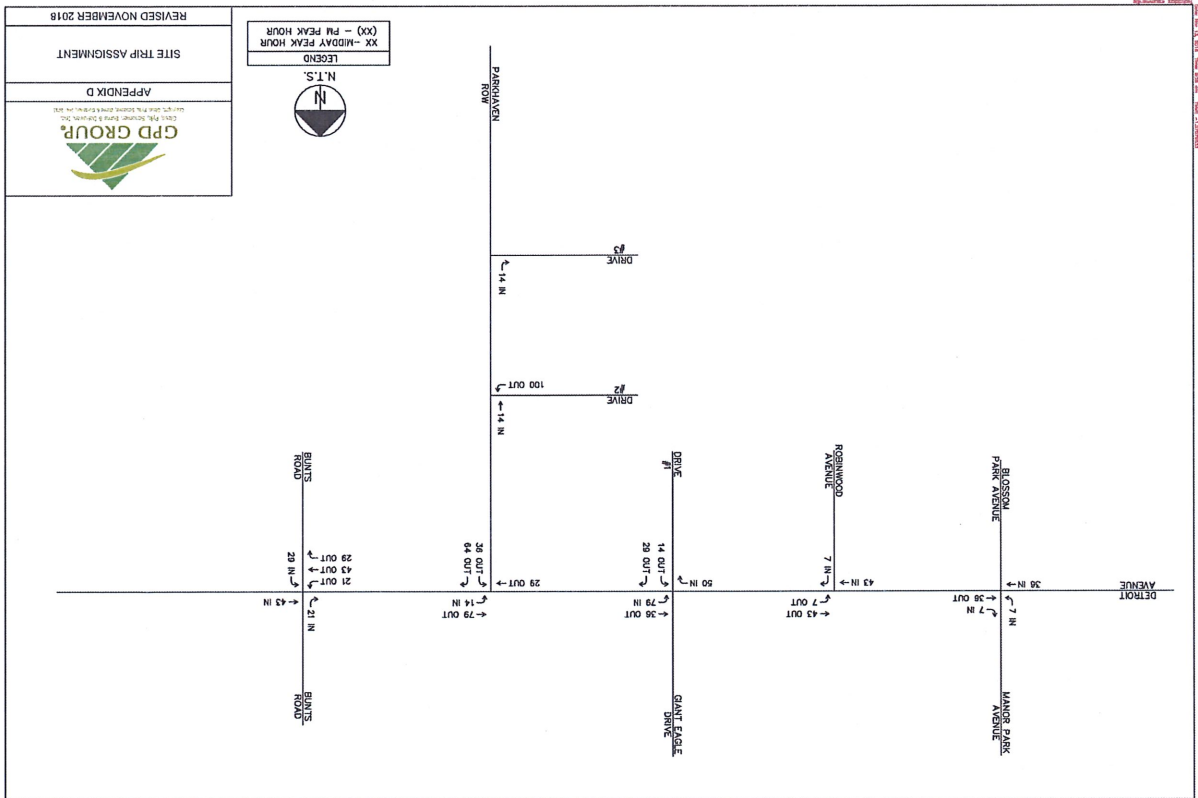
Roadway Section		"Detroit Avenue" - Historical Traffic Volumes					
		1984	2000	2008	2010	2013	
Detroit Avenue		8090	10480	10500	9200	9520	9710
Trendline		9333	9394	9576	9697	9727	9773
Growth Rate		0.16%					

**APPENDIX C
GROWTH RATE CALCULATIONS**



APPENDIX D
SITE TRIP DISTRIBUTION AND ASSIGNMENT

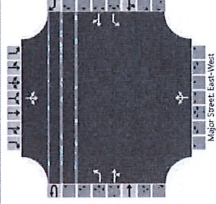
APPENDIX E INTRSECTION CAPACITY ANALYSIS



HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSS	Intersection	Blossom Park Avenue
Agency/Co.	GPD Group	Jurisdiction	City of 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 '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
Movement	1U	1L	1T	3U	3L	3T	4U	4L	4T	5U	5L	5T
Priority	0	1	1	0	0	0	1	1	1	0	0	0
Number of Lanes	0	1	1	0	0	0	1	1	1	0	0	0
Configuration	L	L	TR	TR	L	L	TR	TR	TR	LTR	L	L
Volume (veh/h)	23	367	5	7	390	11	6	4	10	11	4	24
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	4.1	7.1	6.5	6.2	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	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	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	3.53	4.03	3.33

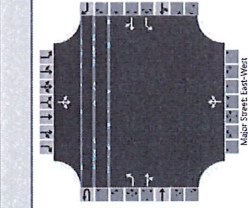
Delay, Queue Length, and Level of Service

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 2019 '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	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		



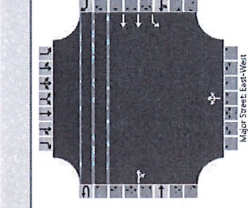
Vehicle Volumes and Adjustments		Eastbound		Westbound		Northbound		Southbound	
Approach		U	L	T	R	U	L	T	R
Movement		1	1	2	3	4	4	5	6
Priority		0	1	1	0	0	1	0	0
Number of Lanes		0	1	1	0	0	1	0	0
Configuration		L	TR	L	TR	L	TR	L	TR
Volume (veh/h)		20	348	7	15	421	25	4	7
Percent Heavy Vehicles (%)		3		3	3	3	3	3	3
Proportion Time Blocked									
Percent Grade (%)									
Right Turn Channelized									
Median Type Storage		Undivided							

Critical and Follow-up Headways		Eastbound		Westbound		Northbound		Southbound	
		U	L	T	R	U	L	T	R
Base Critical Headway (sec)		4.1				7.1	6.5	6.2	7.1
Critical Headway (sec)		4.13				7.13	6.53	6.23	7.13
Base Follow-up Headway (sec)		2.2				3.5	4.0	3.3	3.5
Follow-up Headway (sec)		2.23				3.53	4.03	3.33	3.53

Delay, Queue Length, and Level of Service		Eastbound		Westbound		Northbound		Southbound	
		U	L	T	R	U	L	T	R
Flow Rate v (veh/h)		22				16			
Capacity, c (veh/h)		1073				1167			
v/c Ratio		0.02				0.01			
95% Queue Length, Q ₉₅ (veh)		0.1				0.0			
Control Delay (s/veh)		8.4				8.1			
Level of Service (LOS)		A				A			
Approach Delay (s/veh)		0.4				0.3			
Approach LOS						C			

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 'No-Build' Conditions		



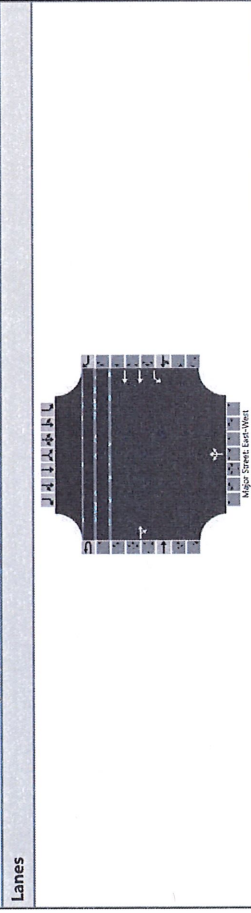
Vehicle Volumes and Adjustments		Eastbound		Westbound		Northbound		Southbound	
Approach		U	L	T	R	U	L	T	R
Movement		1	1	2	3	4	4	5	6
Priority		0	0	1	0	0	1	0	0
Number of Lanes		0	0	1	0	0	1	0	0
Configuration		L	TR	L	TR	L	TR	L	TR
Volume (veh/h)		20	362	3	8	404	20	0	50
Percent Heavy Vehicles (%)		3		3	3	3	3	3	3
Proportion Time Blocked									
Percent Grade (%)									
Right Turn Channelized									
Median Type Storage		Left Only							

Critical and Follow-up Headways		Eastbound		Westbound		Northbound		Southbound	
		U	L	T	R	U	L	T	R
Base Critical Headway (sec)		4.1				7.5	6.5	6.9	7.5
Critical Headway (sec)		4.16				7.56	6.56	6.96	7.56
Base Follow-up Headway (sec)		2.2				3.5	4.0	3.3	3.5
Follow-up Headway (sec)		2.23				3.53	4.03	3.33	3.53

Delay, Queue Length, and Level of Service		Eastbound		Westbound		Northbound		Southbound	
		U	L	T	R	U	L	T	R
Flow Rate v (veh/h)		22				16			
Capacity, c (veh/h)		1073				1167			
v/c Ratio		0.02				0.01			
95% Queue Length, Q ₉₅ (veh)		0.1				0.0			
Control Delay (s/veh)		8.4				8.1			
Level of Service (LOS)		A				A			
Approach Delay (s/veh)		0.4				0.2			
Approach LOS						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		



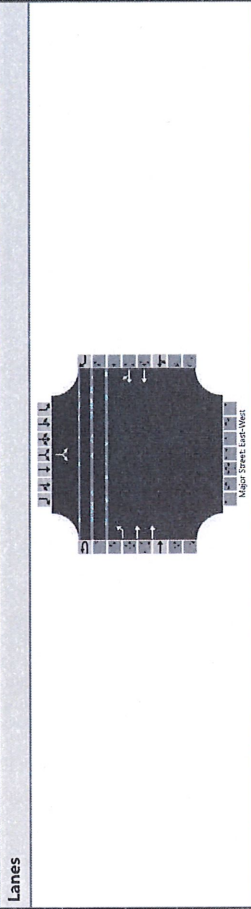
Vehicle Volumes and Adjustments															
Approach	Eastbound			Westbound			Northbound			Southbound					
	U	L	T	U	L	T	U	L	T	U	L	T	R		
Movement	1U	1	2	3	4U	4	5	6	7	8	9	10	11	12	
Priority	0	0	1	0	0	1	2	0	0	1	0	0	0	0	
Number of Lanes	TR			L			L			L			L		
Configuration	361			3			14			0			32		
Volume (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			6.5			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	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		



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	2	0	0	0	2	0	0	0	0	0	1	0	
Number of Lanes	L			L			L			L			L		
Configuration	410			409			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									1		

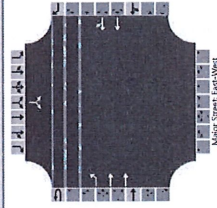
Critical and Follow-up Headways															
Base Critical Headway (sec)				4.1						7.5			6.9		
Critical Headway (sec)				4.16						6.86			6.96		
Base Follow-Up Headway (sec)				2.2						3.5			3.3		
Follow-Up Headway (sec)				2.23						3.53			3.33		

Delay, Queue Length, and Level of Service															
Flow Rate, v (veh/h)				B									8		
Capacity, c (veh/h)				1105									660		
v/c Ratio				0.01									0.01		
95% Queue Length, Q ₉₅ (veh)				0.0									0.0		
Control Delay (s/veh)				8.3									10.5		
Level of Service (LOS)				A									B		
Approach Delay (s/veh)				0.1									10.5		
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	10/3/2018	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



Vehicle Volumes and Adjustments

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	0	2	0	0	0	0	0		
Number of Lanes	L T			T TR			LR			LR				
Configuration	0	6	387	468			3	1			3			
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

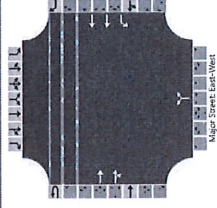
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	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)	5.5	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		

Lanes



Vehicle Volumes and Adjustments

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	1	2	0	0	1	0	0		
Number of Lanes	L T			L T			LR			LR				
Configuration	0	414	3	0	1	389	19	10			3			
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

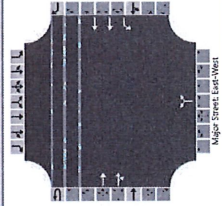
Base Critical Headway (sec)	4.1	7.5	6.9
Critical Headway (sec)	4.16	6.86	6.96
Base Follow-Up Headway (sec)	2.2	3.5	3.3
Follow-Up Headway (sec)	2.23	3.53	3.33

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	U	L	T	U	L	T	U	L	T
Volume (veh/h)	385	6	0	7	439	23	18					
Percent Heavy Vehicles (%)												
Proportion Time Blocked												
Percent Grade (%)												
Right Turn Channelized												
Median Type Storage	Left Only											

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	GPD Group	Duration, h	0.25
Analyst	MSS	Area Type	Other
Jurisdiction	City of Lakewood	PHF	0.92
Urban Street	Detroit Avenue	Analysis Year	2019
Intersection	Burns Road	Analysis Period	1 > 7:00
Project Description	Opening Year 2019 'No-Build'		

Demand Information		WB		NB		SB	
Approach Movement		L	T	R	L	T	R
Demand (V), veh/h		47	237	69	90	254	35

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

Timer Results		EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase		EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT								
Case Number		2	5.0	5.0	55.0	55.0	6.0	6.0	6.0								
Phase Duration, s		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0								
Change Period, (Y+R _c), s		3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2								
Max. Allow Headway (MAH), s		15.6	15.6	17.9	17.9	12.5	12.5	10.5	10.5								
Queue Clearance Time (g _c), s		1.6	1.6	1.6	1.6	1.0	1.0	0.9	0.9								
Green Extension Time (g _e), s		1.00	1.00	1.00	1.00	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								

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		51	258	75	98	276	38	84	175	
Adjusted Saturation Flow Rate (s), veh/h/in		1121	1900	1610	1140	1900	1610	1245	1796	
Queue Service Time (g _s), s		3.4	9.4	2.9	6.5	10.2	1.5	4.7	6.5	
Cycle Queue Clearance Time (g _c), s		13.6	9.4	2.9	15.9	10.2	1.5	10.5	6.5	
Green Ratio (g/c)		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	
Volume-to-Capacity Ratio (X)		0.108	0.298	0.102	0.201	0.320	0.052	0.148	0.214	
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	
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	
Queue Storage Ratio (RS) (50 th percentile)		0.12	0.00	0.21	0.35	0.00	0.22	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	
Incremental Delay (d ₂), s/veh		0.0	0.1	0.0	0.1	0.1	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	
Control Delay (d), s/veh		23.5	19.0	17.2	24.0	19.2	16.8	21.1	18.2	
Level of Service (LOS)		C	B	B	C	B	B	C	B	
Approach Delay, s/veh / LOS		19.2	B	20.1	C	19.1	B	18.5	B	
Intersection Delay, s/veh / LOS		19.4								

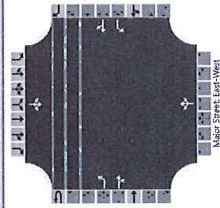
Multimodal Results		WB		NB		SB	
Pedestrian LOS Score / LOS		EB	WB	NB	SB		
Pedestrian LOS Score / LOS							
Bicycle LOS Score / LOS							

HCST 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	2019										
Intersection	Burns Road	File Name	5 - Burns Road OY 2019 No-Build PM.ux										
Project Description	Opening Year 2019 'No-Build'												
Demand Information		EB			WB			NB			SB		
Approach Movement		L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		54	238	63	157	299	51	119	263	75	53	248	42
Signal Information													
Cycle, s	100.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
Timer Results													
Assigned Phase		EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Case Number		5	2	12	6	3	8	18	7	4			
Phase Duration, s		59	259	68	171	325	55	129	367	6.0			
Change Period, (Y+R) s		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	45.0			
Max Allow Headway (MAH), s		3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	5.0			
Queue Clearance Time (g*), s		15.8	20.1	24.1	24.1	24.1	24.1	24.1	24.1	3.3			
Green Extension Time (g+), s		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	21.5			
Phase Call Probability		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.8			
Max Out Probability		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		
Assigned Movement		L	T	R	L	T	R	L	T	R	L	T	R
Adjusted Flow Rate (V), veh/h		5	2	12	6	3	8	18	7	4	14	5	14
Adjusted Saturation Flow Rate (s), veh/h/in		59	259	68	171	325	55	129	367	58	315	1031	1852
Queue Service Time (g*), s		3.5	7.9	2.2	10.2	10.3	1.8	9.8	15.1	4.4	12.3	4.4	12.3
Cycle Queue Clearance Time (g*), s		13.8	7.9	2.2	18.1	10.3	1.8	22.1	15.1	19.5	12.3	0.40	0.40
Green Ratio (g/C)		0.50	0.50	0.50	0.50	0.50	0.50	0.40	0.40	0.40	0.40	0.40	0.40
Capacity (c), veh/h		497	950	805	562	950	805	371	731	329	741	0.175	0.426
Volume-to-Capacity Ratio (X)		0.118	0.272	0.065	0.309	0.342	0.069	0.348	0.503	0.175	0.426	0.175	0.426
Back of Queue (Q), ft/in (95 th percentile)		38.4	145.9	34.8	117.9	190.6	27.9	113.3	259.4	49.1	222.8	2.0	8.9
Queue Storage Ratio (RQ) (95 th percentile)		1.5	5.8	1.4	4.7	7.6	1.1	4.5	10.4	2.0	8.9	0.00	0.00
Uniform Delay (d1), s/veh		0.21	0.00	0.28	0.94	0.00	0.47	0.00	0.00	0.00	0.00	29.9	21.7
Incremental Delay (d2), s/veh		0.0	0.1	0.0	0.1	0.1	0.0	0.2	0.2	0.1	0.1	0.0	0.0
Initial Queue Delay (d3), s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		19.3	14.5	13.1	19.8	15.2	13.0	29.9	22.7	30.0	21.8	0.0	0.0
Level of Service (LOS)		B	B	B	B	B	B	C	C	C	C	C	C
Approach Delay, s/veh / LOS		19.7											
Intersection Delay, s/veh / LOS		B											
Multimodal Results													
Pedestrian LOS Score / LOS		EB			WB			NB			SB		
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	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		



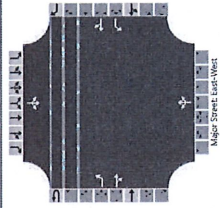
Vehicle Volumes and Adjustments		Eastbound		Westbound		Northbound		Southbound									
Approach		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement		1	1	2	3	4	U	4	5	6	7	8	9	10	11	12	
Priority		0	1	1	0	0	1	1	0	0	1	0	0	0	1	0	
Number of Lanes		L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Configuration		24	382	5	7	406	11	6	4	10	11	4	25				
Volume (veh/h)		3															
Percent Heavy Vehicles (%)																	
Proportion Time Blocked																	
Percent Grade (%)																	
Right Turn Channelized																	
Median Type Storage		Undivided															

Critical and Follow-up Headways		Eastbound		Westbound		Northbound		Southbound									
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
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		Eastbound		Westbound		Northbound		Southbound									
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Flow Rate v (veh/h)		26				8				22				43			
Capacity, c (veh/h)		1102				1133				341				383			
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				16.3				15.6			
Level of Service (LOS)		A				A				C				C			
Approach Delay (s/veh)		0.5				0.1				16.3				15.6			
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		



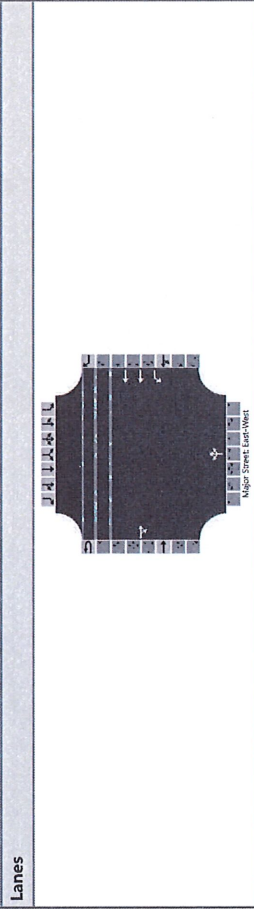
Vehicle Volumes and Adjustments		Eastbound		Westbound		Northbound		Southbound									
Approach		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement		1	1	2	3	4	U	4	5	6	7	8	9	10	11	12	
Priority		0	1	1	0	0	1	1	0	0	1	0	0	0	1	0	
Number of Lanes		L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Configuration		21	362	7		16	438	26		4	7	12		16	15	52	
Volume (veh/h)		3				3				3	3	3		3	3	3	
Percent Heavy Vehicles (%)																	
Proportion Time Blocked																	
Percent Grade (%)																	
Right Turn Channelized																	
Median Type Storage		Undivided															

Critical and Follow-up Headways		Eastbound		Westbound		Northbound		Southbound									
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
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		Eastbound		Westbound		Northbound		Southbound									
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Flow Rate v (veh/h)		23				17				25				90			
Capacity, c (veh/h)		1055				1152				330				365			
v/c Ratio		0.02				0.02				0.08				0.25			
95% Queue Length, Q ₉₅ (veh)		0.1				0.0				0.2				1.0			
Control Delay (s/veh)		8.5				8.2				16.8				18.1			
Level of Service (LOS)		A				A				C				C			
Approach Delay (s/veh)		0.5				0.3				16.8				18.1			
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		



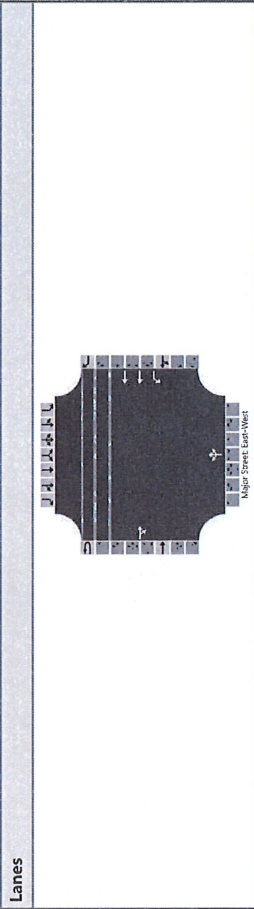
Approach	Eastbound			Westbound			Northbound			Southbound		
	U	L	T	U	L	T	U	L	T	U	L	T
Movement	1U	1	2	3	4U	4	5	6	7	8	9	10
Priority	0	0	1	0	0	1	2	0	0	1	0	0
Number of Lanes	0	0	1	0	0	1	2	0	0	1	0	0
Configuration	TR			L			LTR			L		
Volume (veh/h)	376			8			420			21		
Percent Heavy Vehicles (%)	3			3			3			3		
Proportion Time Blocked												
Percent Grade (%)												
Right Turn Channelized												
Median Type Storage				Left Only						1		

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

Delay, Queue Length, and Level of Service												
Flow Rate, v (veh/h)				9			79					
Capacity, c (veh/h)				1136			557					
v/c Ratio				0.01			0.14					
95% Queue Length, Q ₉₅ (veh)				0.0			0.5					
Control Delay (s/veh)				8.2			12.5					
Level of Service (LOS)				A			B					
Approach Delay (s/veh)				0.2			12.5					
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 'No-Build' Conditions		



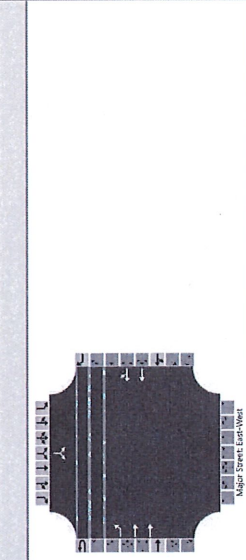
Approach	Eastbound			Westbound			Northbound			Southbound		
	U	L	T	U	L	T	U	L	T	U	L	T
Movement	1U	1	2	3	4U	4	5	6	7	8	9	10
Priority	0	0	1	0	0	1	2	0	0	1	0	0
Number of Lanes	0	0	1	0	0	1	2	0	0	1	0	0
Configuration	TR			L			LTR			L		
Volume (veh/h)	375			15			480			15		
Percent Heavy Vehicles (%)	3			3			3	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

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

Delay, Queue Length, and Level of Service												
Flow Rate, v (veh/h)				16			52					
Capacity, c (veh/h)				1137			547					
v/c Ratio				0.01			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)				0.2			12.3					
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	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		



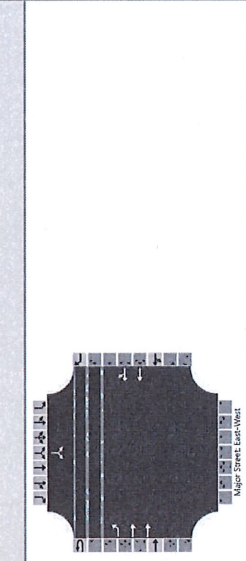
Vehicle Volumes and Adjustments															
Approach	Eastbound			Westbound			Northbound			Southbound					
	U	L	T	U	L	T	U	L	T	U	L	T	R		
Movement	1U	1	2	3	4U	4	5	6	7	8	9	10	11	12	
Priority	0	1	2	0	0	0	2	0	0	0	0	0	0	1	0
Number of Lanes	L T			T TR			L TR			LR					
Configuration	0	7	426	425			0	2			5				
Volume (veh/h)	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												8	
Capacity, c (veh/h)	1088												649	
v/c Ratio	0.01												0.01	
95% Queue Length, Q ₉₅ (veh)	0.0												0.0	
Control Delay (s/veh)	8.3												10.6	
Level of Service (LOS)	A												B	
Approach Delay (s/veh)	0.1												10.6	
Approach LOS													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															
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	2	0	0	0	2	0	0	0	0	0	0	1	0
Number of Lanes	L T			T TR			L TR			LR					
Configuration	0	6	402	487			3	1			3				
Volume (veh/h)	3	3													
Percent Heavy Vehicles (%)															
Proportion Time Blocked															
Percent Grade (%)															
Right Turn Channelized															
Median Type Storage	Left Only									1					

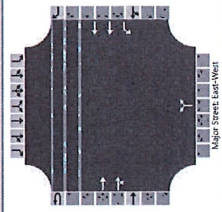
Critical and Follow-up Headways														
Base Critical Headway (sec)	4.1											7.5	6.9	
Critical Headway (sec)	4.16											6.86	6.96	
Base Follow-Up Headway (sec)	2.2											3.5	3.3	
Follow-Up Headway (sec)	2.23											3.53	3.33	

Delay, Queue Length, and Level of Service														
Flow Rate, v (veh/h)	7												4	
Capacity, c (veh/h)	1024												626	
v/c Ratio	0.01												0.01	
95% Queue Length, Q ₉₅ (veh)	0.0												0.0	
Control Delay (s/veh)	8.5												10.8	
Level of Service (LOS)	A												B	
Approach Delay (s/veh)	0.1												10.8	
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	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		

Lanes



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	431			3			0			20			10	
Volume (veh/h)				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

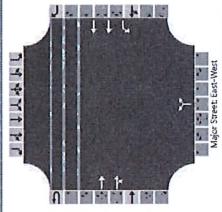
Delay, Queue Length, and Level of Service

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

Lanes



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	400			6			0			24			19	
Volume (veh/h)				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	47
Capacity, c (veh/h)	1108	572
v/c Ratio	0.01	0.08
95% Queue Length, Q ₉₅ (veh)	0.0	0.3
Control Delay (s/veh)	8.3	11.9
Level of Service (LOS)	A	B
Approach Delay (s/veh)	0.1	11.9
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
Jurisdiction	City of Lakewood	Time Period	Mid-day Peak
Urban Street	Detroit Avenue	Analysis Year	2039
Intersection	Burns Road	File Name	5 - Burns Road DY 2039 No-Build Mid.xus
Project Description	Design Year 2039 'No-Build'		

Demand Information		EB		WB		NB		SB				
Approach Movement	Demand (v), veh/h	L	T	R	L	T	R	L	T	R		
	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	End	Green	50.0	40.0	0.0	0.0
Offset, s	0	Reference Point	On	Simult. Gap E/W	3.0	3.0	0.0	0.0	0.0
Uncoordinated	Yes	Simult. Gap N/S	On	Force Mode	Fixed	Simult. Gap N/S	On		

Timer Results		EBT		WBL		WBT		NBL		SBL		SBT	
Assigned Phase	Case Number	EBT	WBL	WBT	NBL	SBL	SBT						
Phase Duration, s	55.0	5.0	5.0	5.0	5.0	5.0	5.0						
Change Period, (Y+R), s	3.2	3.2	3.2	3.2	3.2	3.2	3.2						
Max Allow Headway (MAH), s	16.2	16.2	16.2	16.2	16.2	16.2	16.2						
Queue Clearance Time (g _s), s	1.7	1.7	1.7	1.7	1.7	1.7	1.7						
Green Extension Time (g _e), s	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						

Movement Group Results		EB		WB		NB		SB			
Approach Movement	Assigned Movement	L	T	R	L	T	R	L	T	R	
Adjusted Flow Rate (v), veh/h	53	267	78	102	287	39	87	182	37	167	
Adjusted Saturation Flow Rate (s), veh/h/h	1110	1900	1610	1130	1900	1610	1237	1795	1222	1827	
Queue Service Time (g _s), s	3.6	9.8	3.1	6.9	10.7	1.5	5.0	6.7	2.1	6.1	
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	6.1	
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	462	864	732	478	864	732	560	816	546	831	
Volume-to-Capacity Ratio (X)	0.115	0.310	0.107	0.214	0.332	0.053	0.155	0.222	0.068	0.202	
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	112.8	
Queue Storage Ratio (RC) (95 th percentile)	1.7	7.6	2.0	3.3	8.1	1.0	2.6	4.9	1.1	4.5	
Uniform Delay (d _t), s/veh	23.8	19.0	17.2	24.4	19.3	16.8	21.3	18.2	20.9	18.0	
Incremental Delay (d _s), 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 _i), 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 _c), s/veh	23.9	19.1	17.2	24.4	19.4	16.8	21.4	18.3	20.9	18.1	
Level of Service (LOS)	C	B	B	C	B	B	C	B	C	B	
Approach Delay, s/veh / LOS	19.4	B	B	20.3	C	B	B	19.3	B	18.6	B
Intersection Delay, s/veh / LOS	19.5										

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

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	Burns Road	File Name	5 - Burns Road DY 2039 No-Build PM.xus
Project Description	Design Year 2039 'No-Build'		

Demand Information		EB		WB		NB		SB				
Approach Movement	Demand (v), veh/h	L	T	R	L	T	R	L	T	R		
	56	248	66	163	311	53	124	274	78	55	258	44

Signal Information		EB		WB		NB		SB	
Cycle, s	100.0	Reference Phase	2	End	Green	50.0	40.0	0.0	0.0
Offset, s	0	Reference Point	On	Simult. Gap E/W	3.0	3.0	0.0	0.0	0.0
Uncoordinated	Yes	Simult. Gap N/S	On	Force Mode	Fixed	Simult. Gap N/S	On		

Timer Results		EBT		WBL		WBT		NBL		SBL		SBT	
Assigned Phase	Case Number	EBT	WBL	WBT	NBL	SBL	SBT						
Phase Duration, s	55.0	5.0	5.0	5.0	5.0	5.0	5.0						
Change Period, (Y+R), s	3.2	3.2	3.2	3.2	3.2	3.2	3.2						
Max Allow Headway (MAH), s	16.5	16.5	16.5	16.5	16.5	16.5	16.5						
Queue Clearance Time (g _s), s	2.1	2.1	2.1	2.1	2.1	2.1	2.1						
Green Extension Time (g _e), s	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						

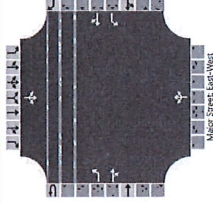
Movement Group Results		EB		WB		NB		SB		
Approach Movement	Assigned Movement	L	T	R	L	T	R	L	T	R
Adjusted Flow Rate (v), veh/h	61	270	72	177	338	58	135	383	60	328
Adjusted Saturation Flow Rate (s), veh/h/h	1059	1900	1610	1127	1900	1610	1068	1827	1016	1851
Queue Service Time (g _s), s	3.7	8.3	2.3	10.9	10.8	1.9	10.5	15.9	4.7	12.9
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	12.9
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	487	950	805	542	950	805	361	731	317	741
Volume-to-Capacity Ratio (X)	0.125	0.284	0.089	0.327	0.356	0.072	0.373	0.524	0.189	0.443
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	231.6
Queue Storage Ratio (RC) (95 th percentile)	1.6	6.1	1.5	5.0	7.9	1.2	4.8	10.8	2.1	9.3
Uniform Delay (d _t), s/veh	19.6	14.6	13.1	20.1	15.2	13.0	30.4	22.8	30.6	21.9
Incremental Delay (d _s), s/veh	0.0	0.1	0.0	0.1	0.1	0.0	0.2	0.3	0.1	0.2
Initial Queue Delay (d _i), 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 _c), s/veh	19.7	14.6	13.1	20.3	15.3	13.0	30.7	23.1	30.7	22.0
Level of Service (LOS)	B	B	B	C	B	B	C	C	C	C
Approach Delay, s/veh / LOS	15.1	B	B	16.6	B	25.1	C	23.4	C	C
Intersection Delay, s/veh / LOS	20.0									

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

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	11/8/2018	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		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound				
	U	L	T	U	L	T	U	L	T	U	L	T		
Movement	TU	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			L			L			L				
Configuration	L			L			L			L				
Volume (veh/h)	23	403	5	7	426	18	6	4	10	18	4	24	3	3
Percent Heavy Vehicles (%)	3			3			3			3				
Proportion Time Blocked														
Percent Grade (%)														
Right Turn Channelized														
Median Type Storage	Undivided			Undivided			Undivided			Undivided				

Critical and Follow-up Headways

Base Critical Headway (sec)	4.1	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
Critical Headway (sec)	4.13	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	2.2	3.5	4.0	3.3	3.5	4.0	3.3
Follow-up Headway (sec)	2.23	2.23	2.23	3.53	4.03	3.33	3.53	4.03	3.33

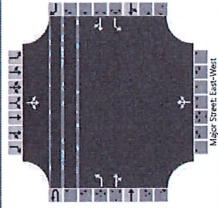
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	25	8	22	321	50
Capacity, c (veh/h)	1075	1111	321	325	325
v/c Ratio	0.02	0.01	0.07	0.15	0.15
95% Queue Length, Q ₉₅ (veh)	0.1	0.0	0.2	0.5	0.5
Control Delay (s/veh)	8.4	8.3	17.0	18.1	18.1
Level of Service (LOS)	A	A	C	C	C
Approach Delay (s/veh)	0.4	0.1	17.0	18.1	18.1
Approach LOS	C	C	C	C	C

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	11/8/2018	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



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			L			L		
Configuration	L			TR			L			L			L		
Volume (veh/h)	20	384	7	15	457	32	4	7	12	22	14	50			
Percent Heavy Vehicles (%)	3			3			3	3	3	3	3	3			
Proportion Time Blocked															
Percent Grade (%)	0														
Right Turn Channelized	Undivided														
Median Type Storage	Left Only														

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		

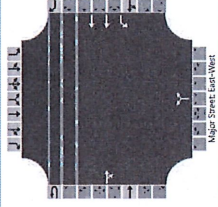
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	22			16			25			25			93	
Capacity, c (veh/h)	1031			1129			313			313			379	
v/c Ratio	0.02			0.01			0.08			0.08			0.28	
95% Queue Length, Q ₉₅ (veh)	0.1			0.0			0.3			0.3			1.1	
Control Delay (s/veh)	8.6			8.2			17.5			17.5			20.3	
Level of Service (LOS)	A			A			C			C			C	
Approach Delay (s/veh)	0.4			0.2			17.5			17.5			20.3	
Approach LOS							C			C			C	

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	11/8/2018	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



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	1	0	
Number of Lanes	L			TR			L			L			L		
Configuration	L			TR			L			L			L		
Volume (veh/h)	20	405	3	15	447	20	57			20			57		
Percent Heavy Vehicles (%)	3			3			3	3	3	3			3		
Proportion Time Blocked															
Percent Grade (%)	0														
Right Turn Channelized	Left Only														
Median Type Storage	Left Only														

Critical and Follow-up Headways

Base Critical Headway (sec)				4.1			7.5	6.9						
Critical Headway (sec)				4.16			7.53	6.96						
Base Follow-Up Headway (sec)				2.2			3.5	3.3						
Follow-Up Headway (sec)				2.23			3.53	3.33						

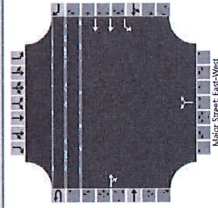
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				16			84							
Capacity, c (veh/h)				1106			532							
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)				0.3			13.0							
Approach LOS							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	11/08/2018	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



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	0	1	0	0	1	2	0	0	1	0	0	0	0
Number of Lanes		TR		L		T		LR							
Configuration		404		3		21		505		14		39			
Volume (veh/h)															
Percent Heavy Vehicles (%)															
Proportion Time Blocked															
Percent Grade (%)															
Right Turn Channelized															
Median Type Storage															

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

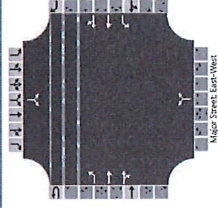
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	23	58
Capacity, c (veh/h)	1107	526
v/c Ratio	0.02	0.11
95% Queue Length, Q ₉₅ (veh)	0.1	0.4
Control Delay (s/veh)	8.3	12.7
Level of Service (LOS)	A	B
Approach Delay (s/veh)	0.3	12.7
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	11/08/2018	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



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	1	2	0	0	1	0	0	0	1
Number of Lanes		TR		L		T		LR							
Configuration		404		3		21		505		14		39			
Volume (veh/h)															
Percent Heavy Vehicles (%)															
Proportion Time Blocked															
Percent Grade (%)															
Right Turn Channelized															
Median Type Storage															

Critical and Follow-up Headways

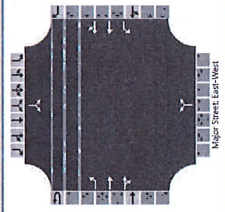
Base Critical Headway (sec)	4.1	7.5	6.9
Critical Headway (sec)	4.16	7.56	6.96
Base Follow-up Headway (sec)	2.2	3.5	3.3
Follow-up Headway (sec)	2.23	3.53	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	8	86	47
Capacity, c (veh/h)	1068	1053	535
v/c Ratio	0.01	0.08	0.09
95% Queue Length, Q ₉₅ (veh)	0.0	0.3	0.3
Control Delay (s/veh)	8.4	8.7	12.4
Level of Service (LOS)	A	A	B
Approach Delay (s/veh)	0.1	1.3	12.4
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	11/8/2018	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		



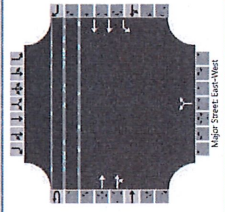
Vehicle Volumes and Adjustments		Eastbound		Westbound		Northbound		Southbound							
Approach		U	L	T	R	U	L	T	R	U	L	T	R		
Movement		1U	1	2	3	4U	4	5	6	7	8	9	10	11	12
Priority		0	1	2	0	0	1	2	0	0	1	0	0	0	1
Number of Lanes		L		T	TR	L	T	TR	LR	LR	LR	LR	LR		
Configuration		0	6	387	50	0	79	504	3	14	29	1	3		
Volume (veh/h)		3	3	3	3	3	3	3	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		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		Eastbound		Westbound		Northbound		Southbound	
Flow Rate, v (veh/h)		7		86		47		4	
Capacity, c (veh/h)		1008		1076		539		519	
v/c Ratio		0.01		0.08		0.09		0.01	
95% Queue Length, C ₉₅ (veh)		0.0		0.3		0.3		0.0	
Control Delay (s/veh)		8.6		8.6		12.3		12.0	
Level of Service (LOS)		A		A		B		B	
Approach Delay (s/veh)		0.1		1.2		12.3		12.0	
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	11/8/2018	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		



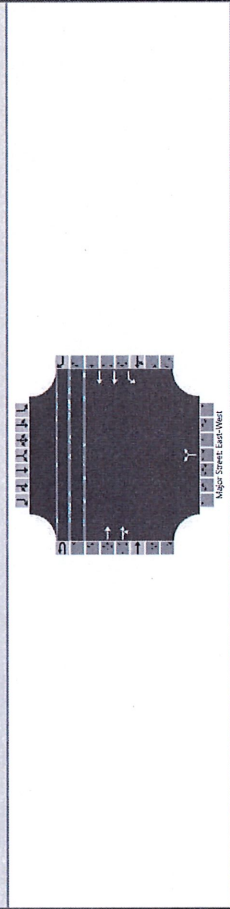
Vehicle Volumes and Adjustments		Eastbound		Westbound		Northbound		Southbound							
Approach		U	L	T	R	U	L	T	R	U	L	T	R		
Movement		1U	1	2	3	4U	4	5	6	7	8	9	10	11	12
Priority		0	0	2	0	0	1	2	0	0	1	0	0	0	0
Number of Lanes		L		T	TR	L	T	TR	LR	LR	LR	LR	LR		
Configuration		0	6	443	3	0	15	468	55	74	3	3	3		
Volume (veh/h)		3	3	3	3	3	3	3	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		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		Eastbound		Westbound		Northbound		Southbound	
Flow Rate, v (veh/h)		7		16		140		140	
Capacity, c (veh/h)		1008		1067		580		580	
v/c Ratio		0.01		0.02		0.24		0.24	
95% Queue Length, C ₉₅ (veh)		0.0		0.0		0.9		0.9	
Control Delay (s/veh)		8.6		8.4		13.2		13.2	
Level of Service (LOS)		A		A		B		B	
Approach Delay (s/veh)		0.3		0.3		13.2		13.2	
Approach LOS						B		B	

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Agency	MSS	Intersection	Parkhaven Row
Analyst	GPD Group	Jurisdiction	City of Lakewood
Date Performed	11/8/2018	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'		



Vehicle Volumes and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	U	L	T	U	L	T	U	L	T	U	L	T
Priority	1	2	3	4	5	6	7	8	9	10	11	12
Number of Lanes	0	0	2	0	1	2	0	1	0	0	0	0
Configuration	T	TR	L	T	L	T	LR					
Volume (veh/h)	414	6	0	21	518		59		82			
Percent Heavy Vehicles (%)				3	3		3		3			
Proportion Time Blocked							0					
Right Turn Channelized												
Median Type Storage	Left Only											

Critical and Follow-up Headways

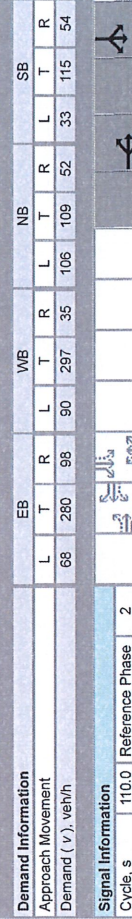
Base Critical Headway (sec)	4.1	7.5	6.9
Critical Headway (sec)	4.16	6.86	6.96
Base Follow-up Headway (sec)	2.2	3.5	3.3
Follow-up Headway (sec)	2.23	3.53	3.33

Delay, Queue Length, and Level of Service

Flow Rate v (veh/h)	23	153
Capacity, c (veh/h)	1094	586
v/c Ratio	0.02	0.26
95% Queue Length, Q ₉₅ (veh)	0.1	1.0
Control Delay (s/veh)	8.4	13.3
Level of Service (LOS)	A	B
Approach Delay (s/veh)	0.3	13.3
Approach LOS	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	2019
Intersection	Bunts Road	Analysis Period	1 > 7:00
Project Description	Opening Year 2019 'Build'		
File Name	5 - Bunts Road OY 2019 Build Mid.xsv		



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	68	280	98	90	297	35	106	109	52	33	115	54

Signal Information

Cycle, s	Reference Phase		End
	0	2	
Offset, s	Green	50.5	49.5
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Timer Results

Assigned Phase	EBT		WBL		WBT		NBT		SBL		SBT	
	L	T	L	T	L	T	L	T	L	T	L	T
Case Number	2		6		6		8		8		4	
Phase Duration, s	5.0		5.0		5.0		6.0		6.0		6.0	
Change Period, (Y+R)c, s	55.5		55.5		55.5		54.5		54.5		54.5	
Max Allow Headway (MAH), s	5.0		5.0		5.0		5.0		5.0		5.0	
Queue Clearance Time (g _q), s	3.2		3.2		3.2		3.2		3.2		3.2	
Green Extension Time (g _e), s	19.5		20.3		15.9		15.9		10.5		10.5	
Phase Call Probability	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	

Movement Group Results

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Flow Rate (v), veh/h	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	74	304	107	98	323	38	115	175	36	184		
Adjusted Saturation Flow Rate (s), veh/h/ln	1074	1900	1610	1092	1900	1610	1219	1796	1229	1797		
Queue Service Time (g _e), s	5.3	11.3	4.2	7.0	12.2	1.4	7.0	6.5	2.0	6.9		
Cycle Queue Clearance Time (g _c), s	17.5	11.3	4.2	18.3	12.2	1.4	13.9	6.5	8.5	6.9		
Green Ratio (g/c)	0.46	0.46	0.46	0.46	0.46	0.46	0.45	0.45	0.45	0.45		
Capacity (c), veh/h	440	872	739	454	872	739	538	808	545	809		
Volume-to-Capacity Ratio (X)	0.168	0.349	0.144	0.215	0.370	0.051	0.214	0.217	0.066	0.227		
Back of Queue (Q), ft/ln (50 th percentile)	33.5	122.1	38.4	44.8	130.8	13.1	49.9	66.6	14.4	70.3		
Back of Queue (Q), veh/ln (50 th percentile)	1.3	4.9	1.5	1.8	5.2	0.5	2.0	2.7	0.6	2.8		
Queue Storage Ratio (RS) (50 th percentile)	0.18	0.00	0.31	0.36	0.00	0.22	0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	25.1	19.2	17.2	25.1	19.4	16.5	22.8	18.4	21.0	18.5		
Incremental Delay (d ₂), s/veh	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	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	0.0		
Control Delay (d ₄), s/veh	25.1	19.3	17.3	25.1	19.5	16.5	22.9	18.5	21.1	18.6		
Level of Service (LOS)	C	B	B	C	B	B	C	B	C	B		
Approach Delay, s/veh / LOS	19.7	B	B	20.4	C	C	20.2	B	19.0	B		
Intersection Delay, s/veh / LOS	19.9											

Multimodal Results

Pedestrian LOS Score / LOS	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
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	City of Lakewood	Area Type	Other
Jurisdiction	Detroit Avenue	PHF	0.92
Intersection	Bunts Road	Analysis Period	1 st 7:00
Project Description	Opening Year 2019 'Build'	File Name	5 - Bunts Road OY 2019 Build PM.xus

Demand Information		EB		WB		NB		SB					
Approach	Movement	L	T	R	L	T	R	L	T	R			
Demand (v)	veh/h	75	281	92	157	342	51	148	263	75	53	248	63

Signal Information		EB		WB		NB		SB	
Cycle, s	Reference Phase	2	2	5	5	5	5	5	5
Offset, s	0	45.0	45.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	Yes	Simult. Gap E/W	3.0	3.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	2.0	2.0	0.0	0.0	0.0	0.0	0.0

Timer Results		EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase	Case Number	5	2	12	12	6	6	16	16	3	3	8	8	7	7	4	4
Phase Duration, s	82	305	100	171	372	55	161	161	161	1059	1827	1031	1833	58	338		
Change Period, (Y+R+G), s	Max Allow Headway (MAH), s	1027	1900	1610	1900	1610	1610	1610	1610	1059	1827	1031	1833	4.1	12.4		
Queue Clearance Time (g _c), s	Queue Extension Time (g _e), s	5.9	10.5	3.6	12.2	13.4	2.0	12.1	13.8	4.1	13.8	4.1	12.4	17.9	12.4		
Green Extension Time (g _e), s	Phase Call Probability	19.3	10.5	3.6	22.7	13.4	2.0	24.5	13.8	17.9	12.4	17.9	12.4	0.45	0.45		
Max Out Probability	Max Out Probability	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.45	0.45	0.45	0.45	0.45	0.45		
		397	855	725	448	855	725	417	822	393	825	0.147	0.410				

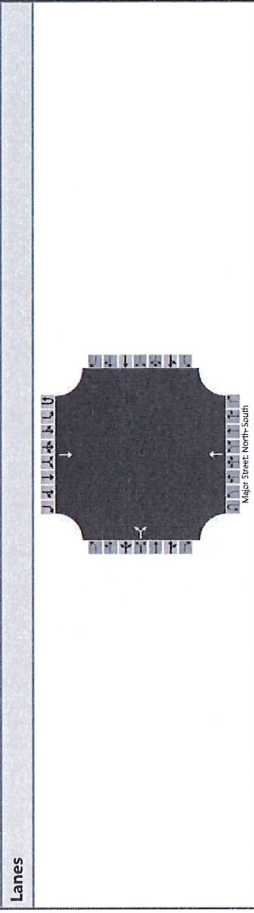
Movement Group Results		EB		WB		NB		SB									
Approach Movement	Assigned Movement	L	T	R	L	T	R	L	T	R							
Adjusted Flow Rate (v), veh/h	82	305	100	171	372	55	161	161	161	1059	1827	1031	1833	58	338		
Adjusted Saturation Flow Rate (s), veh/h/m	1027	1900	1610	1900	1610	1610	1610	1610	1610	1059	1827	1031	1833	4.1	12.4		
Queue Service Time (g _c), s	Queue Service Time (g _e), s	5.9	10.5	3.6	12.2	13.4	2.0	12.1	13.8	4.1	13.8	4.1	12.4	17.9	12.4		
Cycle Queue Clearance Time (g _c), s	Green Ratio (g/C)	19.3	10.5	3.6	22.7	13.4	2.0	24.5	13.8	17.9	12.4	17.9	12.4	0.45	0.45		
Capacity (c), veh/h	Volume-to-Capacity Ratio (X)	397	855	725	448	855	725	417	822	393	825	0.147	0.410				
Back of Queue (Q), veh/m (95th percentile)	Back of Queue (Q), veh/m (95th percentile)	63.7	197.5	56.7	138.5	238.6	31.5	134.5	237.9	44.3	219.1	44.3	219.1	1.8	8.8		
Queue Storage Ratio (RQ) (95th percentile)	Uniform Delay (d ₁), s/veh	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		
Incremental Delay (d ₂), s/veh	Initial Queue Delay (d ₃), s/veh	0.1	0.1	0.0	0.2	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0		
Control Delay (d), s/veh	Level of Service (LOS)	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		
Approach Delay, s/veh / LOS	Intersection Delay, s/veh / LOS	25.5	18.1	16.2	25.7	18.9	15.7	27.0	19.1	25.2	18.7	25.2	18.7	C	B		
		18.9	B	B	C	B	B	C	B	C	B	C	B	C	B		

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

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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	11/8/2018	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	T	R	U	T	R	U	T	R	U	T	R	
Movement	10	11	12	7	8	9	1U	1	2	3	4U	5	6
Number of Lanes	0	1	0	0	0	0	0	0	0	1	0	0	1
Configuration	LR			LR			T			T			
Volume (veh/h)	100	0	0	0	0	0	29	0	0	0	0	18	0
Percent Heavy Vehicles (%)	3	3	3	0	0	0	0	0	0	0	0	0	0
Proportion Time Blocked	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent Grade (%)	Undivided												
Right Turn Channelized	Undivided												
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

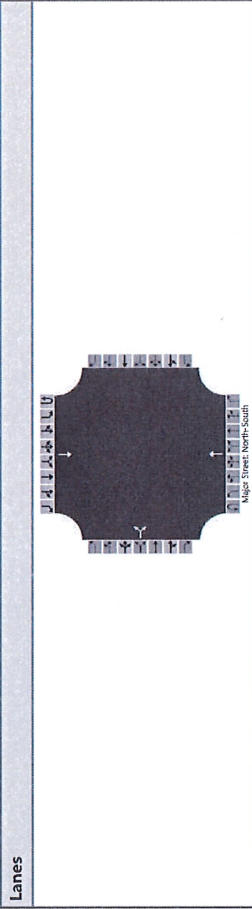
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	109
Capacity, c (veh/h)	955
v/c Ratio	0.11
95% Queue Length, Q ₉₅ (veh)	0.4
Control Delay (s/veh)	9.3
Level of Service (LOS)	A
Approach Delay (s/veh)	9.3
Approach LOS	A

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6 - Parkhaven Row & Drive 2 OY 2019 Build Mid-rwy

HCS7 Two-Way Stop-Control Report

General Information			Site Information		
Analyst	MSS	Intersection	Drive # 2	City of Lakewood	
Agency/Co.	GPD Group	Jurisdiction	Drive # 2	Parkhaven Row	
Date Performed	11/8/2018	North/South Street	Peak Hour Factor	0.92	
Analysis Year	2019	North/South	Analysis Time Period (hrs)	0.25	
Time Analyzed	PM Peak Hour	Opening Year 2019 'Build' Conditions			
Intersection Orientation	North-South				
Project Description	Opening Year 2019 'Build' Conditions				



Vehicle Volumes and Adjustments

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	LR			T			T			T				
Volume (veh/h)	100			0			41			27				
Percent Heavy Vehicles (%)	3			3										
Proportion Time Blocked	0													
Percent Grade (%)														
Right Turn Channelized														
Median Type Storage				Undivided										

Critical and Follow-up Headways

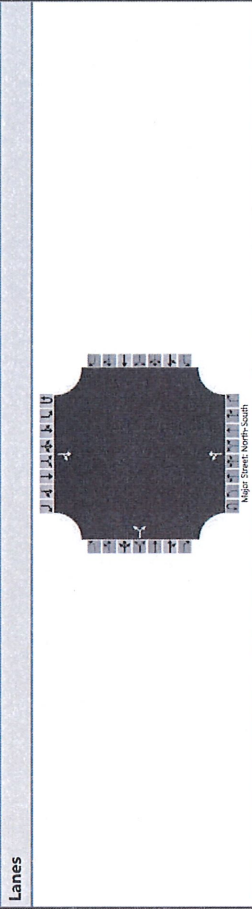
Base Critical Headway (sec)	7.1	6.2											
Critical Headway (sec)	6.43	6.23											
Base Follow-up Headway (sec)	3.5	3.3											
Follow-up Headway (sec)	3.53	3.33											

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	109												
Capacity, c (veh/h)	927												
v/c Ratio	0.12												
95% Queue Length, Q ₉₅ (veh)	0.4												
Control Delay (s/veh)	9.4												
Level of Service (LOS)	A												
Approach Delay (s/veh)	9.4												
Approach LOS	A												

HCS7 Two-Way Stop-Control Report

General Information			Site Information		
Analyst	MSS	Intersection	Drive # 3	City of Lakewood	
Agency/Co.	GPD Group	Jurisdiction	Drive # 3	Parkhaven Row	
Date Performed	11/8/2018	North/South Street	Peak Hour Factor	0.92	
Analysis Year	2019	North/South	Analysis Time Period (hrs)	0.25	
Time Analyzed	Mid-day Peak Hour	Opening Year 2019 'Build' Conditions			
Intersection Orientation	North-South				
Project Description	Opening Year 2019 'Build' Conditions				



Vehicle Volumes and Adjustments

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	LR			T			LT			TR				
Volume (veh/h)	0			0			0			29				
Percent Heavy Vehicles (%)	3			3			3			4				
Proportion Time Blocked	0													
Percent Grade (%)														
Right Turn Channelized														
Median Type Storage				Undivided										

Critical and Follow-up Headways

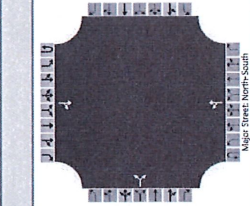
Base Critical Headway (sec)	7.1	6.2											
Critical Headway (sec)	6.43	6.23											
Base Follow-up Headway (sec)	3.5	3.3											
Follow-up Headway (sec)	3.53	3.33											

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	0												
Capacity, c (veh/h)	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)	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	11/02/2018	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														
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	6
Priority	0	1	0	0	0	0	0	0	1	0	0	0	1	0
Number of Lanes	LR			LR			LT			TR				
Configuration	0			0			0			41				
Volume (veh/h)	3			3			3			13				
Percent Heavy Vehicles (%)	0			0			0			14				
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			4.1			4.1		
Critical Headway (sec)	6.43			6.23			4.13			4.13		
Base Follow-up Headway (sec)	3.5			3.3			2.2			2.2		
Follow-up Headway (sec)	3.53			3.33			2.23			2.23		

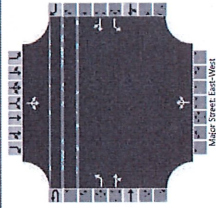
Delay, Queue Length, and Level of Service												
Flow Rate v (veh/h)	0			0			0			0		
Capacity, c (veh/h)	1577			1577			1577			1577		
v/c Ratio	0.00			0.00			0.00			0.00		
95% Queue Length, Obs (veh)	0.0			0.0			0.0			0.0		
Control Delay (s/veh)	7.3			7.3			7.3			7.3		
Level of Service (LOS)	A			A			A			A		
Approach Delay (s/veh)	0.0			0.0			0.0			0.0		
Approach LOS	A			A			A			A		

DESIGN YEAR 2039 '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	11/8/2018	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		

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			L			L			L				
Configuration	TR			L			TR			LTR				
Volume (veh/h)	24	418	5	7	442	18	6	4	10	18	4	25	3	3
Percent Heavy Vehicles (%)	3			3			3			3				
Proportion Time Blocked														
Percent Grade (%)														
Right Turn Channelized														
Median Type Storage				Undivided										

Vehicle Volumes and Adjustments

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

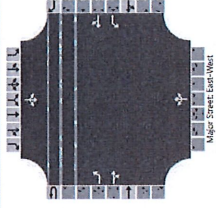
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	26	8	22	22	51
Capacity, c (veh/h)	1059	1086	306	306	313
v/c Ratio	0.02	0.01	0.07	0.07	0.16
95% Queue Length, Q ₉₅ (veh)	0.1	0.0	0.2	0.2	0.6
Control Delay (s/veh)	8.5	8.3	17.7	17.7	18.7
Level of Service (LOS)	A	A	C	C	C
Approach Delay (s/veh)	0.5	0.1	17.7	17.7	18.7
Approach LOS			C	C	C

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	11/8/2018	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		

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			L			L			L				
Configuration	TR			L			TR			LTR				
Volume (veh/h)	21	398	7	15	474	33	4	7	12	23	15	52	3	3
Percent Heavy Vehicles (%)	3			3			3			3				
Proportion Time Blocked														
Percent Grade (%)														
Right Turn Channelized														
Median Type Storage				Undivided										

Vehicle Volumes and Adjustments

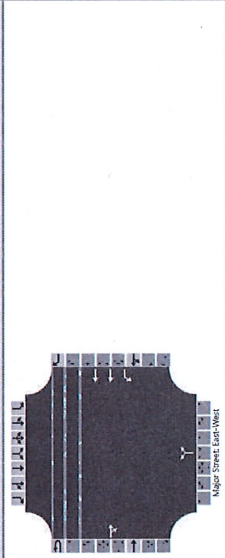
Base Critical Headway (sec)	4.1	7.1	6.5	6.2	7.1	6.5	6.2	7.1	6.5	6.2
Critical Headway (sec)	4.13	7.13	6.53	6.23	7.13	6.53	6.23	7.13	6.53	6.23
Base Follow-Up Headway (sec)	2.2	3.5	4.0	3.3	3.5	4.0	3.3	3.5	4.0	3.3
Follow-Up Headway (sec)	2.23	3.53	4.03	3.33	3.53	4.03	3.33	3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	23	16	25	25	96
Capacity, c (veh/h)	1014	1114	297	297	313
v/c Ratio	0.02	0.01	0.08	0.08	0.31
95% Queue Length, Q ₉₅ (veh)	0.1	0.0	0.3	0.3	1.3
Control Delay (s/veh)	8.6	8.3	18.2	18.2	21.7
Level of Service (LOS)	A	A	C	C	C
Approach Delay (s/veh)	0.4	0.2	18.2	18.2	21.7
Approach LOS			C	C	C

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	11/8/2018	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		



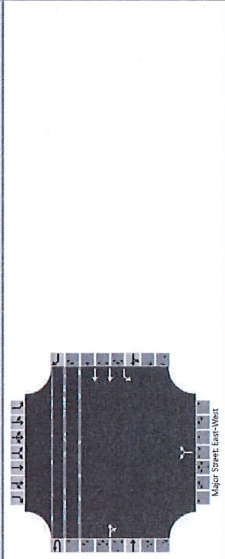
Vehicle Volumes and Adjustments															
Approach	Eastbound			Westbound			Northbound			Southbound					
	U	L	T	U	L	T	U	L	T	U	L	T	R		
Movement	1U	1	2	3	4U	4	5	6	7	8	9	10	11	12	
Priority	0	0	1	0	0	1	2	0	0	1	0	0	0	0	
Number of Lanes	TR			L			T			LR			0		
Configuration	419			3			15			463			21		
Volume (veh/h)	419			3			15			463			21		
Percent Heavy Vehicles (%)	3			3			3			3			3		
Proportion Time Blocked	0			0			0			0			0		
Percent Grade (%)															
Right Turn Channelized	Left Only														
Median Type Storage	1														

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)	16												
Capacity, c (veh/h)	1092												
v/c Ratio	0.01												
95% Queue Length, Q ₉₅ (veh)	0.0												
Control Delay (s/veh)	8.3												
Level of Service (LOS)	A												
Approach Delay (s/veh)	0.3												
Approach LOS	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	11/8/2018	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		



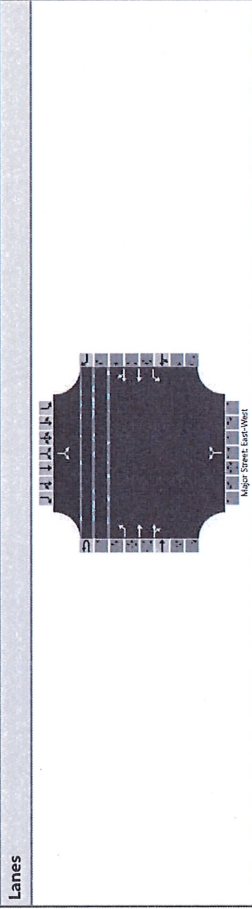
Vehicle Volumes and Adjustments															
Approach	Eastbound			Westbound			Northbound			Southbound					
	U	L	T	U	L	T	U	L	T	U	L	T	R		
Movement	1U	1	2	3	4U	4	5	6	7	8	9	10	11	12	
Priority	0	0	1	0	0	1	2	0	0	1	0	0	0	0	
Number of Lanes	TR			L			T			LR			0		
Configuration	418			3			22			523			15		
Volume (veh/h)	418			3			22			523			15		
Percent Heavy Vehicles (%)	3			3			3			3			3		
Proportion Time Blocked	0			0			0			0			0		
Percent Grade (%)															
Right Turn Channelized	Left Only														
Median Type Storage	1														

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)	24												
Capacity, c (veh/h)	1093												
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)	0.3												
Approach LOS	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	11/8/2018	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 'Build' Conditions		



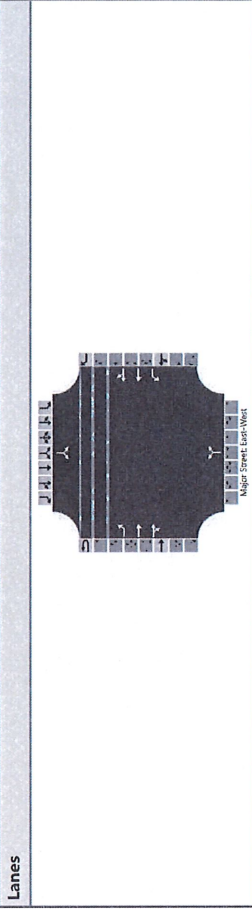
Vehicle Volumes and Adjustments		Eastbound		Westbound		Northbound		Southbound							
Approach		U	L	T	R	U	L	T	R	U	L	T	R		
Movement		1U	1	2	3	4U	4	5	6	7	8	9	10	11	12
Priority		0	1	2	0	0	1	2	0	0	1	0	0	0	1
Number of Lanes		L	T	TR	L	T	TR	LR	LR	LR	LR	LR	LR		
Configuration		0	7	426	50	0	79	461	0	14	29	2	5		
Volume (veh/h)		3	3	3	3	3	3	3	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		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		Eastbound		Westbound		Northbound		Southbound	
Flow Rate, v (veh/h)		B		86		47		B	
Capacity, c (veh/h)		1052		1038		524		519	
v/c Ratio		0.01		0.08		0.09		0.01	
95% Queue Length, Q ₉₅ (veh)		0.0		0.3		0.3		0.0	
Control Delay (s/veh)		8.4		8.8		12.5		12.0	
Level of Service (LOS)		A		A		B		B	
Approach Delay (s/veh)		0.1		1.3		12.5		12.0	
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	11/8/2018	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		



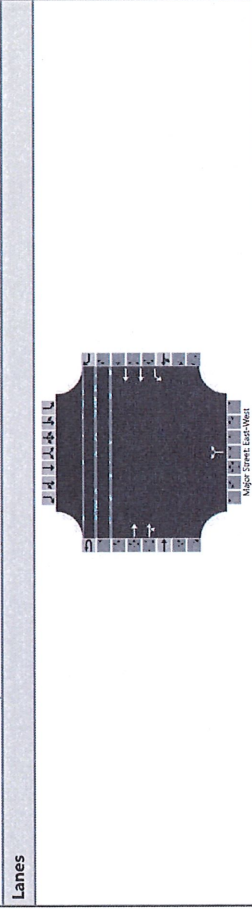
Vehicle Volumes and Adjustments		Eastbound		Westbound		Northbound		Southbound							
Approach		U	L	T	R	U	L	T	R	U	L	T	R		
Movement		1U	1	2	3	4U	4	5	6	7	8	9	10	11	12
Priority		0	1	2	0	0	1	2	0	0	1	0	0	0	1
Number of Lanes		L	T	TR	L	T	TR	LR	LR	LR	LR	LR			
Configuration		0	6	402	50	0	79	523	3	14	29	1	3		
Volume (veh/h)		3	3	3	3	3	3	3	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		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		Eastbound		Westbound		Northbound		Southbound	
Flow Rate, v (veh/h)		7		86		47		4	
Capacity, c (veh/h)		990		1061		529		507	
v/c Ratio		0.01		0.08		0.09		0.01	
95% Queue Length, Q ₉₅ (veh)		0.0		0.3		0.3		0.0	
Control Delay (s/veh)		8.7		8.7		12.5		12.2	
Level of Service (LOS)		A		A		B		B	
Approach Delay (s/veh)		0.1		1.1		12.5		12.2	
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	11/8/2018	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		



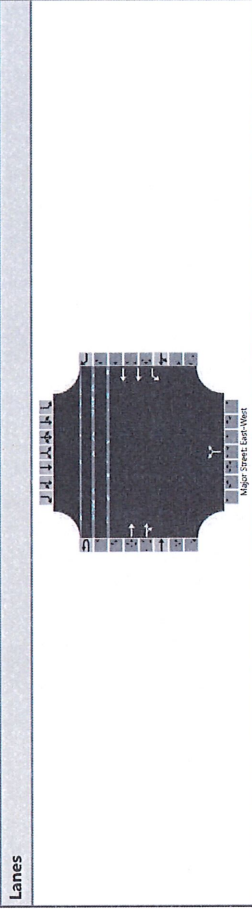
Vehicle Volumes and Adjustments		Eastbound		Westbound		Northbound		Southbound	
Approach		U	L	T	R	U	L	T	R
Movement		1U	1	2	3	4U	4	5	6
Priority		0	0	2	0	0	1	2	0
Number of Lanes		T		TR		L		LR	
Configuration		460		3		0		15	
Volume (veh/h)		484		56		74			
Percent Heavy Vehicles (%)		3		3		3			
Proportion Time Blocked		0							
Percent Grade (%)									
Right Turn Channelized									
Median Type Storage		Left Only						1	

Critical and Follow-up Headways		Eastbound		Westbound		Northbound		Southbound	
Base Critical Headway (sec)		4.1		4.1		7.5		6.9	
Critical Headway (sec)		4.16		4.16		6.86		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		Eastbound		Westbound		Northbound		Southbound	
Flow Rate, v (veh/h)		16		16		141			
Capacity, c (veh/h)		1050		1078		567			
v/c Ratio		0.02		0.02		0.25			
95% Queue Length, Q ₉₅ (veh)		0.0		0.1		1.0			
Control Delay (s/veh)		8.5		8.4		13.4			
Level of Service (LOS)		A		A		B			
Approach Delay (s/veh)		0.3		0.3		13.4		B	
Approach LOS		B		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	11/8/2018	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		



Vehicle Volumes and Adjustments		Eastbound		Westbound		Northbound		Southbound	
Approach		U	L	T	R	U	L	T	R
Movement		1U	1	2	3	4U	4	5	6
Priority		0	0	2	0	0	1	2	0
Number of Lanes		T		TR		L		LR	
Configuration		429		6		0		21	
Volume (veh/h)		536		60		83			
Percent Heavy Vehicles (%)		3		3		3			
Proportion Time Blocked		0							
Percent Grade (%)									
Right Turn Channelized									
Median Type Storage		Left Only						1	

Critical and Follow-up Headways		Eastbound		Westbound		Northbound		Southbound	
Base Critical Headway (sec)		4.1		4.1		7.5		6.9	
Critical Headway (sec)		4.16		4.16		6.86		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		Eastbound		Westbound		Northbound		Southbound	
Flow Rate, v (veh/h)		23		23		155			
Capacity, c (veh/h)		1078		1078		575			
v/c Ratio		0.02		0.02		0.27			
95% Queue Length, Q ₉₅ (veh)		0.1		0.1		1.1			
Control Delay (s/veh)		8.4		8.4		13.6			
Level of Service (LOS)		A		A		B			
Approach Delay (s/veh)		0.3		0.3		13.6		B	
Approach LOS		B		B		B		B	

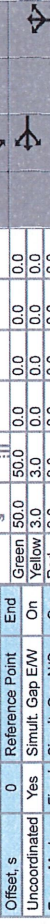
HCST7 Signalized Intersection Results Summary

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	Burns Road	File Name	5 - Burns Road DY 2039 Build Mid.xus
Project Description	Design Year 2039 'Build'		

Demand Information		WB		NB		SB						
Approach Movement	L	T	R	L	T	R	L	T	R			
Demand (V), veh/h	70	289	101	94	307	36	109	113	54	34	120	55

Signal Information		EB		WB		NB		SB	
Cycle, s	Reference Phase	End	Green	Yellow	Red	Simult. Gap N/S	Simult. Gap E/W	On	On
110.0	0	50.0	50.0	3.0	2.0	0.0	0.0	0.0	0.0
Uncoordinated	Yes	Simult. Gap E/W	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		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase	2	2	2	6	6	6	6	8	8	8	8	4	4	4	4
Case Number	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
Phase Duration, s	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
Change Period, (Y+R), 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
Max Allow Headway (MAH), s	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4
Queue Clearance Time (g _s), s	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
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
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
Max Out Probability															



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	7	4	14
Adjusted Flow Rate (V), veh/h	76	314	110	102	334	39	118	182	37	190		
Adjusted Saturation Flow Rate (s), veh/h/h	1063	1900	1610	1082	1900	1610	1212	1795	2222	1798		
Queue Service Time (g _s), s	5.6	11.9	4.4	7.5	12.8	1.5	7.3	6.7	2.1	7.1		
Cycle Queue Clearance Time (g _c), s	18.4	11.9	4.4	19.4	12.8	1.5	14.4	6.7	8.8	7.1		
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	425	864	732	440	864	732	538	816	546	817		
Volume-to-Capacity Ratio (X)	0.179	0.364	0.150	0.232	0.386	0.053	0.220	0.222	0.088	0.233		
Back of Queue (Q), ft/in (50th percentile)	35.3	128	40	47.8	137.6	13.6	51.2	68.6	14.8	72.3		
Back of Queue (Q), veh/in (50th percentile)	1.4	5.1	1.6	1.9	5.5	0.5	2.0	2.7	0.6	2.9		
Queue Storage Ratio (RS) (50th percentile)	0.19	0.00	0.32	0.38	0.00	0.23	0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	25.9	19.6	17.6	25.9	19.8	16.8	22.7	18.2	20.9	18.3		
Incremental Delay (d ₂), s/veh	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1		
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	0.0		
Control Delay (d), s/veh	26.0	19.7	17.6	26.0	20.0	16.8	22.8	18.3	20.9	18.4		
Level of Service (LOS)	C	B	B	C	B	B	C	B	C	B		
Approach Delay, s/veh / LOS	20.2	C	21.0	C	20.0	C	18.8	B				
Intersection Delay, s/veh / LOS	20.2											

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

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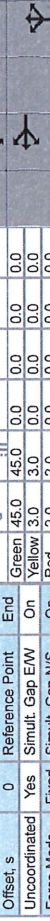
HCST7 Signalized Intersection Results Summary

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	Burns Road	File Name	5 - Burns Road DY 2039 Build PM.xus
Project Description	Design Year 2039 'Build'		

Demand Information		WB		NB		SB						
Approach Movement	L	T	R	L	T	R	L	T	R			
Demand (V), veh/h	77	291	95	163	354	53	153	274	78	65	258	55

Signal Information		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Cycle, s	100.0	Reference Phase	2	2	2	6	6	8	8	8	8	4	4	4	4
Offset, s	0	Reference Point	End	Green	Yellow	Red	Simult. Gap N/S	Simult. Gap E/W	On	On	On	On	On	On	On
Uncoordinated	Yes	Simult. Gap E/W	On	0.0	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	0.0

Timer Results		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase	2	2	2	6	6	6	6	8	8	8	8	4	4	4	4
Case Number	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
Phase Duration, s	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Change Period, (Y+R), s	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Max Allow Headway (MAH), s	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2
Queue Clearance Time (g _s), s	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
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
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
Max Out Probability															



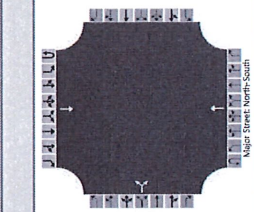
Movement Group Results		EB		WB		NB		SB				
Approach Movement	L	T	R	L	T	R	L	T	R			
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (V), veh/h	84	316	103	177	385	58	166	383	71	340		
Adjusted Saturation Flow Rate (s), veh/h/h	1014	1900	1610	1080	1900	1610	1057	1827	2016	1842		
Queue Service Time (g _s), s	6.2	11.0	3.8	12.9	14.0	2.0	12.6	14.6	5.2	12.5		
Cycle Queue Clearance Time (g _c), s	20.2	11.0	3.8	23.9	14.0	2.0	25.1	14.6	19.8	12.5		
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	387	855	725	439	855	725	416	822	381	829		
Volume-to-Capacity Ratio (X)	0.216	0.370	0.143	0.403	0.450	0.080	0.400	0.465	0.185	0.410		
Back of Queue (Q), ft/in (95th percentile)	66.3	204.2	60.7	146.3	247.1	32.8	140.1	247.9	55.8	220.2		
Back of Queue (Q), veh/in (95th percentile)	2.7	8.2	2.4	5.9	9.9	1.3	5.6	9.9	2.2	8.8		
Queue Storage Ratio (RS) (95th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	25.9	18.1	16.2	26.0	19.0	15.7	27.0	19.1	26.0	18.6		
Incremental Delay (d ₂), s/veh	0.1	0.1	0.0	0.2	0.1	0.0	0.2	0.2	0.1	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	0.0		
Control Delay (d), s/veh	26.0	18.2	16.2	26.3	19.1	15.7	27.2	19.3	26.1	18.7		
Level of Service (LOS)	C	B	B	C	B	B	C	B	C	B		
Approach Delay, s/veh / LOS	18.1	B	20.8	C	21.7	C	19.9	B				
Intersection Delay, s/veh / LOS	20.5											

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/Co.	GPD Group	Jurisdiction	City of Lakewood
Date Performed	11/8/2018	East/West Street	Drive # 2
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		



Lanes

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	5	6
Priority	0	1	0	0	0	0	0	0	0	1	0	0	1
Number of Lanes	LR			T			T			T			
Configuration	LR			T			T			T			
Volume (veh/h)	100			0			30			18			
Percent Heavy Vehicles (%)	3			3									
Proportion Time Blocked	0												
Percent Grade (%)	0												
Right Turn Channelized													
Median Type Storage				Undivided									

Critical and Follow-up Headways

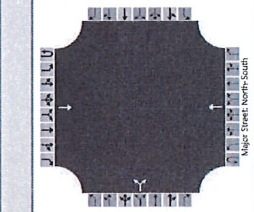
Base Critical Headway (sec)	7.1	6.2											
Critical Headway (sec)	6.43	6.23											
Base Follow-Up Headway (sec)	3.5	3.3											
Follow-Up Headway (sec)	3.53	3.33											

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	109												
Capacity, c (veh/h)	954												
v/c Ratio	0.11												
95% Queue Length, Q ₉₅ (veh)	0.4												
Control Delay (s/veh)	9.3												
Level of Service (LOS)	A												
Approach Delay (s/veh)	9.3												
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	11/8/2018	East/West Street	Drive # 2
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	Opening Year 2039 'Build' Conditions		



Lanes

Approach	Eastbound			Westbound			Northbound			Southbound			
	U	L	T	U	L	T	U	L	T	U	L	T	
Movement	10	11	12	7	8	9	TU	1	2	3	4U	5	6
Priority	0	1	0	0	0	0	0	0	0	1	0	0	1
Number of Lanes	LR			T			T			T			
Configuration	LR			T			T			T			
Volume (veh/h)	100			0			43			28			
Percent Heavy Vehicles (%)	3			3									
Proportion Time Blocked	0												
Percent Grade (%)	0												
Right Turn Channelized													
Median Type Storage				Undivided									

Critical and Follow-up Headways

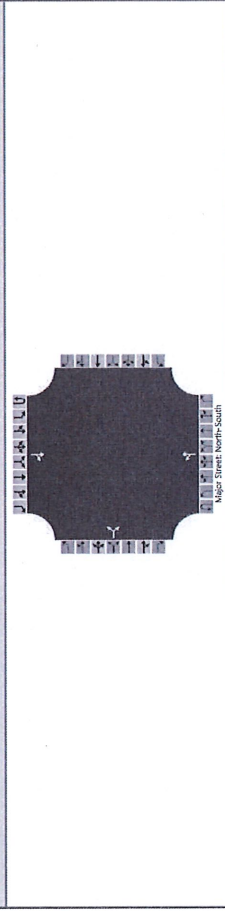
Base Critical Headway (sec)	7.1	6.2											
Critical Headway (sec)	6.43	6.23											
Base Follow-Up Headway (sec)	3.5	3.3											
Follow-Up Headway (sec)	3.53	3.33											

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	109												
Capacity, c (veh/h)	923												
v/c Ratio	0.12												
95% Queue Length, Q ₉₅ (veh)	0.4												
Control Delay (s/veh)	9.4												
Level of Service (LOS)	A												
Approach Delay (s/veh)	9.4												
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	11/8/2018	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	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	0	1	0
Number of Lanes	LR						LT			TR						
Configuration	0			0			0			30						
Volume (veh/h)	0			0			0			3						
Percent Heavy Vehicles (%)	3			3			3			3						
Proportion Time Blocked	0			0			0			0						
Percent Grade (%)	0			0			0			0						
Right Turn Channelized																
Median Type Storage	Undivided															

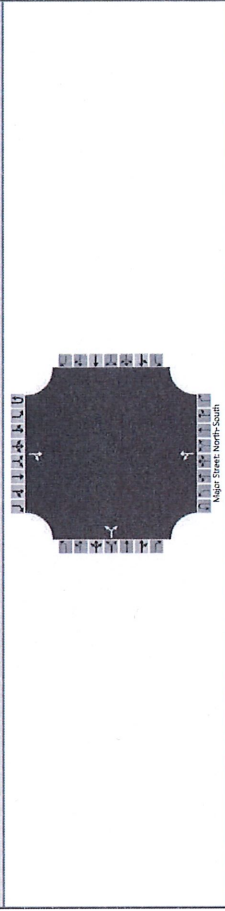
Critical and Follow-up Headways												
Base Critical Headway (sec)	7.1	6.2	4.1									
Critical Headway (sec)	6.43	6.23	4.13									
Base Follow-up Headway (sec)	3.5	3.3	2.2									
Follow-up Headway (sec)	3.53	3.33	2.23									

Delay, Queue Length, and Level of Service												
Flow Rate v (veh/h)	0											
Capacity, c (veh/h)	1550											
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											

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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	11/8/2018	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	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	0	1	0
Number of Lanes	LR						LT			TR						
Configuration	0			0			0			43						
Volume (veh/h)	0			0			0			3						
Percent Heavy Vehicles (%)	3			3			3			3						
Proportion Time Blocked	0			0			0			0						
Percent Grade (%)	0			0			0			0						
Right Turn Channelized																
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									

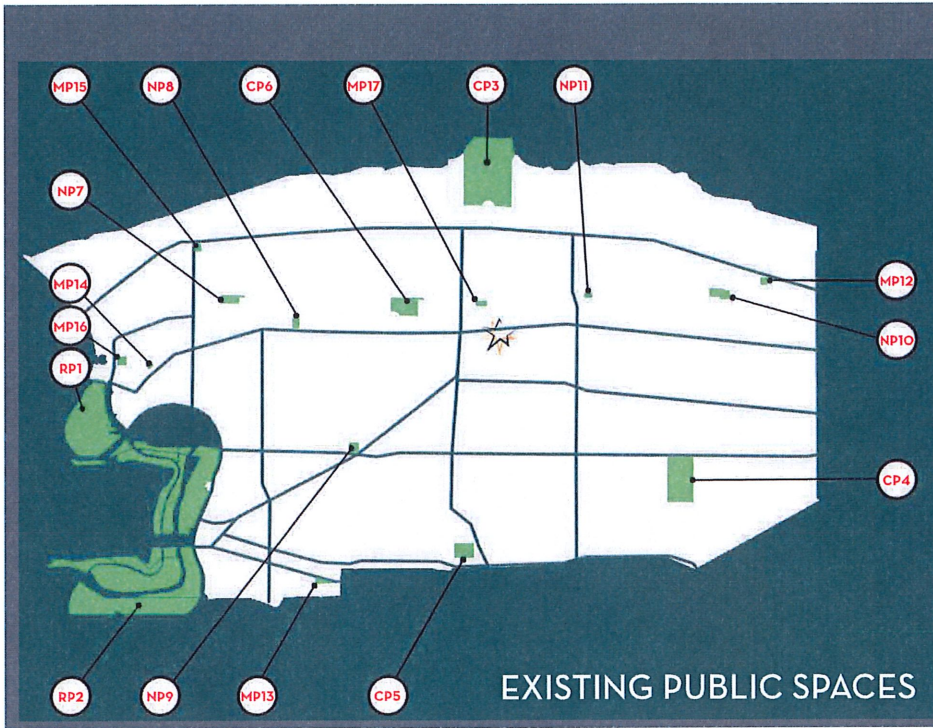
Delay, Queue Length, and Level of Service												
Flow Rate v (veh/h)	0											
Capacity, c (veh/h)	1576											
v/c Ratio	0.00											
95% Queue Length, Q ₉₅ (veh)	0.0											
Control Delay (s/veh)	7.3											
Level of Service (LOS)	A											
Approach Delay (s/veh)	0.0											
Approach LOS	A											

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- 1 plaza
- 2 updated site plan & massing study
- 3 residential liner buildings

AGENDA

PLAZA



REGIONAL PARK

- RP1 Rocky River Reservation
- RP2 Cleveland Metroparks

COMMUNITY PARK/REC CENTERS

- CP1 Lakewood Park
- CP2 Madison Park
- CP3 Winterhurst
- CP4 Kauffman Park

NEIGHBORHOOD PARKS

- NP1 Webb Park
- NP2 Edwards Park
- NP3 Wagar Park
- NP4 Cove Park
- NP5 Merl Park

MINI PARKS

- MP1 Clifton Prado
- MP2 Niagra Park
- MP3 Park Row Park
- MP4 Celeste Park
- MP5 Sloane Park
- MP6 City Center Park



Should be

- ✓ Adaptable & flexible
- ✓ Focused on active living
- ✓ Designed for everyday use
- ✓ Designed with elements for parents and children alike
- ✓ Inclusive of public art
- ✓ Food truck friendly
- ✓ Designed for all seasons
- ✓ Simple, high quality design

Should not

- ✗ Include too much fencing
- ✗ Include only permanent fixtures





Should be...

- ✓ Community centered
- ✓ Designed for families
- ✓ Designed for kids to play
- ✓ Designed with smaller environments in the larger plaza
- ✓ Designed with greenspace
- ✓ Designed with a water feature
- ✓ Wheelchair accessible
- ✓ People-centric to de-emphasize traffic and driving
- ✓ A place worth traveling to and through

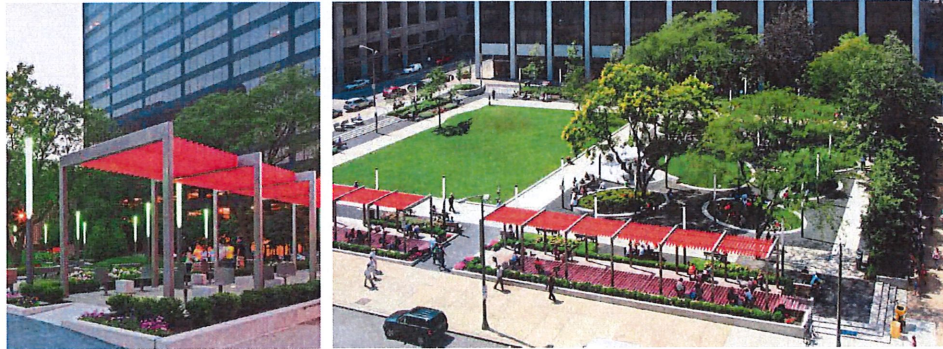


Comp

PERK PARK

SIZE: 1 acre
 LOCATION: East 12th Street & Chester Avenue
 DATE: 1972, updated in 2012.
 CONCEPT: "forest and meadow"

- FEATURES:
- shade trees
 - grassy lawn
 - planted mounds
 - wide-open lawn
 - sculptural knoll
 - clear lines of sight
 - secluded seating areas embedded in a grove of honey locusts
 - arceded percola aligned to contextual buildings
 - grid of light wands
 - multitextured ground surfaces
 - multiple seating options





Comp

PERK PARK

SIZE: 1 acre

ONE LAKEWOOD PLAZA SIZE: .5 acres



Comp

MARKET SQUARE

SIZE: .5 acres

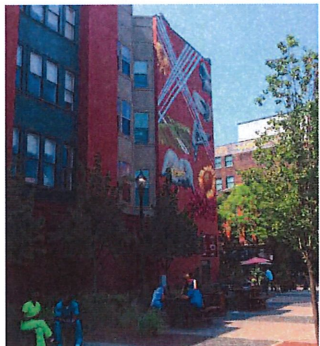
LOCATION: West 25th St. & Lorain Ave.

DATE: 1840 site of Pearl Market, 1912 became Market Square, Updated in 2012

CONCEPT: "harvest market"

FEATURES:

- large central plaza
- performance stage
- public art
- clear lines of sight
- gateway elements
- multitextured ground surfaces
- multiple seating options



ASPIRATIONAL GOALS

- ✓ rediscover and reclaim the public realm
- ✓ benefit Lakewood:
socially, culturally and economically
- ✓ the center of urban life

SPECIFICS

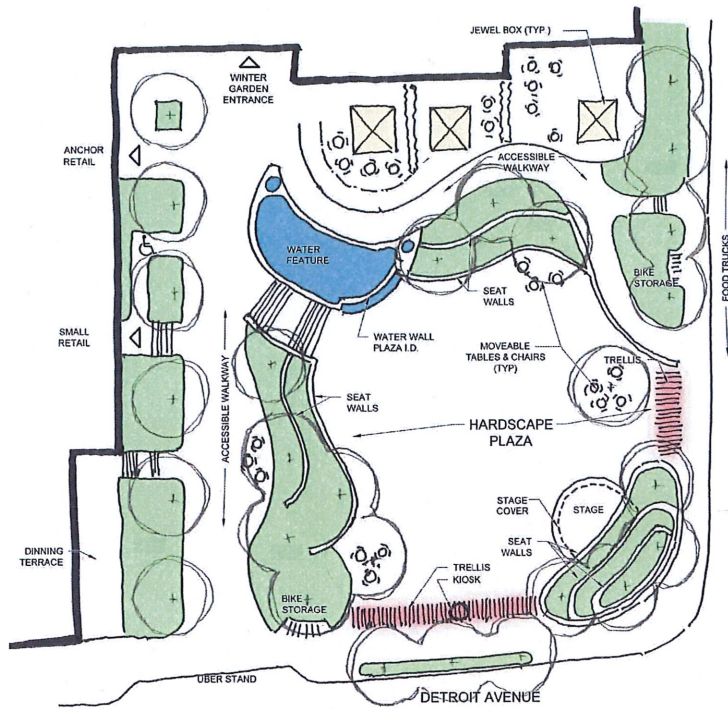
- ✓ all people, all times of the year
- ✓ vibrant, inclusive, adaptable
- ✓ high performance
- ✓ planned, all space considered
- ✓ interact with people and surroundings
- ✓ beautiful
- ✓ attractive and competitive
- ✓ people-centered
- ✓ innovatative, interactive & fun
- ✓ WIFI

PURPOSE

- ✓ Create an outdoor “living room” for the community and serve as the finest urban plaza space in the city.

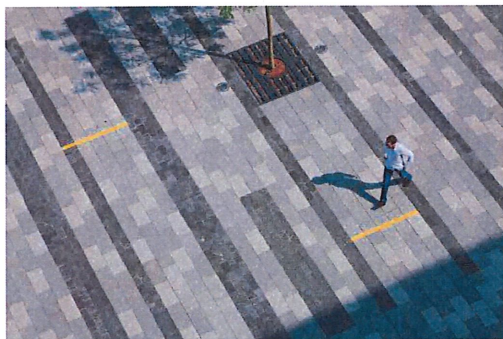
MISSION STATEMENT

- ✓ One Lakewood Plaza will be the urban square of Lakewood, serving all of its residents at all times of the year, as the center for community events and gatherings, and as a place for everyday use.
One Lakewood Plaza will be Lakewood’s outdoor living room.



Conceptual Site Plan

- Large hardscape plaza, surrounded by softscaped areas
- Combination of formal and organic forms
- Focal features include a stage and a water feature
- Trellised gateway entries and buffering
- Elevated dining areas
- Accessible route
- Multiple seating options
- Moveable furniture

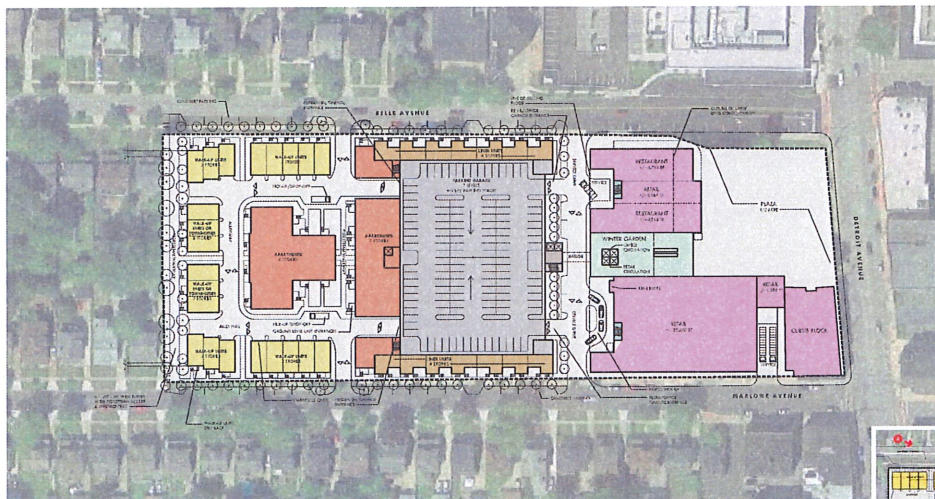


Material Concepts

- texture
- color
- variation
- hardscape and softscape



UPDATED SITE PLAN & MASSING STUDY



Site Plan

REVISED SITE PLAN

- Southern buffer
- Apartment building height
- Walk-up units setback

RESIDENTIAL

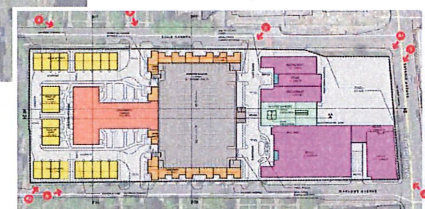
- APARTMENT LINER UNITS:
14 BUILDINGS, 4 FLRS = 42 UNITS
- APARTMENT UNITS:
1 BUILDING, 3-7 FLRS = 118 UNITS
- WALK-UP OR TOWNHOME BUILDINGS:
22 BUILDINGS, 3 FLRS = 38 - 44 UNITS
- CONDO UNITS:
1 BUILDING, 3-4 FLRS (OVER THE OFFICE): 12-16 UNITS
- TOTAL: 210 - 220 UNITS

COMMERCIAL

- RETAIL/RESTAURANTS/FITNESS CENTER
84,173 SF
- OFFICE
138,000 SF
- WINTER GARDEN

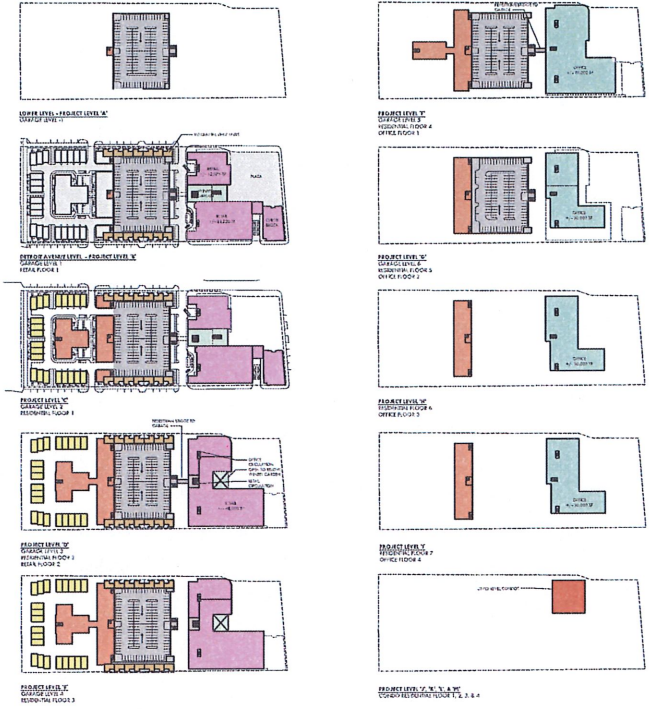
PARKING

- 870 GARAGE SPACES
- 36 ON-STREET SPACES
- 44 PRIVATE GARAGE SPACES FOR THE WALK-UPS
- TOTAL 950 SPACES PROVIDED
- MINIMUM REQUIREMENTS:
38-44 WALK-UP OR TOWNHOME UNITS x 1.0 SPACES/DU = 44 SPACES
15 ADDITIONAL SPACES FOR THE FOR-SALE UNITS = 15 SPACES
42 LINER UNITS x 1.0 SPACES/DU = 42 SPACES
134 APARTMENT/CONDO UNITS x 1.0 SPACES/DU = 134 SPACES
84,173 SF OF RETAIL @ 2.0 SPACES/1,000 SF = 168 SPACES (AVAILABLE TO THE PUBLIC)
138,000 SF OF OFFICE @ 2.0/1,000 SF = 276 MN
CURTIS BLOCK = 84 SPACES
CLEVELAND CLINIC PARKING = 75 SPACES
838 SPACES REQUIRED



Previous Site Plan

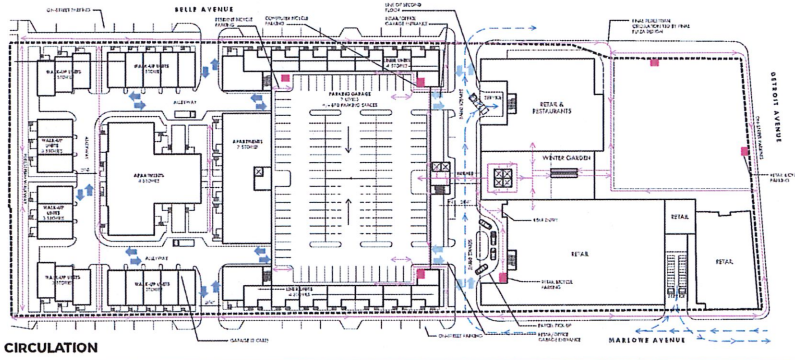
Project Levels



- LEGEND**
- RESIDENTIAL**
- APARTMENT LINER UNITS
 - APARTMENT UNITS
 - WALK-UP OR TOWNHOME BUILDINGS
 - CONDO UNITS
- COMMERCIAL**
- RETAIL, RESTAURANTS/FITNESS CENTER
 - OFFICE
 - WINTER GARDEN
 - GARAGE
 - CIRCULATION



Zoning Plan



CIRCULATION

SUMMARY

SITE INFO

5.9 ACRES

PROPOSED CIRCULATION

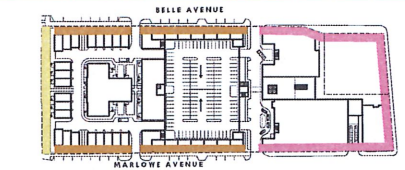
- PUBLIC DRIVE
- SEMI-PRIVATE DRIVE
- SERVICE ROUTE
- DRIVE AISLE WIDTHS VARY, SEE PLAN

PARALLEL PARKING: RANGES 8'-10" IN WIDTH

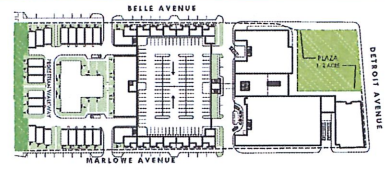
- MAJOR PEDESTRIAN ROUTES
- BICYCLE PARKING

BUILDING HEIGHT

NO PRINCIPAL BUILDING SHALL EXCEED 175' IN HEIGHT MEASURED FROM THE GRADE AT THE BUILDING ENTRANCE TO THE TOP OF THE ROOF OR PARAPET



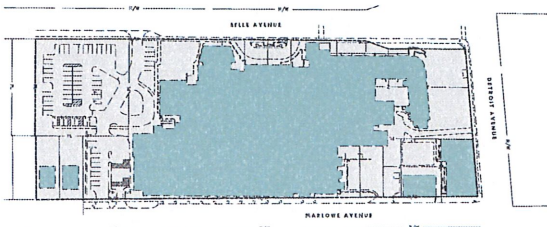
- BUILDING SETBACKS**
- PROPOSED SETBACKS**
- COMMERCIAL DEVELOPMENT: 5'-0" - 10'-0"
 - RESIDENTIAL DEVELOPMENT: 0'-0" - 10'-0"
 - SETBACK ABUTTING RTH: 20'-0" MIN



- COMMON AMENITY GREEN SPACE**
- PROPOSED OPENS SPACE**
- PUBLIC GREENSPACE/HARDSCAPE PLAZA: MIN. 1/2 ACRE (21,780 SF) 8% OF THE SITE
 - PUBLIC PEDESTRIAN WALKWAY: 7'-0" - 10' AC
 - LAWN

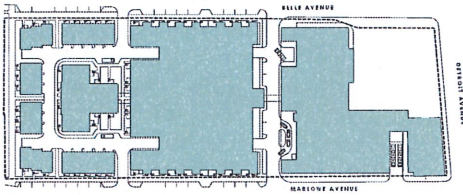


Coverage Plan



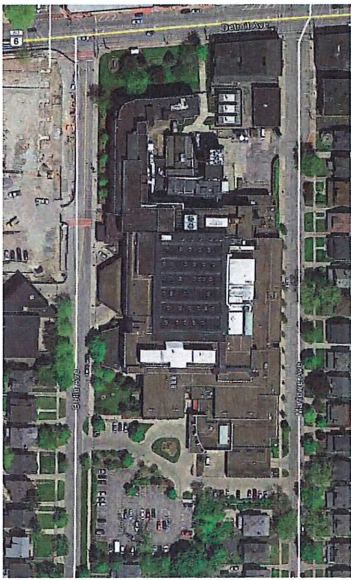
COVERAGE - EXISTING

BUILDING COVERAGE +/- 127,970 SF, 51% OF THE SITE
LOT COVERAGE +/- 206,480 SF, 81% OF THE SITE



COVERAGE - PROPOSED

BUILDING COVERAGE +/- 146,000 SF, 57% OF THE SITE
LOT COVERAGE +/- 208,220 SF, 81% OF THE SITE

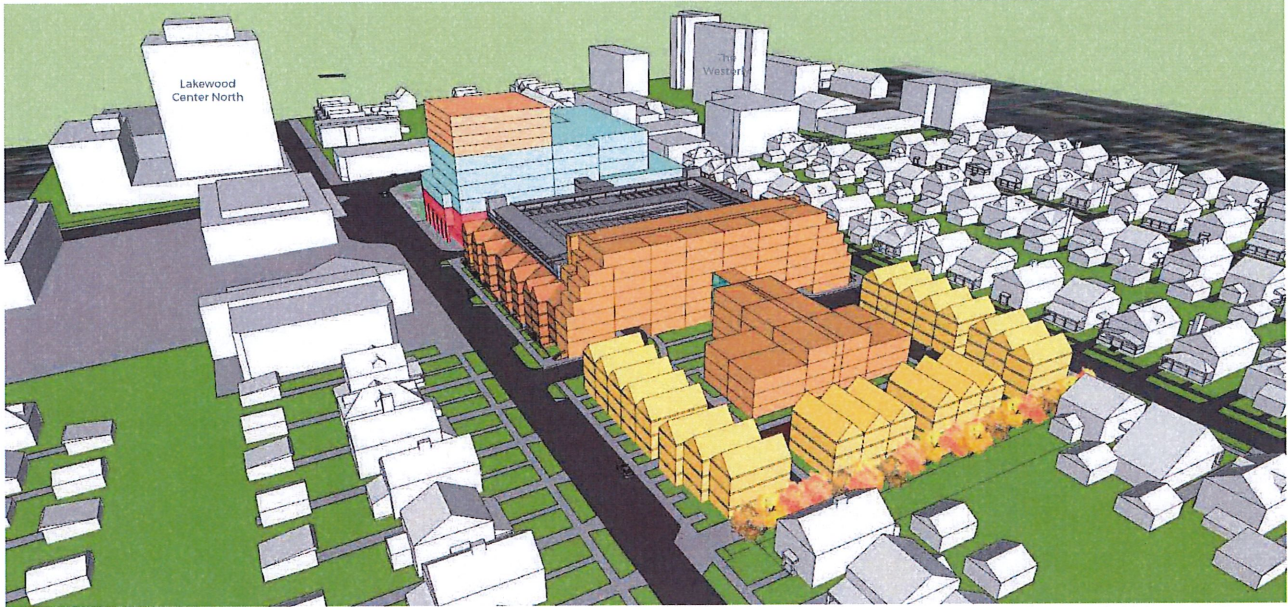


EXISTING CONDITIONS

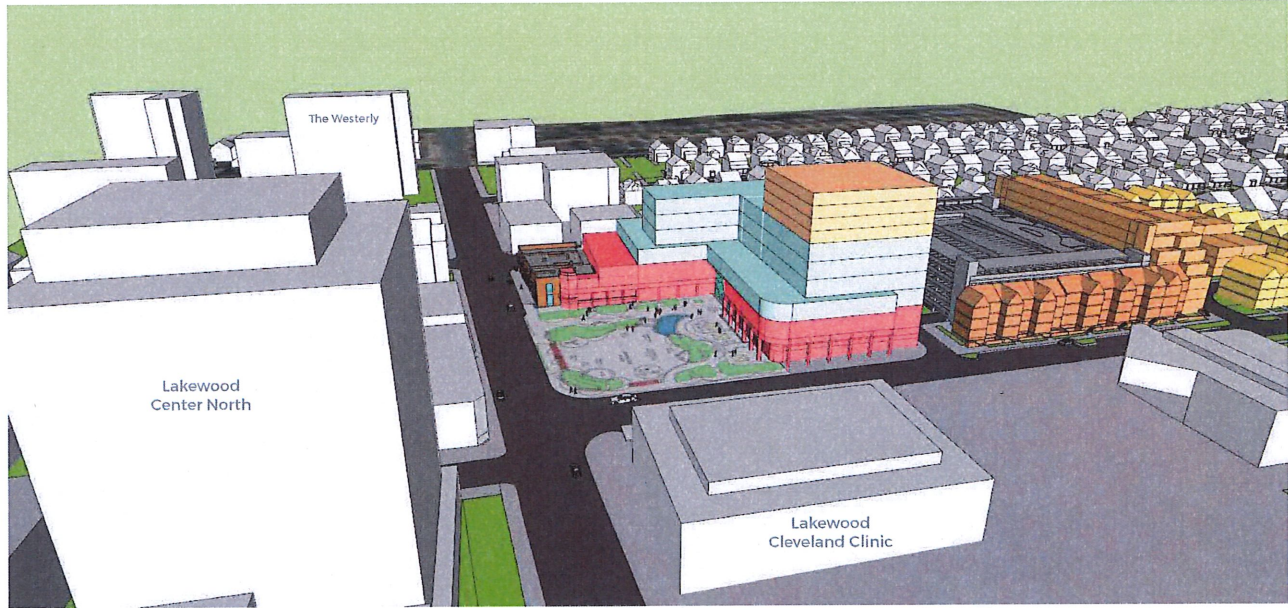


View Looking Northwest



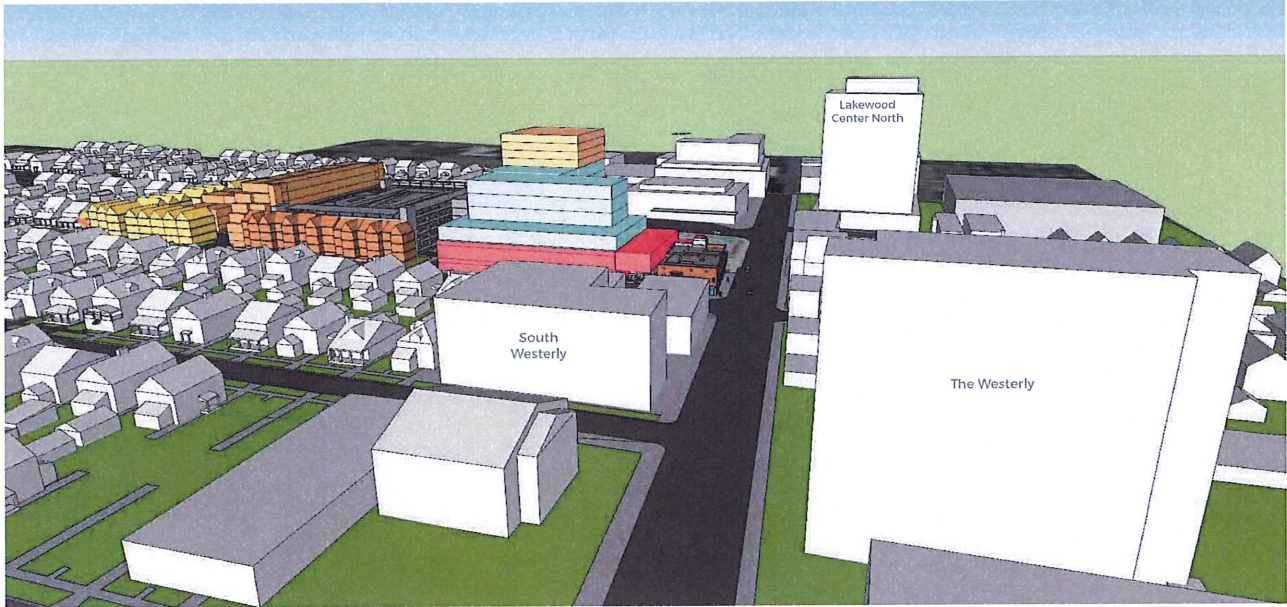


View Looking Northeast

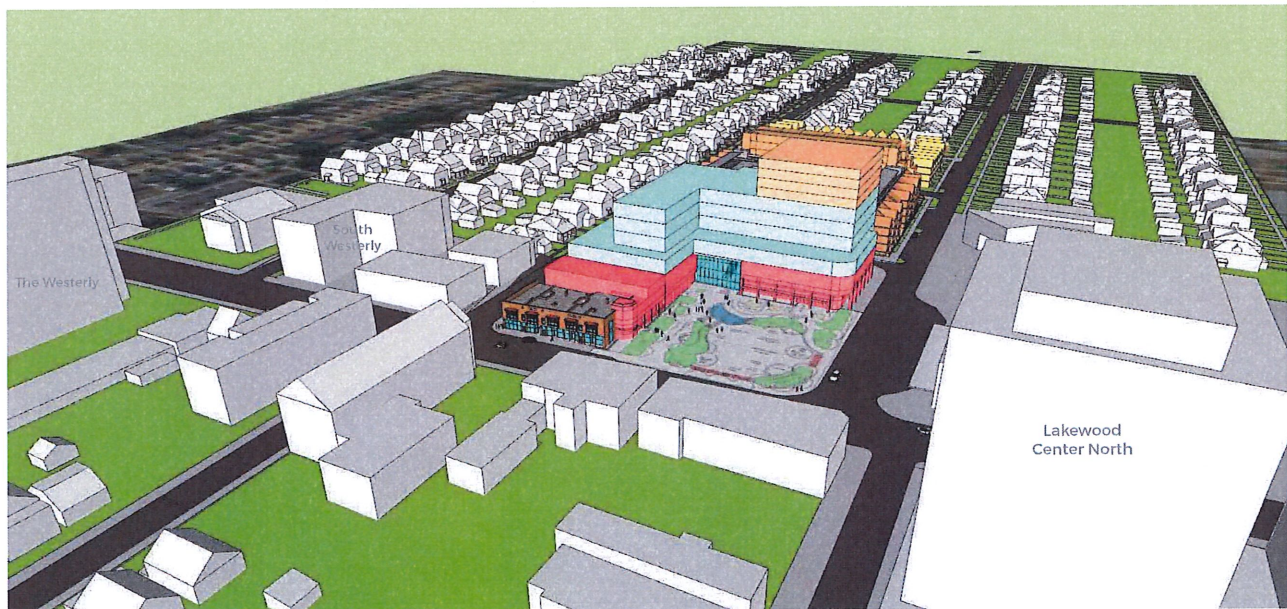


View Looking East

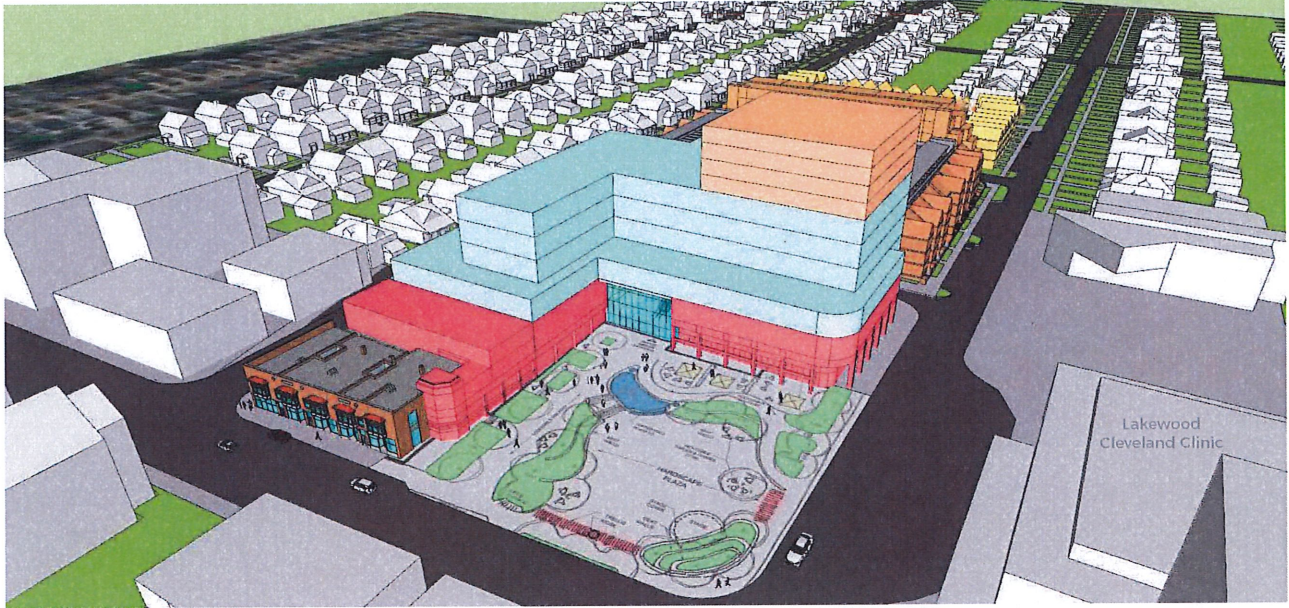




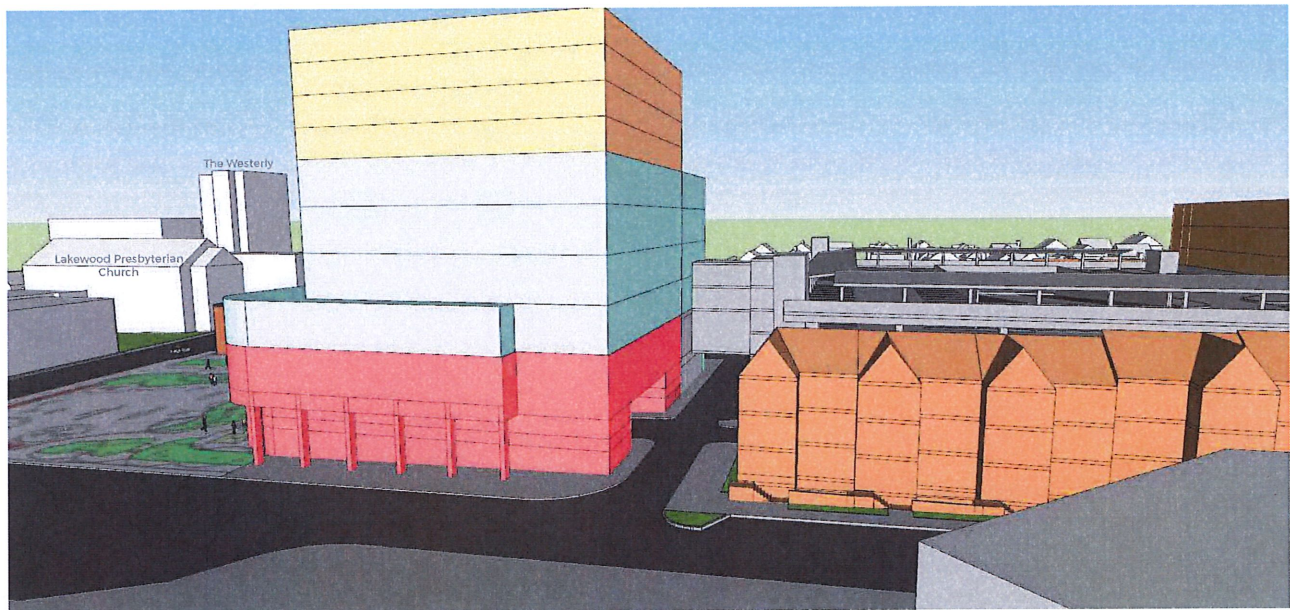
View Looking West



View Looking South

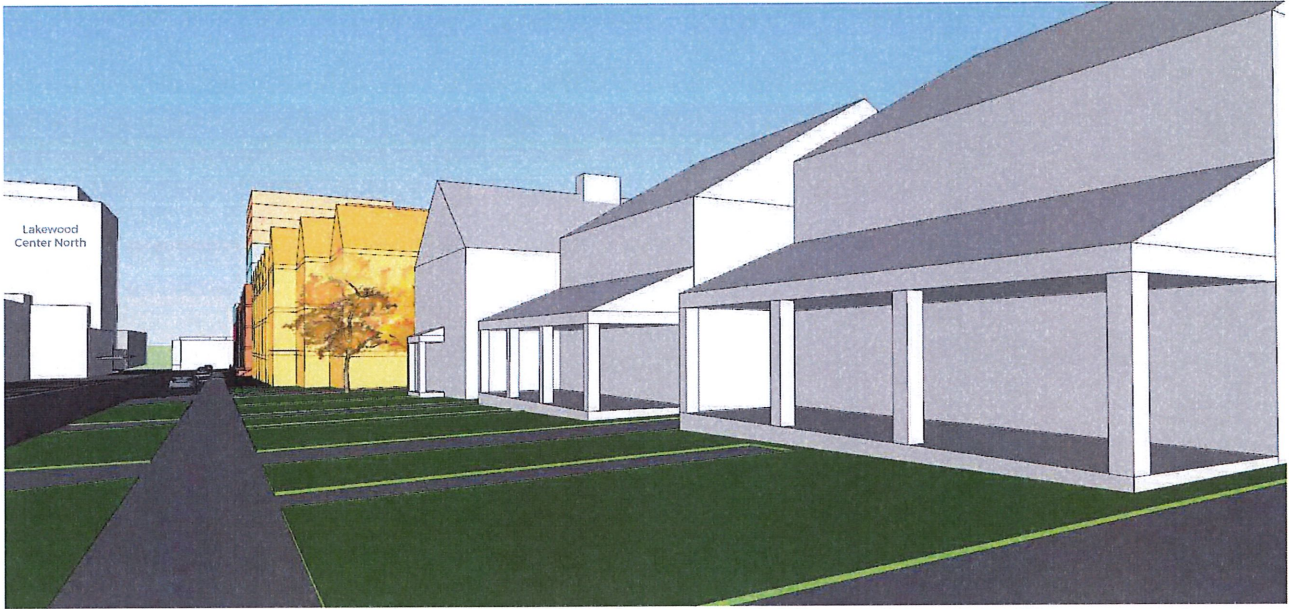


View Looking Southeast



View Looking East





Belle Ave. Looking North

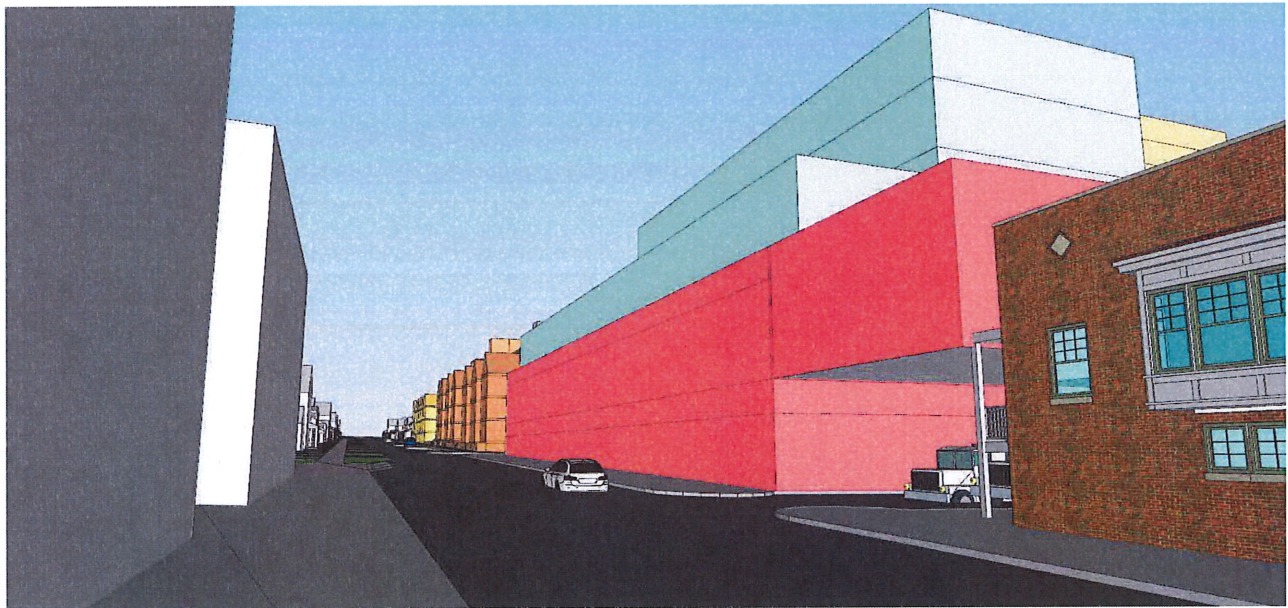


Marlowe Ave. Looking North



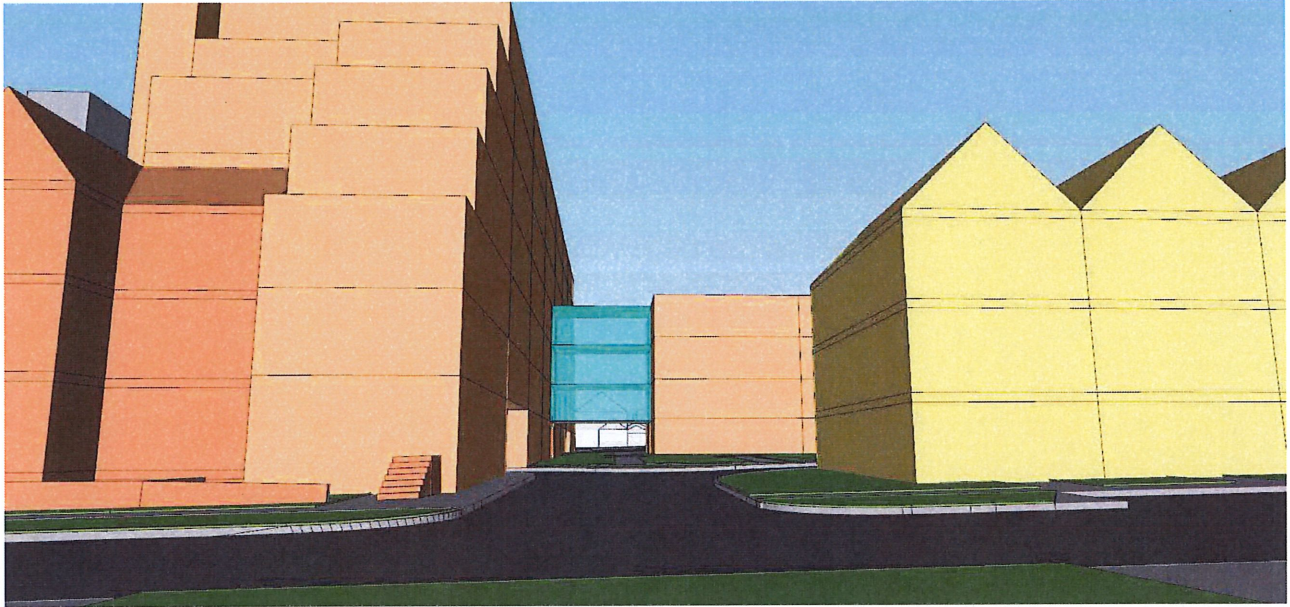


Southern Residential

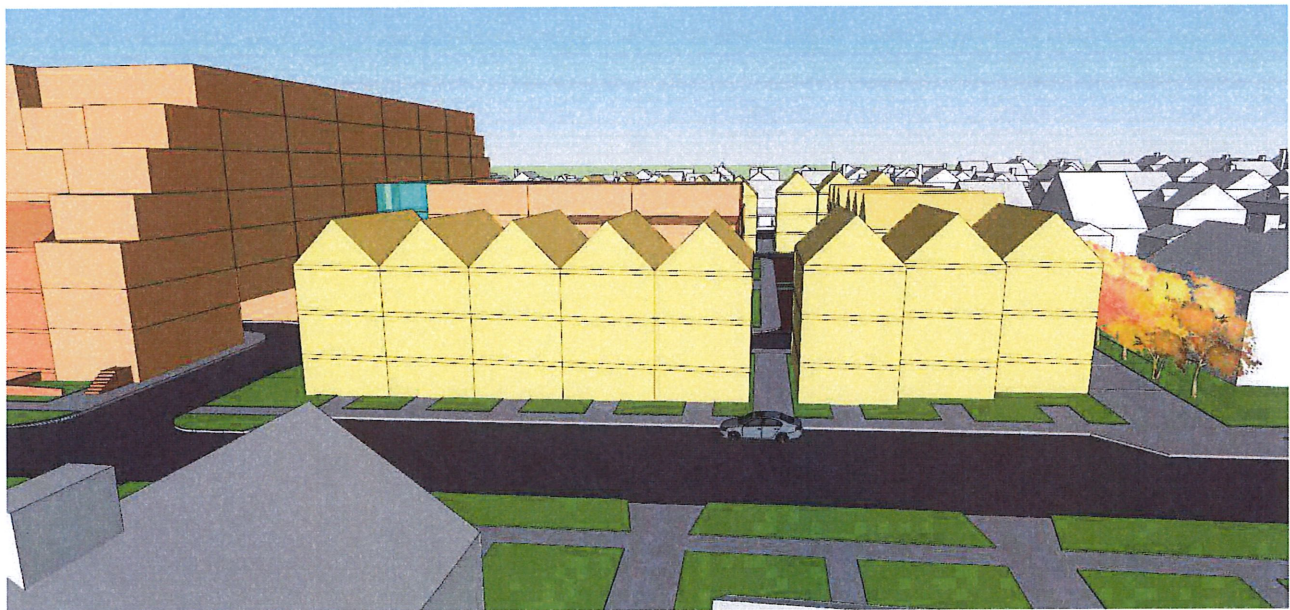


Marlowe Ave. Looking South



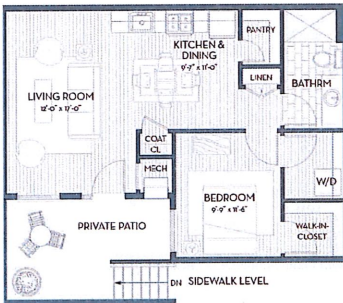


Looking East at Apartments

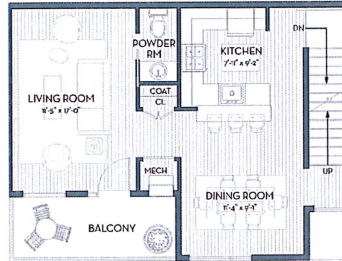


Belle Ave. Walk-ups

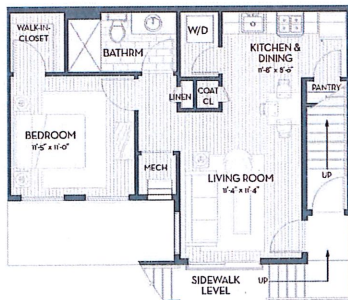
RESIDENTIAL LINER BUILDINGS



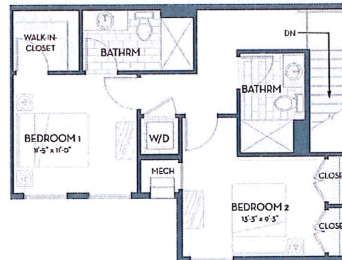
GARDEN UNIT
624 NET SF / 675 GROSS SF



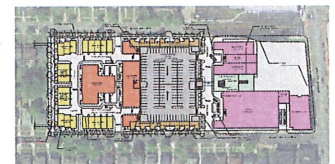
UPPER FLOOR UNIT MAIN LEVEL
605 NET SF / 675 GROSS SF
UNIT TOTAL:
1,229 NET SF / 1,352 GROSS SF

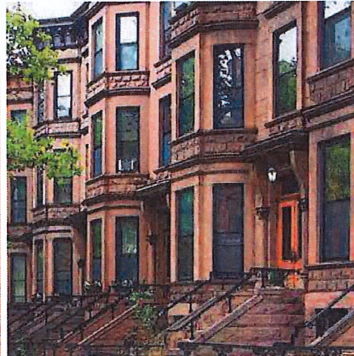
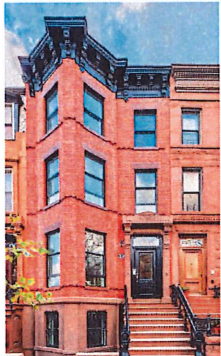
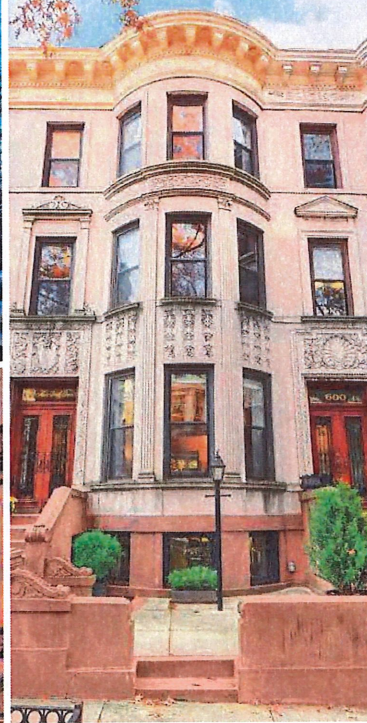
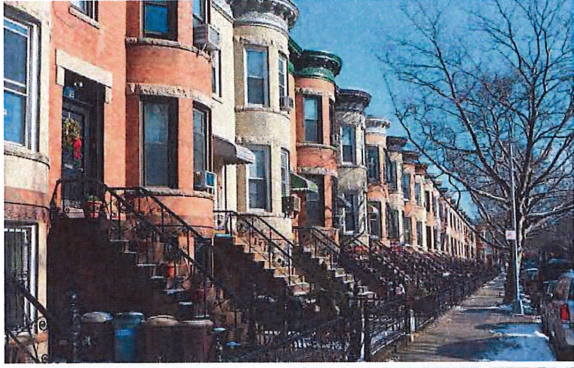


FIRST FLOOR UNIT
563 NET SF / 617 GROSS SF

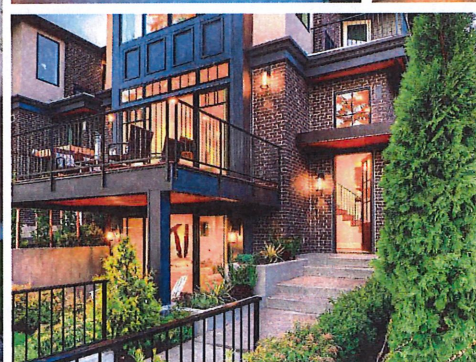


UPPER FLOOR UNIT BEDROOM LEVEL
624 NET SF / 675 GROSS SF
UNIT TOTAL:
1,229 NET SF / 1,352 GROSS SF

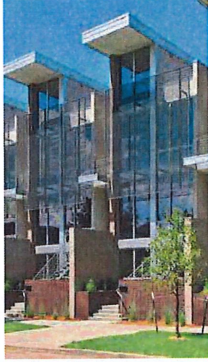




Brownstone Inspiration



Brownstone Inspiration



Brownstone Inspiration



Planning Commission
December 6, 2018

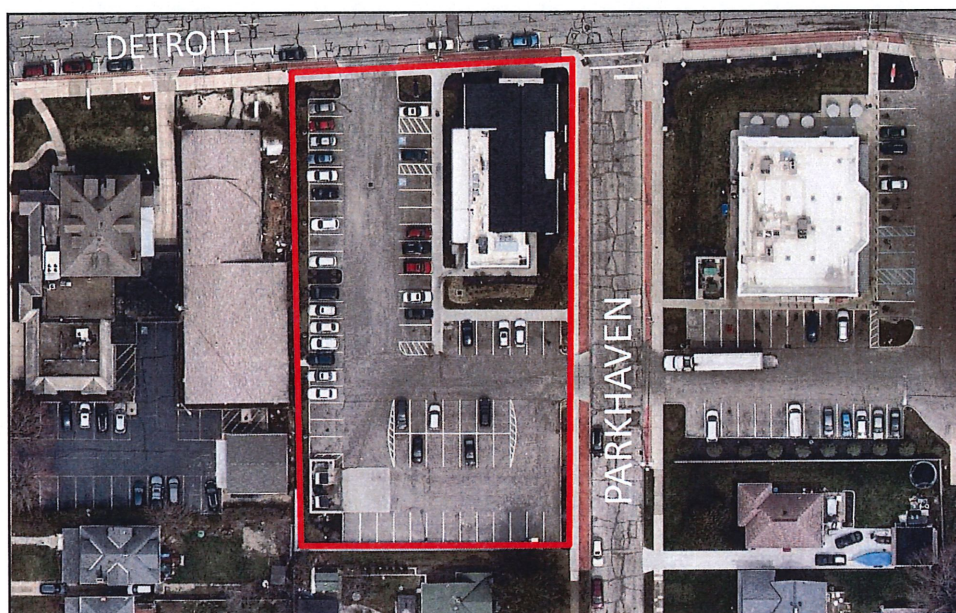
Requests

- 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)**

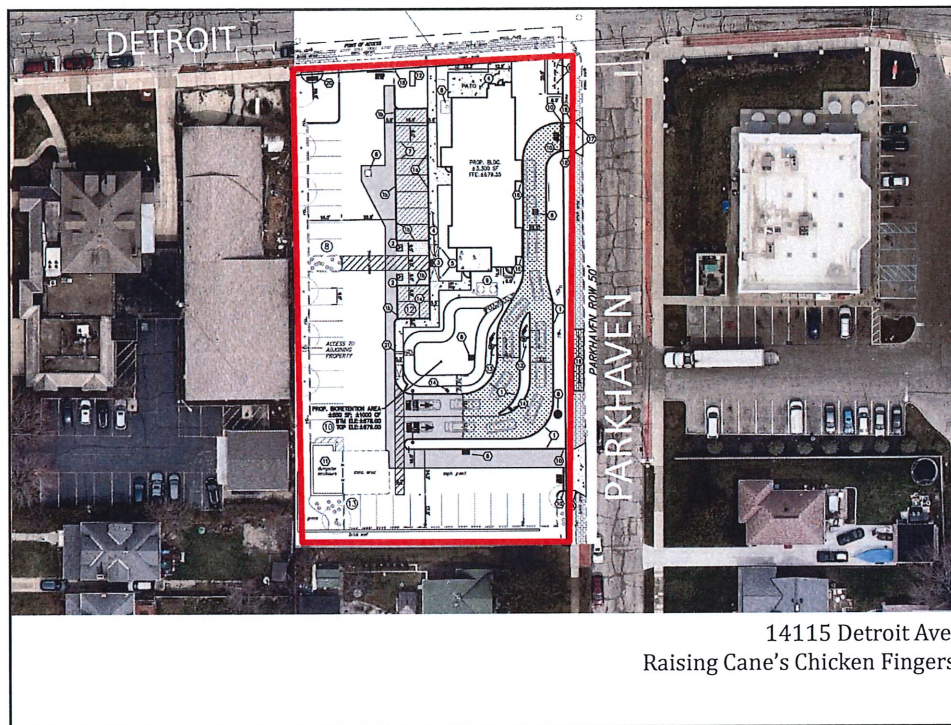
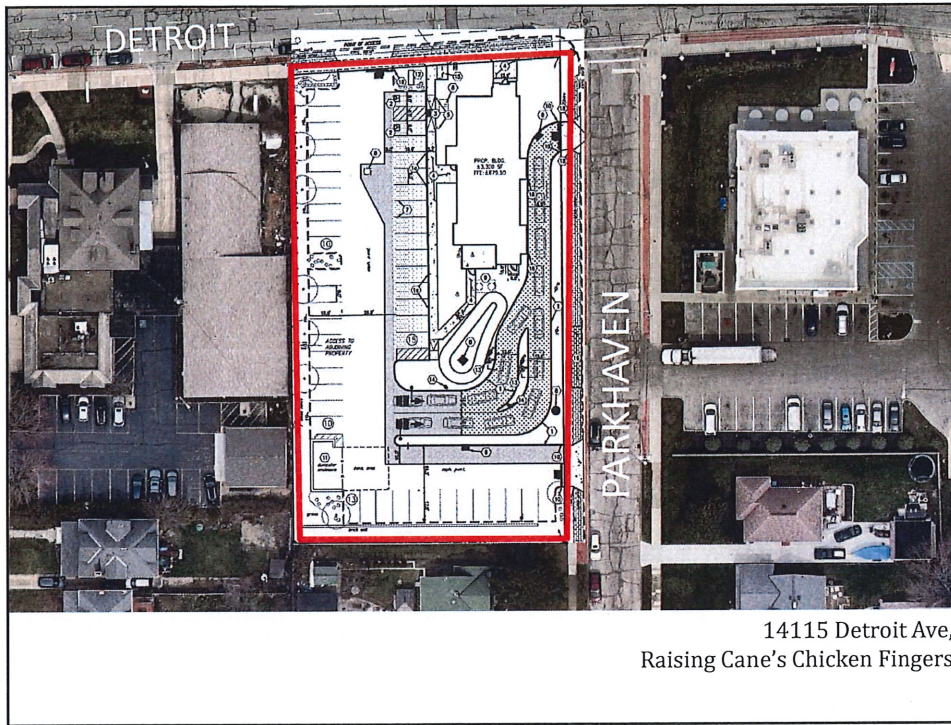
14115 Detroit Ave,
Raising Cane's Chicken Fingers



14115 Detroit Ave,
Raising Cane's Chicken Fingers



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 service 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 1143.05 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 of street intersections;
 - (12) Pedestrian crossing of the drive-through lane shall be clearly defined by crosswalks; and
 - (13) Drive-through banking facilities should also feature a walk-up window or self-service automatic teller.

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Raising Cane's Chicken Fingers
Conditional Use- Drive Through

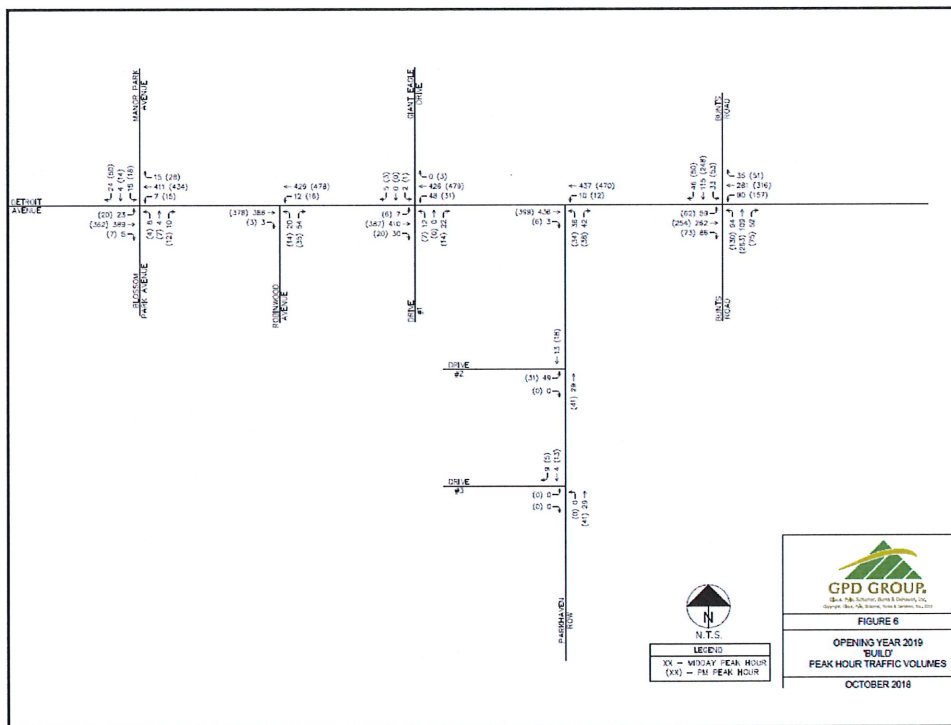
1161.03(y)- Summary

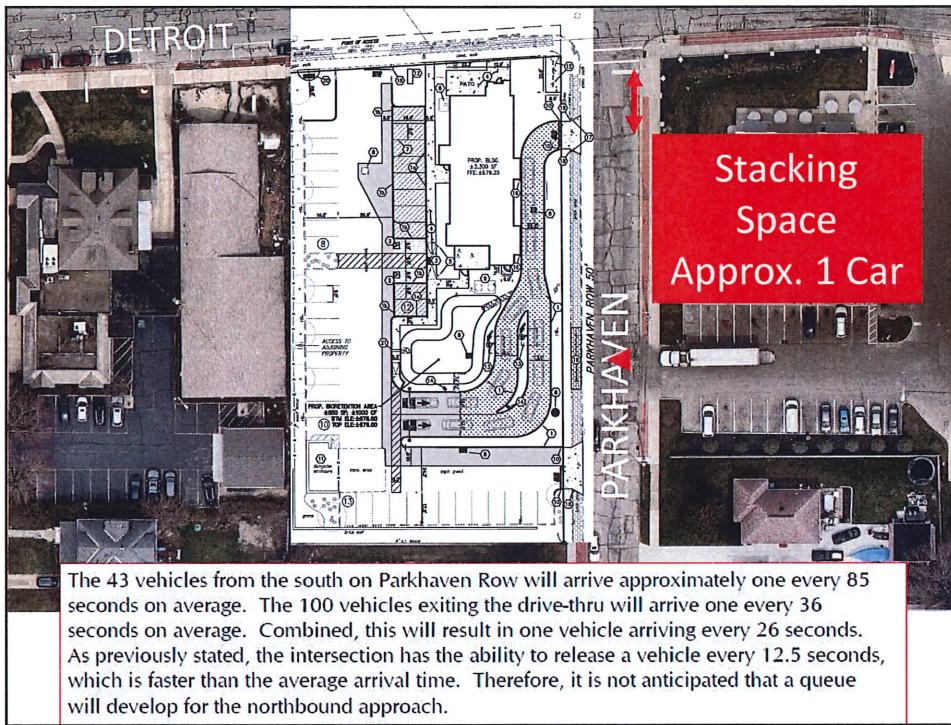
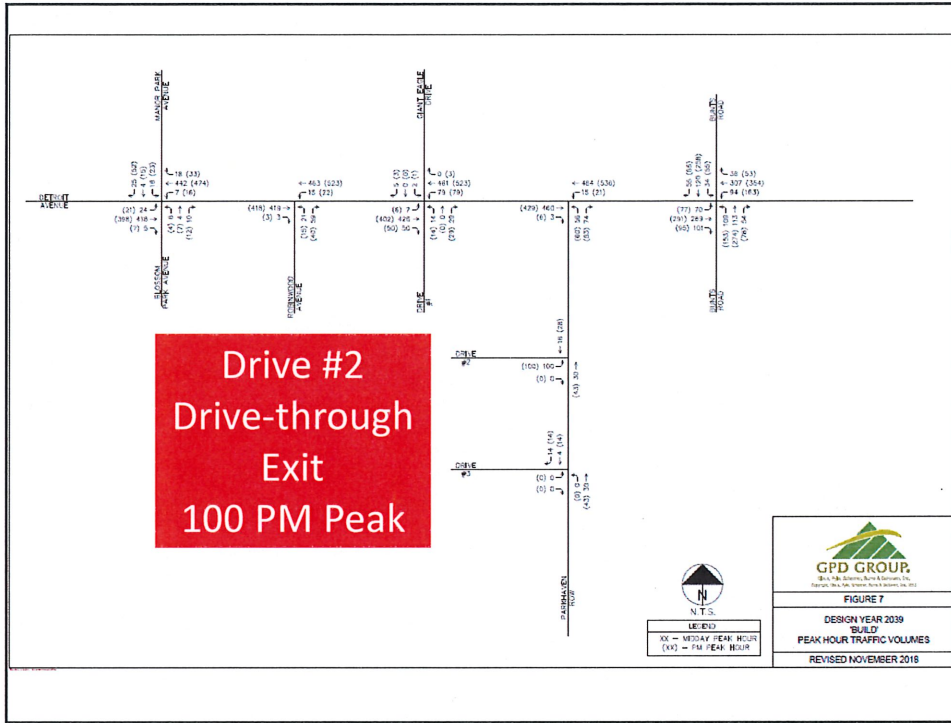
- Equipment shall not be located within 50 feet of a residence
- No drive-through facility abutting residential shall be operated between the hours of 10:00 p.m. and 6:00 a.m.
- Traffic Impact Analysis needed
- Insure acceptable flow of traffic
- Photometric Study needed
- 10' landscape buffer against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

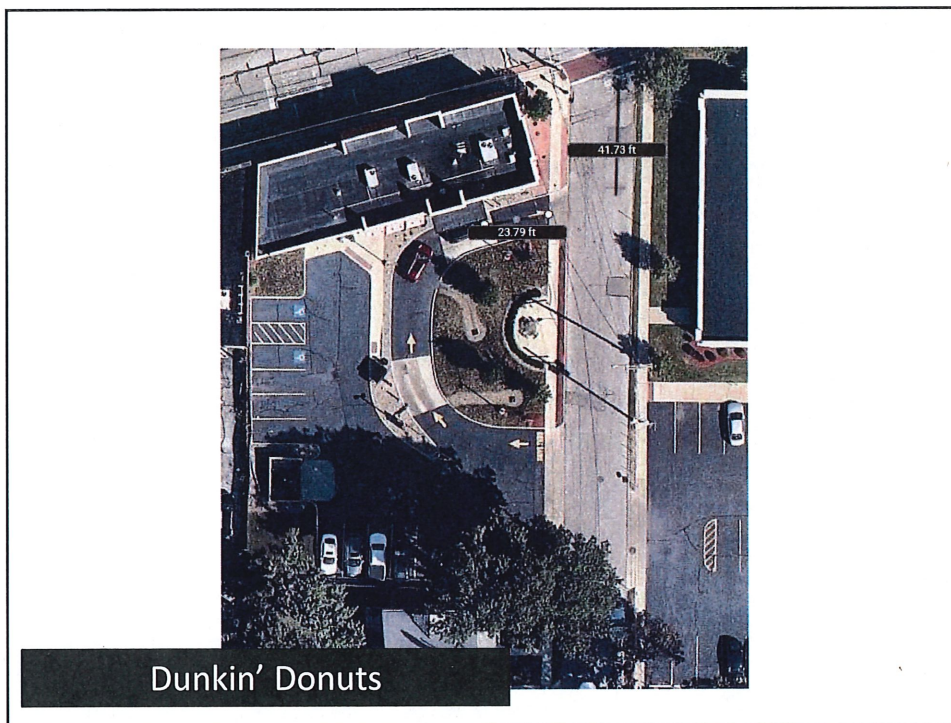
1143.13 Stacking Space Requirements

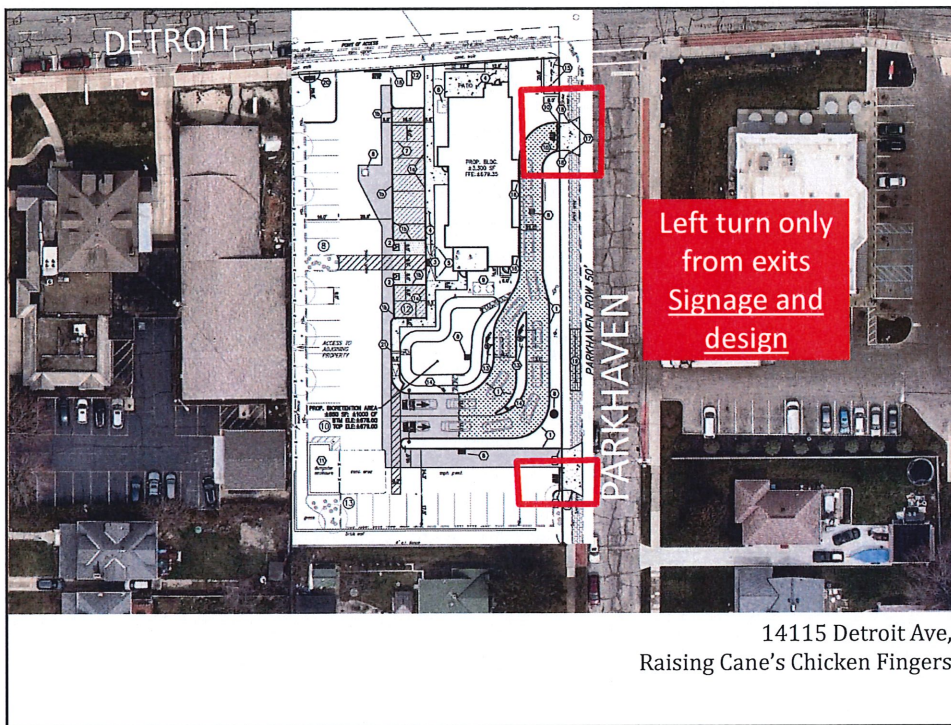
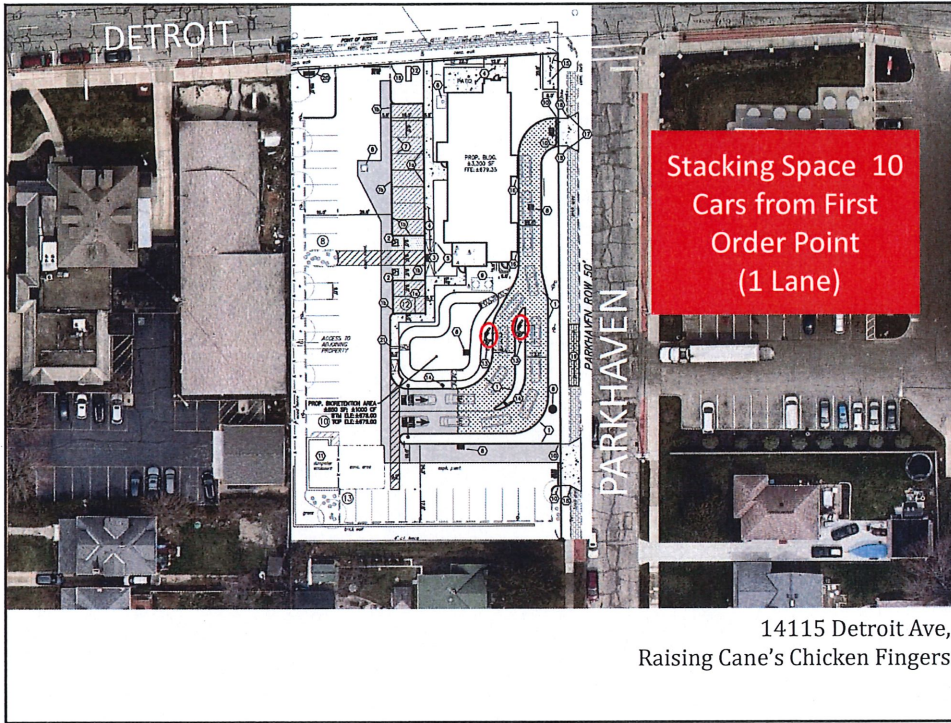
Uses defined as commercial with a drive-through lane: 10' stacking spaces per drive-through lane.

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.

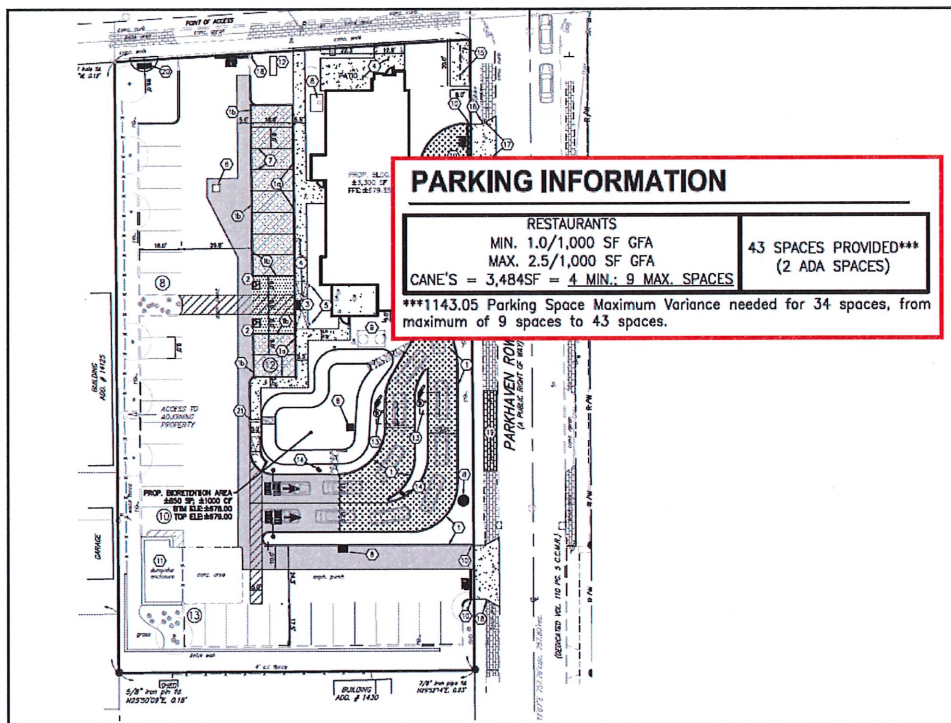
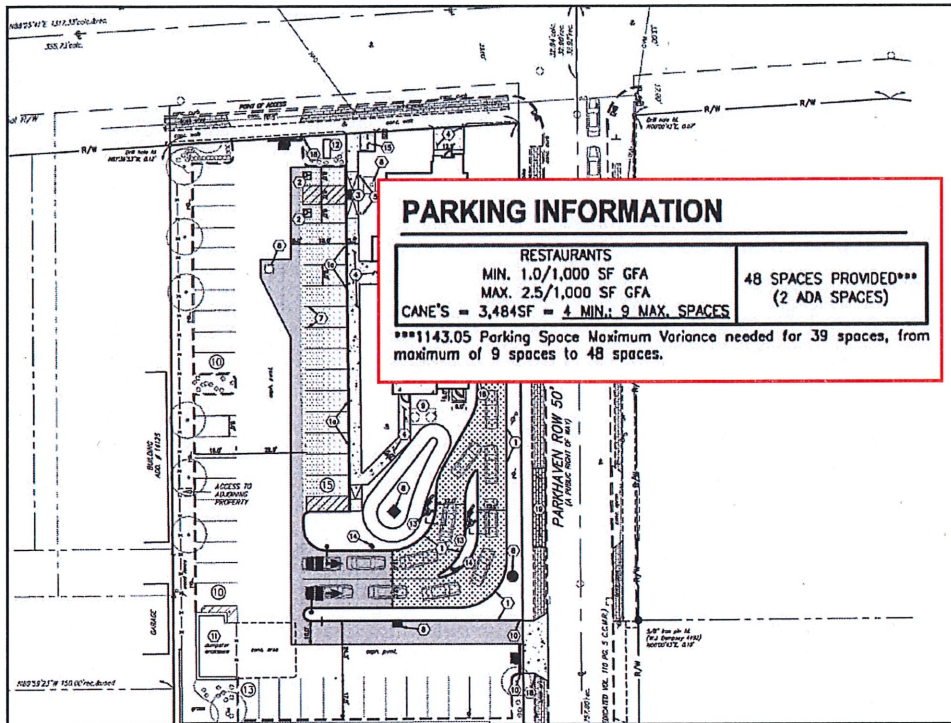
14115 Detroit Ave,
Raising Cane's Chicken Fingers
Conditional Use- Drive Through



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

Administration's Recommendation

Staff recommendations for improvements to address 1143.11:

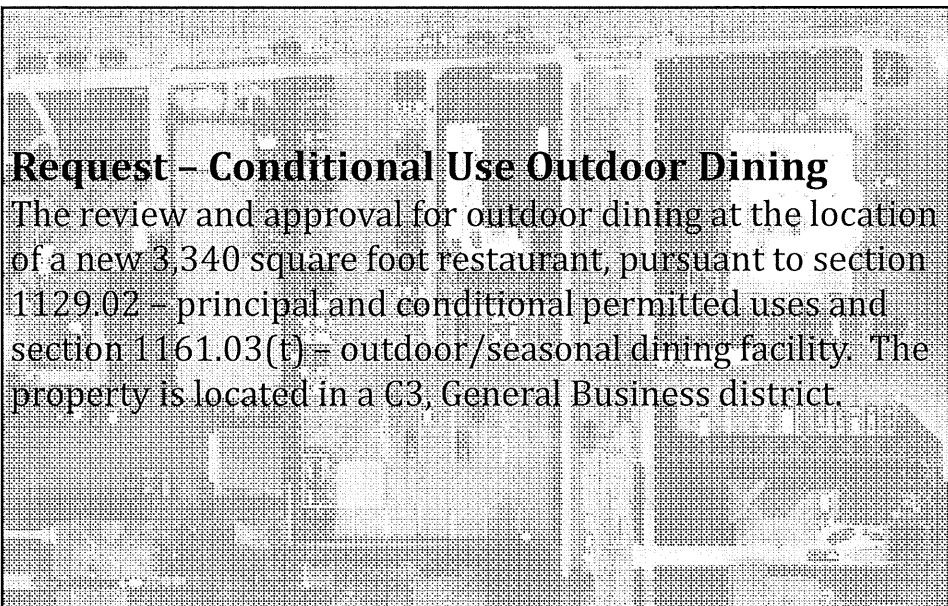
- Implement an innovative landscaping plan as determined by ABR (1143.11d)
- Install streetscape improvements (1143.11c) including:
 - Install electric vehicle charging stations as a streetscape improvement
 - Install outdoor public pedestrian seating (public benches) (1143.11c)
- Implement a shared parking agreement with neighboring property owners (1143.11e)
- Implement stormwater control that exceed local code and has a visible green infrastructure component (1143.11b)

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



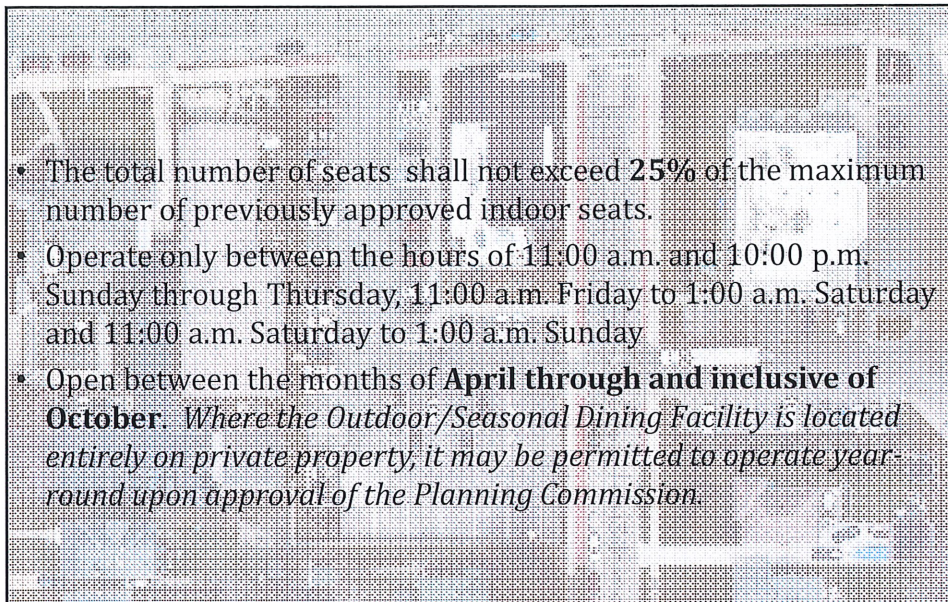
Request – Parking Plan Review
The review and approval of a parking plan at the location of a new 3,340 square foot restaurant, pursuant to section 1143.09 - parking plan review. The property is located in a C3, General Business district.

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



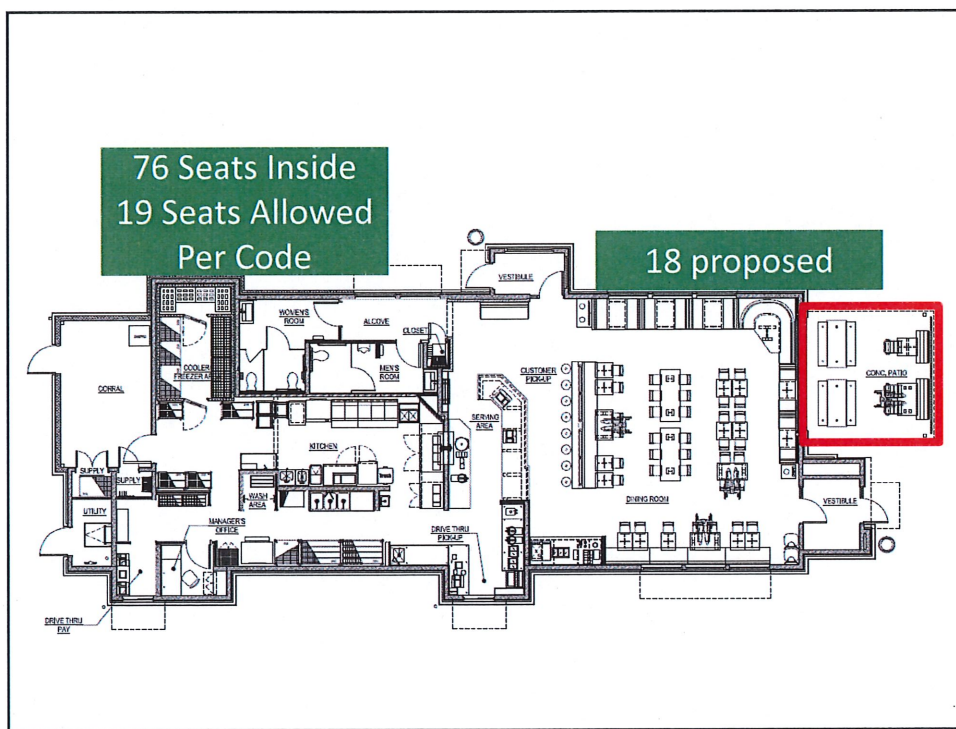
Request – Conditional Use Outdoor Dining
The review and approval for outdoor dining at the location of a new 3,340 square foot restaurant, pursuant to section 1129.02 – principal and conditional permitted uses and section 1161.03(t) – outdoor/seasonal dining facility. The property is located in a C3,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

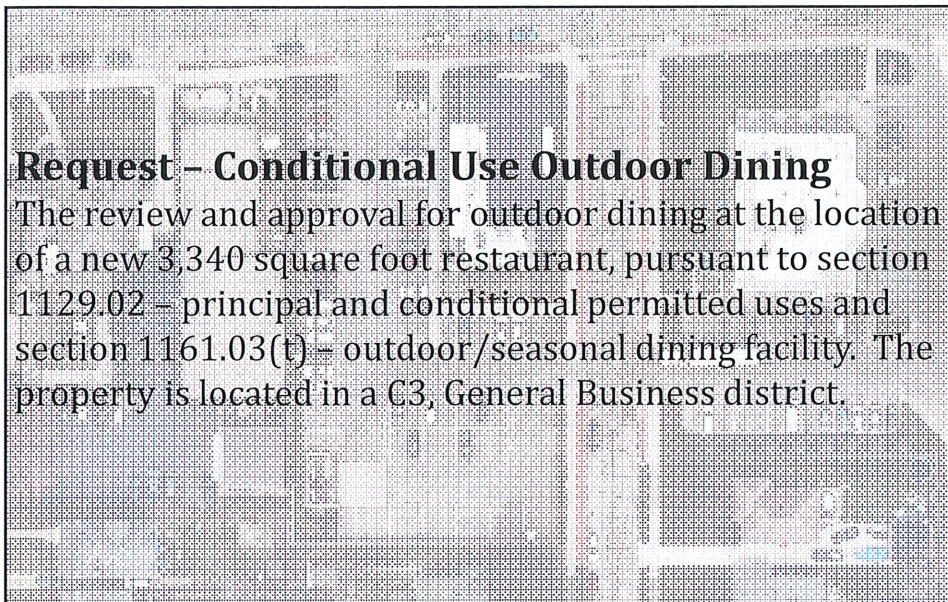
14115 Detroit Ave,
Raising Cane's Chicken Fingers
Conditional Use-Outdoor Dining



- 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.*

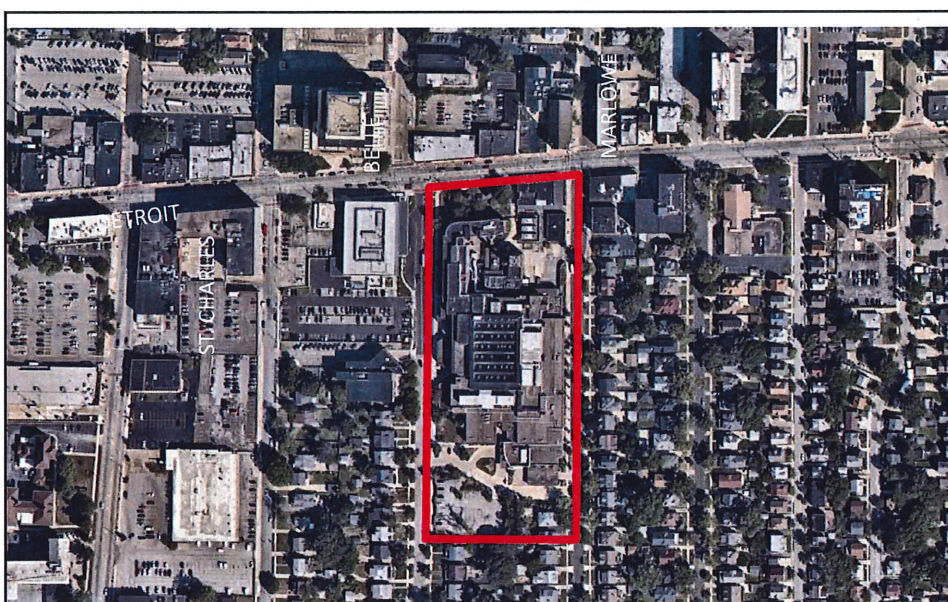
11801 Clifton Blvd
Diner on Clifton
Conditional Use Outdoor Dining





Request – 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



14519 Detroit Avenue
One Lakewood Place
Planned Development Rezoning

Planned Development Approval Process

- 1. Planning Commission reviews plan for preliminary approval**
2. Architectural Board of Review begins review of site plan and elevations
3. Planning Commission approves final development
4. Architectural Board of Review approves site plan, elevations and materials
5. City Council approves Planned Development zoning

14519 Detroit Avenue
One Lakewood Place
Planned Development Rezoning

Under Consideration Tonight

Preliminary Plan Approval

1156.04(c)

The Commission's role shall be to review all applications for Preliminary PD Plans and make a recommendation to the Director to approve, approve with conditions, or deny the application based on compliance with Section 1156.03

1156.03

Prescribes items for which the Planning Commission should review when considering a Preliminary Plan for approval. Items such as: *lot size, floor area ratio, structure height, residential setbacks, building line setbacks, circulation*

14519 Detroit Avenue
One Lakewood Place
Planned Development Rezoning

- **Preliminary Plan Approval (1156.03 and 1156.04)**

- Preliminary Approval is the first step to unlock the review of the full design and architectural plans (1156.05)

- Final Approval will come at a future meeting.

- All modifications to Final Plan must be approved by Planning Commission. (1156.04(m)(1)(A))

After a preliminary approval, Planning Commission and ABR will turn to 1156.05

- Building and Site Design
- Building Materials
- Pedestrian Access and Circulation
- Parking
- Landscaping and Screening
- Screening of roof-mounted equipment
- Streetscape Improvements
- Service Area and Mechanical Screening
- Signage
- Lighting
- Fences
- Urban Open Space
- Amenities



**Architectural Board of Review
Thursday, December 13, 5:30**

www.OneLakewood.com/downtowndevelopment

Under Consideration Tonight

Preliminary Plan Approval

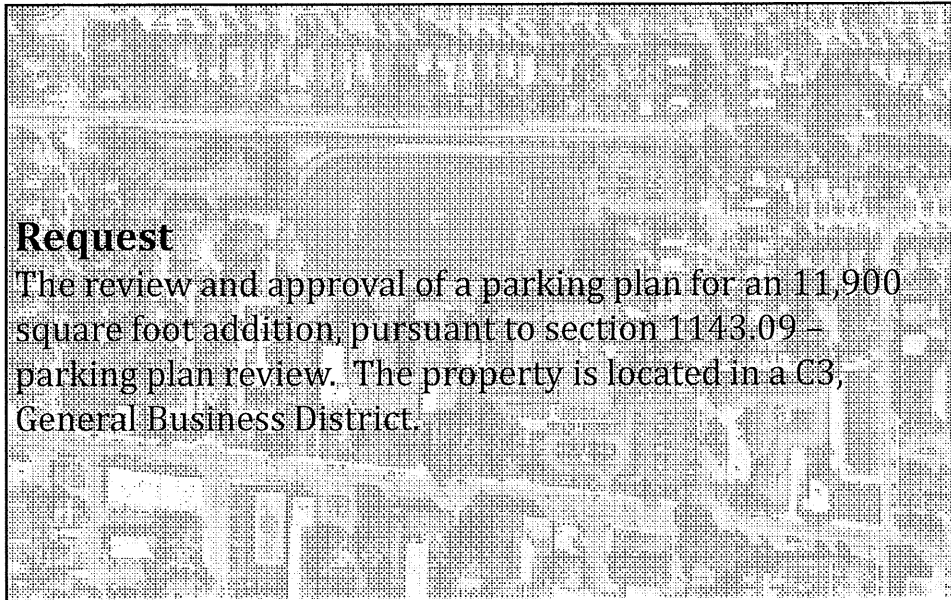
1156.04(c)

The Commission's role shall be to review all applications for Preliminary PD Plans and make a recommendation to the Director to approve, approve with conditions, or deny the application based on compliance with Section 1156.03

1156.03

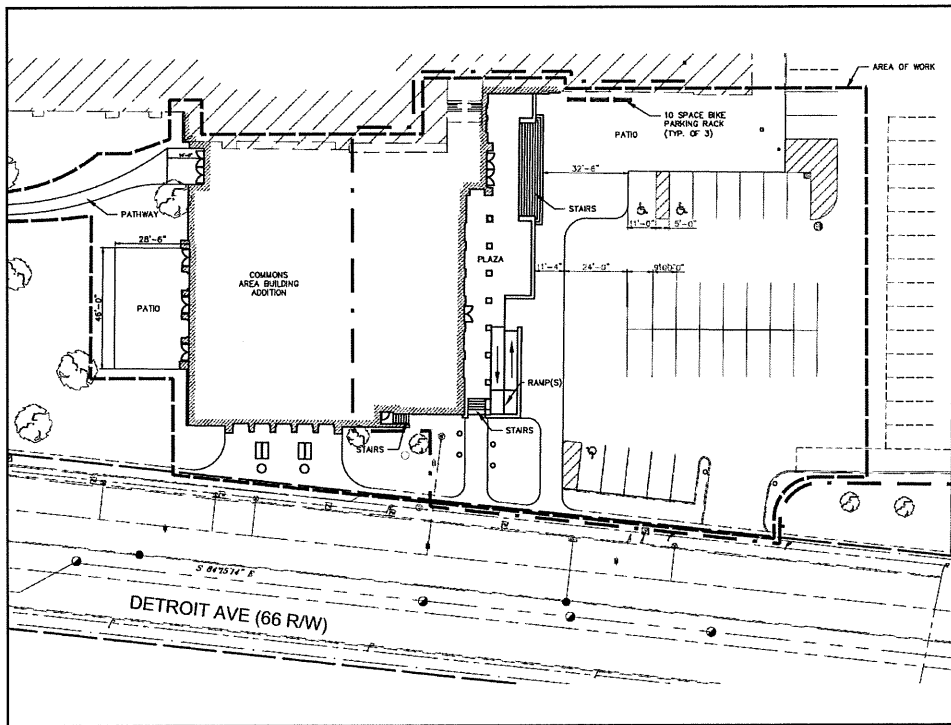
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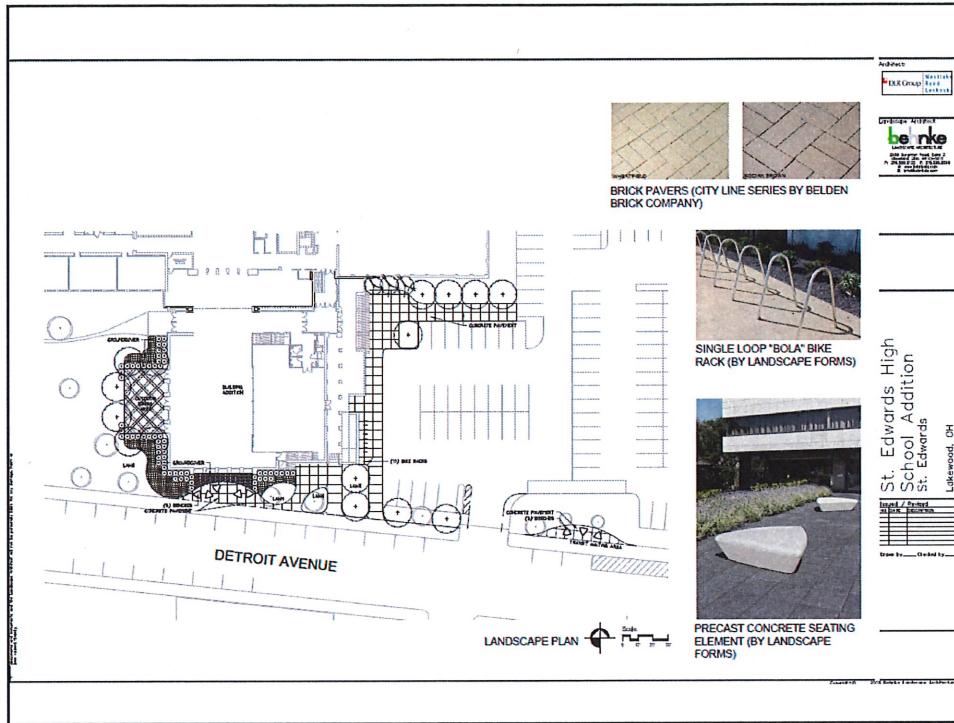
14519 Detroit Avenue
One Lakewood Place
Planned Development Rezoning

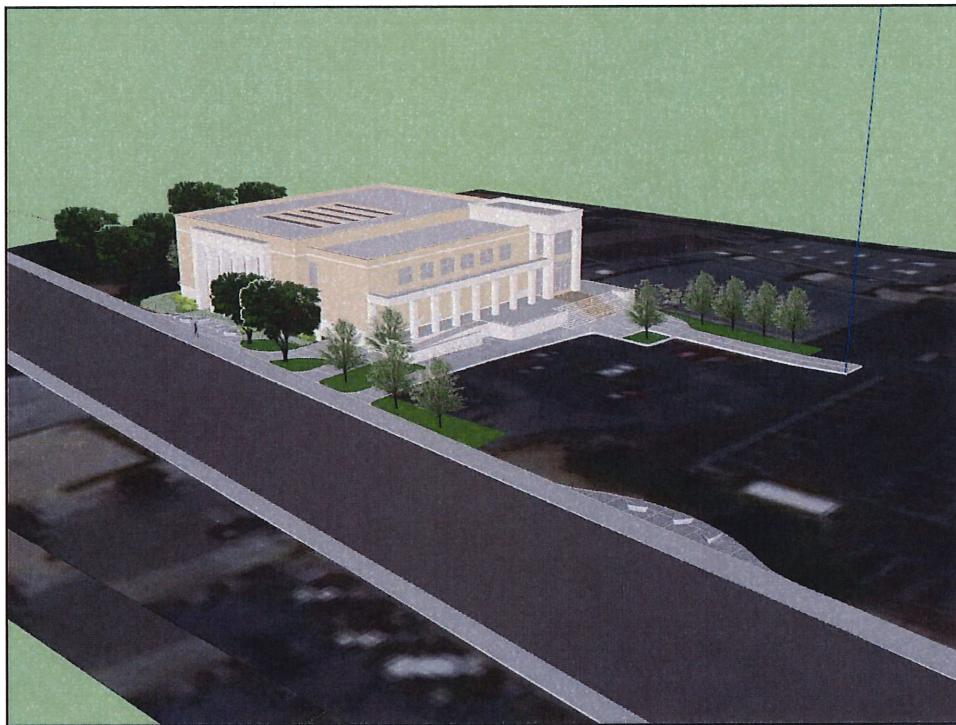


Request
The review and approval of a parking plan for an 11,900 square foot addition, pursuant to section 1143.09 – parking plan review. The property is located in a C3, General Business District.

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

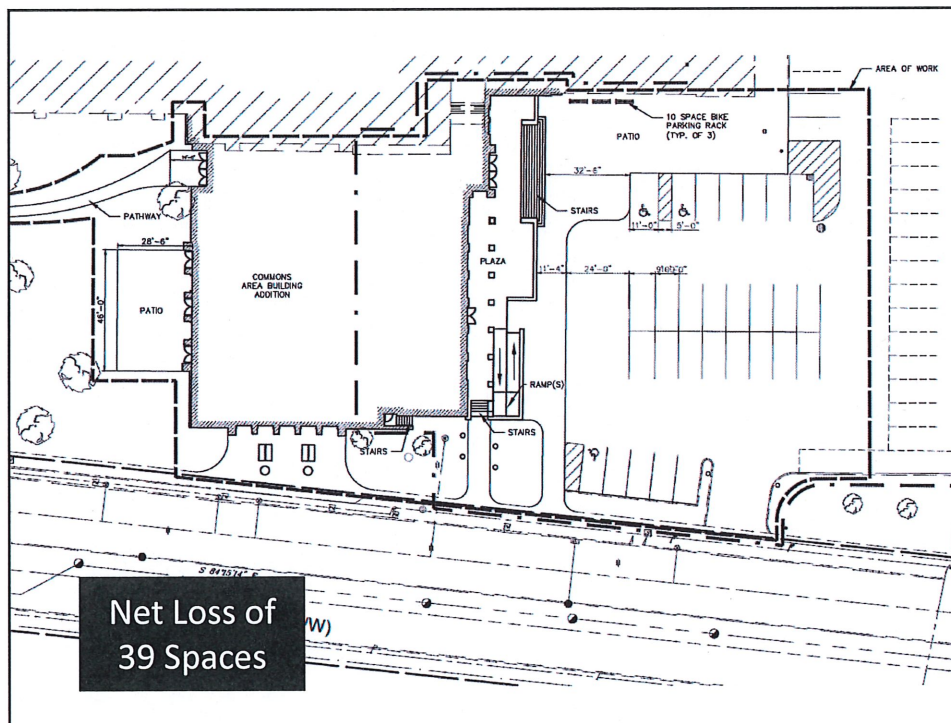
(a) The Commission shall review applications for parking plans that do not meet the set schedule in 1143.05. In addition to Section 1143.09 and Section 1143.10, the Commission may consider the following when reviewing an application:

- (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



13500 Detroit Avenue
St. Edward High School
Parking Plan Review



Comparison to Lakewood High School

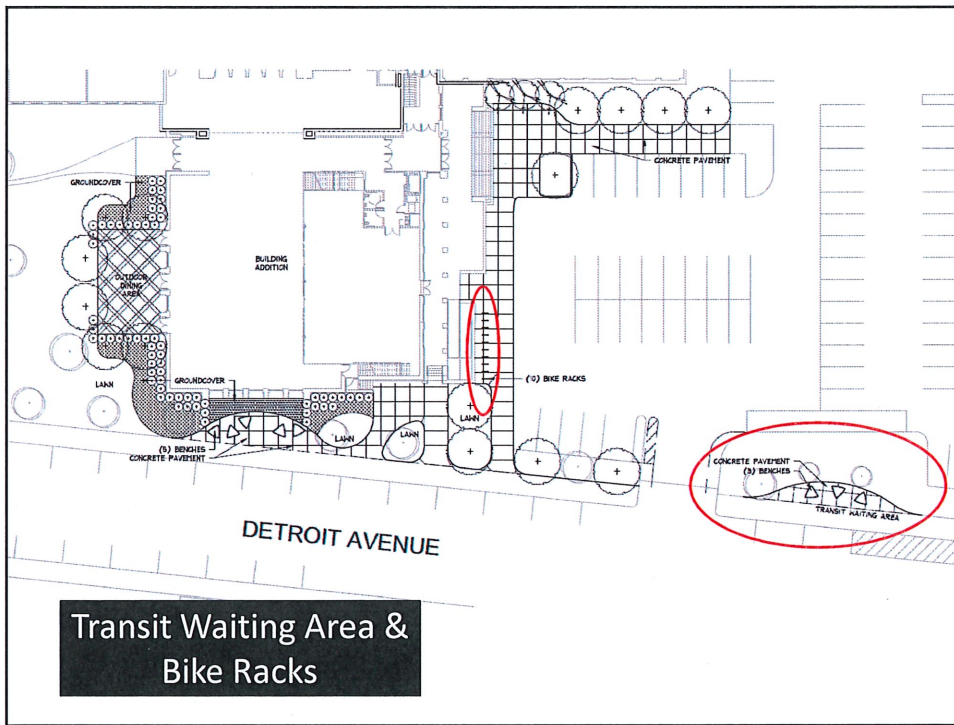
	Students	Staff	Parking Spaces (including handicap)	Ratio (Parking Space/Person)	Zip Codes Represented
St. Edward High School (Existing)	963	137	400	.363	71
Lakewood High School	1420	150	475	.302	1

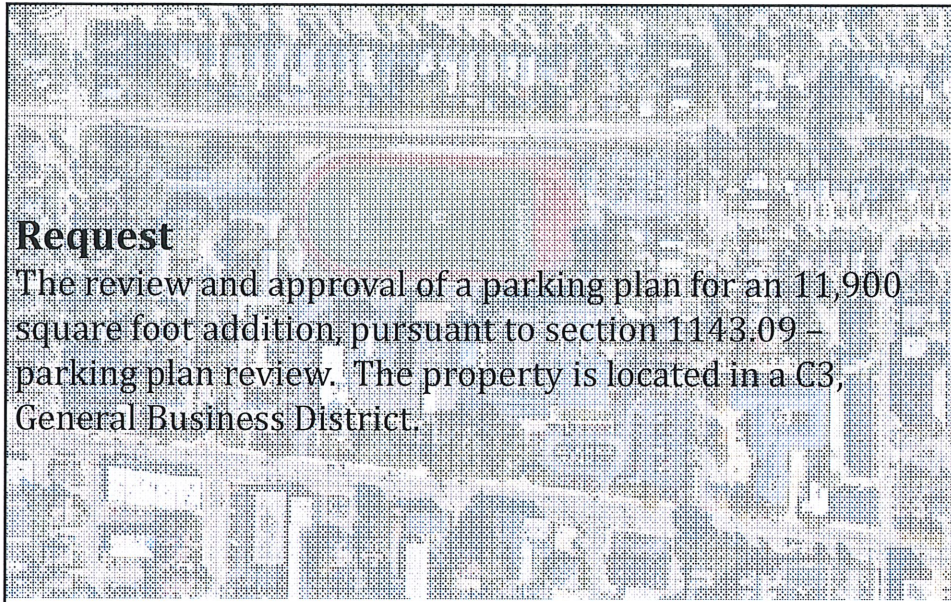
13500 Detroit Avenue
St. Edward High School
Parking Plan Review

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	361	0.33	71
Lakewood High School	1420	150	475	0.30	1

13500 Detroit Avenue
St. Edward High School
Parking Plan Review






Request
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13500 Detroit Avenue
St. Edward High School
Parking Plan Review



 **Planning Commission**
December 6, 2018