

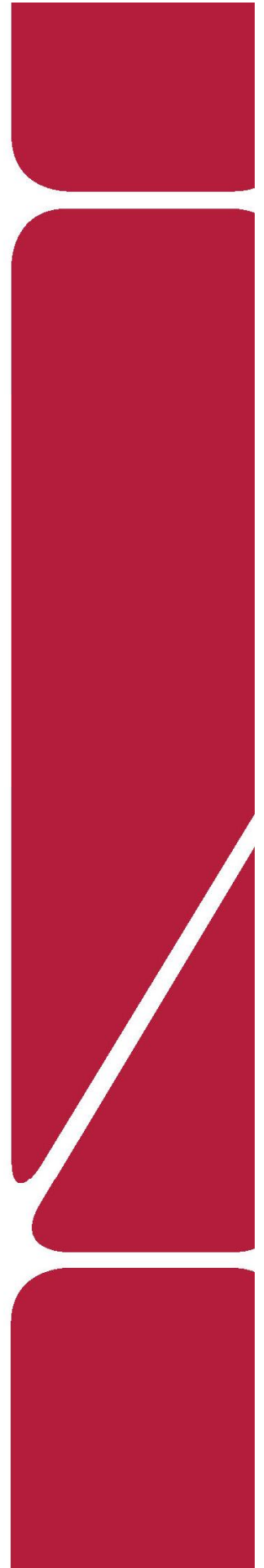


Traffic Impact Study

Parker and Pine Parker, Colorado

Prepared for:
Eisenberg Company

Kimley»»Horn



T R A F F I C I M P A C T S T U D Y

Parker and Pine

Parker, Colorado

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1.0 EXECUTIVE SUMMARY

A new mixed-use development, Parker and Pine, is proposed on the southwest corner of the Parker Road (SH-83) and Pine Lane intersection, in Parker, Colorado. For purposes of this traffic study, the project was assumed to include a total of six (6) different land uses, to include 35,000 square feet of medical office building space, a 124-room hotel, 6,000 square feet of fast-food restaurants with drive-through, 13,000 square feet of retail, a 6,400-square foot automated car wash, and a 16-pump gasoline station with convenience market. It is expected that the project will be completed within approximately five years. Analysis was therefore conducted for the 2022 short term horizon, as well as the 2040 long-term horizon per Town of Parker and State of Colorado Department of Transportation (CDOT) requirements.

The purpose of this study is to identify project traffic generation characteristics, to identify potential project traffic related impacts on the local street system, and to develop mitigation measures required for identified impacts. The following intersections were incorporated into this traffic study in accordance with Town of Parker and CDOT standards and requirements:

- Parker Road (SH-83) and Pine Lane
- Pine Lane and Twenty Mile Road

In addition, the proposed right-in/right-out access along Parker Road, the proposed full movement access along Pine Lane, and the proposed full movement access along Twenty Mile Road were evaluated.

Regional access to the site will be provided by Parker Road (SH-83) and E-470. Primary access to the site will be provided by Parker Road and Pine Lane. Direct access to the project is proposed from one access on Pine Lane, one access on Parker Road, and one access on Twenty Mile Road. The proposed driveway along Pine Lane is located approximately 550 feet west of Parker Road. The proposed access along Parker Road is located approximately 500 feet south of Pine Lane. The proposed driveway access along Twenty Mile Road is located approximately 500 feet south of Pine Lane. All access curb cuts have already been constructed in these locations.

The Parker and Pine Development is expected to generate approximately 7,456 daily weekday trips. Of these, 482 trips are expected to occur during the weekday morning peak hour, while 604 trips are expected during the weekday afternoon peak hour. Since the project is a commercial development, pass-by trips are expected. These pass-by trips are vehicles already on the street network that will be attracted to the retail and fast-food restaurants land uses. With pass-by, expected net new trips (non pass-by) to the surrounding street network results in 4,880 weekday daily trips with 292 and 405 trips anticipated during the weekday morning and afternoon peak hours, respectively.

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, anticipated surrounding development areas, and the proposed access system for the project. Assignment of project traffic was based upon the trip generation described previously and the distributions developed.

Based on the analysis presented in this report, Kimley-Horn believes the proposed Parker and Pine project will be successfully incorporated into the existing roadway network. The proposed project development and expected traffic volumes resulted in the following recommendations:

- It is recommended that the project access along Pine Lane allow full turning movements and that the project access approach be stop controlled. It is recommended that a R1-1 "STOP" sign be installed for this northbound approach to Pine Lane. It is recommended that the project access approach to Pine Lane provide a throat depth to accommodate three vehicles of storage (75 feet) to accommodate the long term 2040 horizon traffic volumes.
- It is recommended that the project access along Parker Road (SH-83) be restricted to right-in/right-out movements and that the project access be stop controlled. It is recommended that a R1-1 "STOP" sign be installed for this eastbound access approach to Parker Road. To identify the proposed access to right turn movements only, it is recommended that a R3-2 No Left Turn sign be placed underneath the "STOP" sign and a R6-1 (R) "ONE WAY" sign be located within the existing raised median directly in front of the driver's view from the access to further identify the exiting movement at the driveway for right turns only.

- It is recommended that the project access along Twenty Mile Road allow full turning movements and that the project access approach be stop controlled. It is recommended that a R1-1 “STOP” sign be installed for this westbound approach to Twenty Mile Road. The project access approach is recommended to provide a throat depth to accommodate one vehicle of storage (25 feet).
- With development of the project, it is recommended the westbound left turn lane at the Pine Lane and Twenty Mile Road intersection be restriped to include 200-foot dual left turn lanes.
- With development of the project, it is recommended the eastbound left turn lane length at the Parker Road (SH-83) and Pine Lane intersection be extended to its maximum possible length from the existing 175 feet to 250 feet. This will require restriping of Pine Lane by modifying the turn bay taper.
- By 2035, the Parker Road (SH-83) and Pine Lane intersection was found to have operational issues if the background traffic volumes are realized. Therefore, to provide the most optimal traffic lanes available, the northbound left turn at the Parker Road (SH-83) and Pine Lane intersection may need to be expanded to include dual left turn lanes. An area is striped out for these dual left turn lanes already (to shadow the southbound dual lefts) so implementation of northbound dual lefts is feasible.
- All off-site and on-site improvements should be incorporated into the Civil Drawings, and conform to standards of the Town of Parker, CDOT, American Association of State Highway and Transportation Officials (AASHTO) Geometric Design of Highways and Streets, Institute of Transportation Engineers (ITE), and the Manual on Traffic Control Devices (MUTCD) – 2009 Edition.

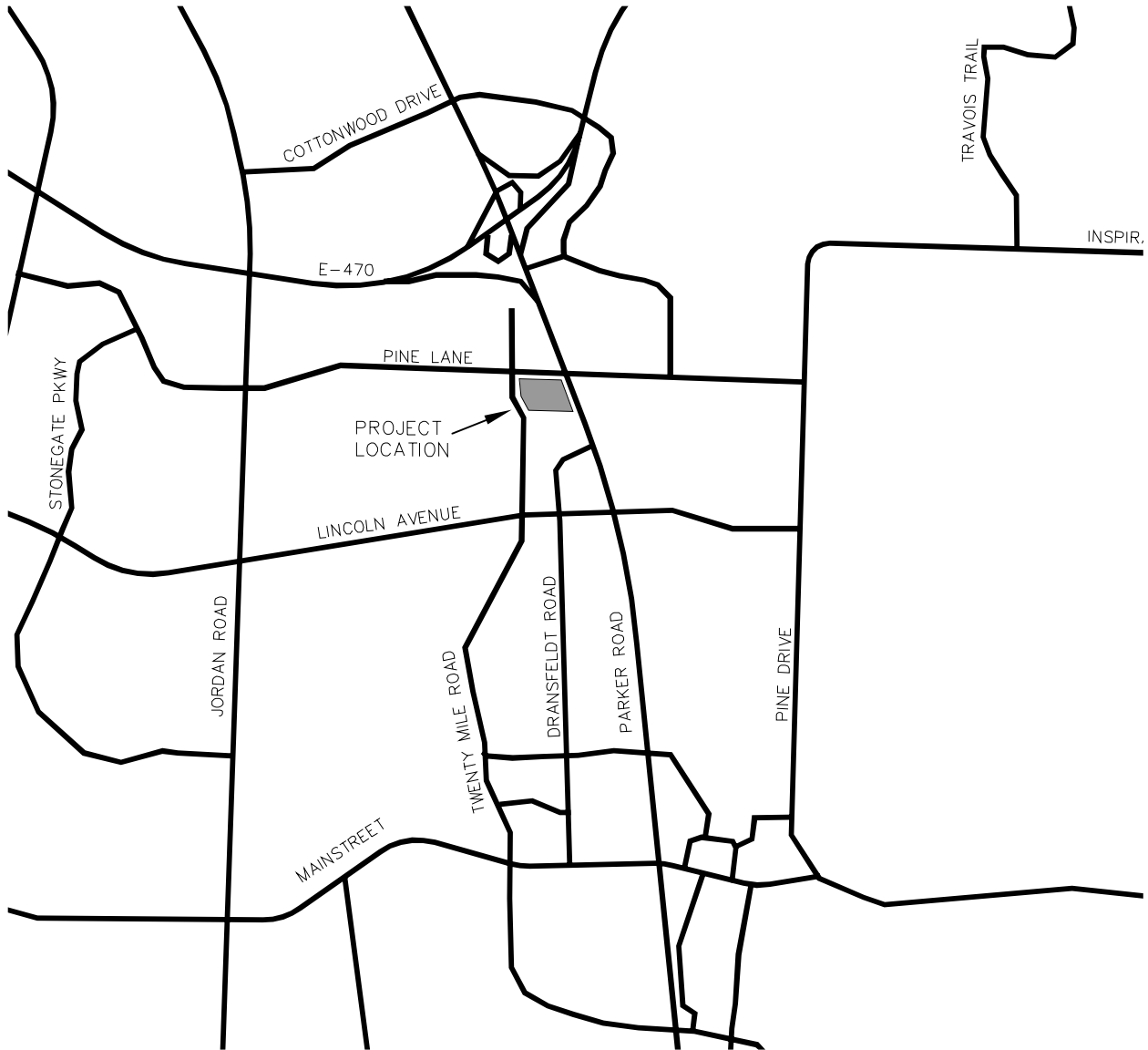
2.0 INTRODUCTION

Kimley-Horn and Associates, Inc. (Kimley-Horn) has prepared this report to document the results of a Traffic Impact Study of future traffic conditions associated with the proposed Parker and Pine mixed-use development to be located on the southwest corner of the Parker Road (SH-83) and Pine Lane intersection in Parker, Colorado. A vicinity map illustrating the project site location is shown in **Figure 1**. The project is anticipated to develop with 35,000 square feet of medical office building space, a 124-room hotel, 6,000 square feet of fast-food restaurants with drive-through, 13,000 square feet of retail, a 6,400-square foot automated car wash, and a 16-pump gasoline station with convenience market. It is expected that the project will be completed within five years. Analysis was therefore conducted for the 2022 short term horizon, as well as the 2040 long-term horizon per Town of Parker and State of Colorado Department of Transportation (CDOT) requirements. The conceptual site plan illustrating the development and access locations is shown in **Appendix G**.

The purpose of this study is to identify project traffic generation characteristics, to identify potential project traffic related impacts on the local street system, and to develop mitigation measures required for identified impacts. The following intersections were incorporated into this traffic study in accordance with Town of Parker and CDOT standards and requirements:

- Parker Road (SH-83) and Pine Lane
- Pine Lane and Twenty Mile Road

In addition, the proposed right-in/right-out access along Parker Road, the proposed full movement access along Pine Lane, and the proposed full movement access along Twenty Mile Road were evaluated. The Town of Parker Traffic Impact Study Checklist is provided in **Appendix A**.



PARKER AND PINE
PARKER ROAD & PINE LANE
VICINITY MAP

FIGURE 1

3.0 EXISTING AND FUTURE CONDITIONS

3.1 Existing Roadway Network

Regional access to the site will be provided by Parker Road (SH-83) and E-470. Primary access to the site will be provided by Parker Road and Pine Lane. Direct access to the project is proposed from one access on Pine Lane, one access on Parker Road, and one access on Twenty Mile Road. The proposed driveway along Pine Lane is located approximately 550 feet west of Parker Road. The proposed access along Parker Road is located approximately 500 feet south of Pine Lane. The proposed driveway access along Twenty Mile Road is located approximately 500 feet south of Pine Lane. All access curb cuts have already been constructed in these locations.

Parker Road provides three through lanes of travel each direction, northbound and southbound, and has a posted speed limit of 45 miles per hour. Parker Road has a fourth auxiliary lane northbound and southbound and is separated by a raised median through the project study area. Pine Lane provides two lanes of travel each direction, eastbound and westbound, and has a posted speed limit of 40 miles per hour. Twenty Mile Road provides two lanes of travel each direction, northbound and southbound, and has a posted speed limit of 40 miles per hour. Twenty Mile Road is separated by a raised median through the project study area.

The intersection of Parker Road and Pine Lane is signalized with protected only left turn phasing on all approaches. The eastbound and westbound approaches each consist of dual left turn lanes, two through lanes, and channelized right turn lanes operating with free turning movements. The northbound and southbound approaches each consist of dual left turn lanes, three through lanes, and channelized right turn lanes operating with yield control.

The intersection of Pine Lane and Twenty Mile Road is signalized with protected-permissive left turn phasing on all approaches. The eastbound approach consists of one left turn lane, one through lane, and one shared through/right turn lane. The westbound approach consists of one left turn lane, two through lanes, and one right turn lane. The northbound approach consists of one left turn lane, one through lane, and a shared through/right turn lane. The southbound approach consists of a left turn lane, two through lanes, and one right turn lane. All right turn

lanes are channelized operating with yield control, other than the eastbound to southbound right turn lane which has a free right turn movement with a third southbound add lane.

The intersection lane configuration and control for these study area key intersections are shown in **Figure 2**.

3.2 Existing and Future Study Area

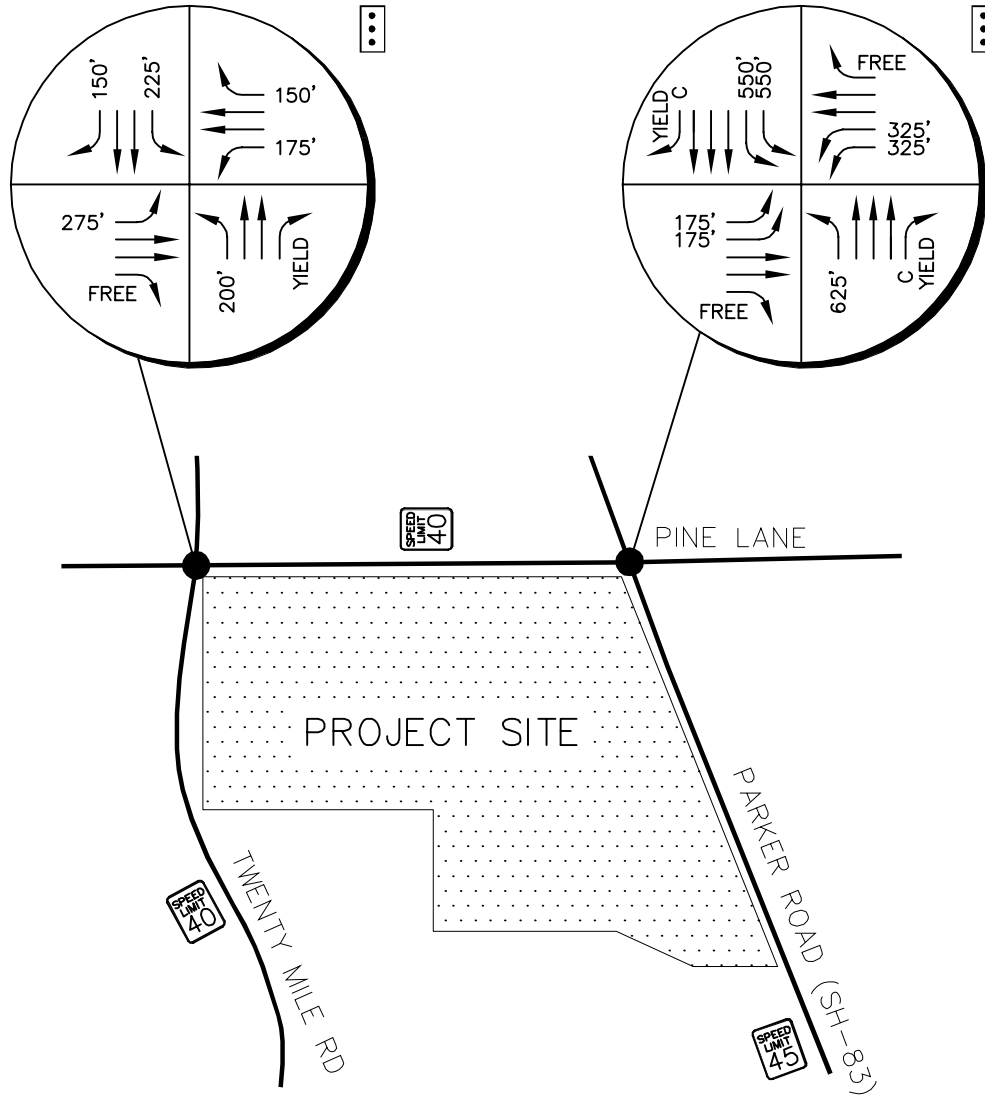
The existing site is comprised of vacant land. The surrounding area contains a mix of uses. Directly to the north of the site exists a medical office building. Directly to the east across Parker Road is retail and a motel. Directly to the west is vacant land and the Baldwin Gulch Trail which runs along the southern border of the site. Directly to the south are commercial uses. Outside of these uses, a K-8 charter school exists to the southwest and residential areas exist to the west.

3.3 Existing Traffic Volumes

Existing peak hour turning movement counts were conducted at the key intersections on Thursday, August 3, 2017. The counts were conducted in 15-minute intervals during the morning and afternoon peak hours of adjacent street traffic from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on this count date. Existing turning movement counts are shown in **Figure 3** with count sheets provided in **Appendix B**.

3.4 Unspecified Development Traffic Growth

According to information provided on the website for the Colorado Department of Transportation, the 20-year growth factor along Parker Road (SH-83) within the study area is 1.25. This value equates to an annual growth rate of approximately 1.1 percent. According to the Douglas County 2030 Transportation Plan (2020 & 2030 peak hour traffic forecasts) Parker Road through the study area has an annual projected growth rate of 0.7 percent. Therefore, an annual traffic volume growth rate of 1.1 percent was used in this traffic analysis to be conservative. Traffic information from the CDOT Online Transportation Information System (OTIS) website and Douglas County 2030 Transportation Plan traffic forecast maps are included in **Appendix B**. This annual growth rate was used to estimate near term 2022 and long term 2040 traffic volume projections at the key intersections. Background traffic volumes for 2022 and 2040 are shown in **Figures 4** and **5**, respectively.

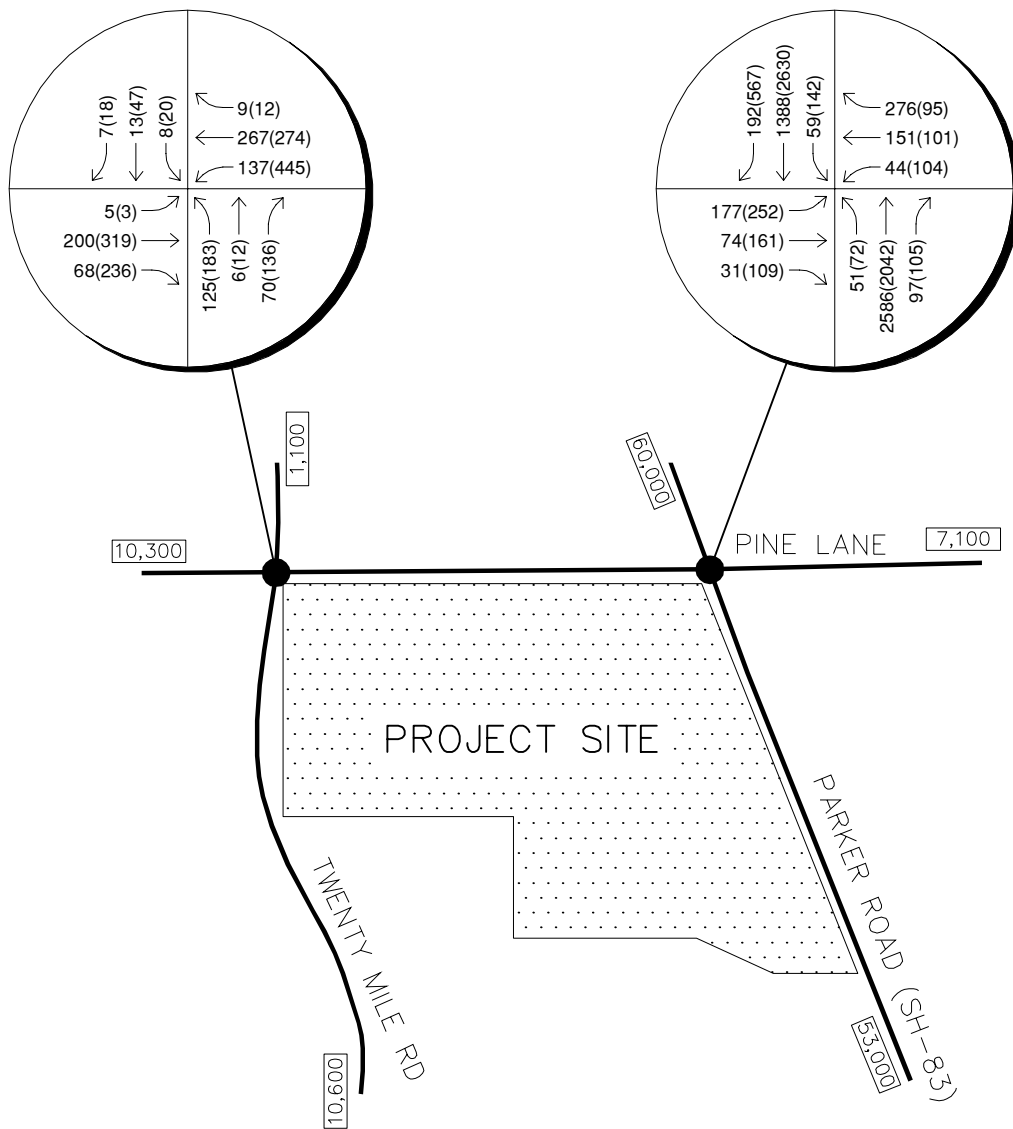


PARKER AND PINE
 PARKER ROAD & PINE LANE
 EXISTING LANE CONFIGURATIONS

FIGURE 2

Thursday, August 3, 2017
7:30 to 8:30 AM (5:00 to 6:00 PM)

Thursday, August 3, 2017
7:15 to 8:15 AM (4:45 to 5:45 PM)

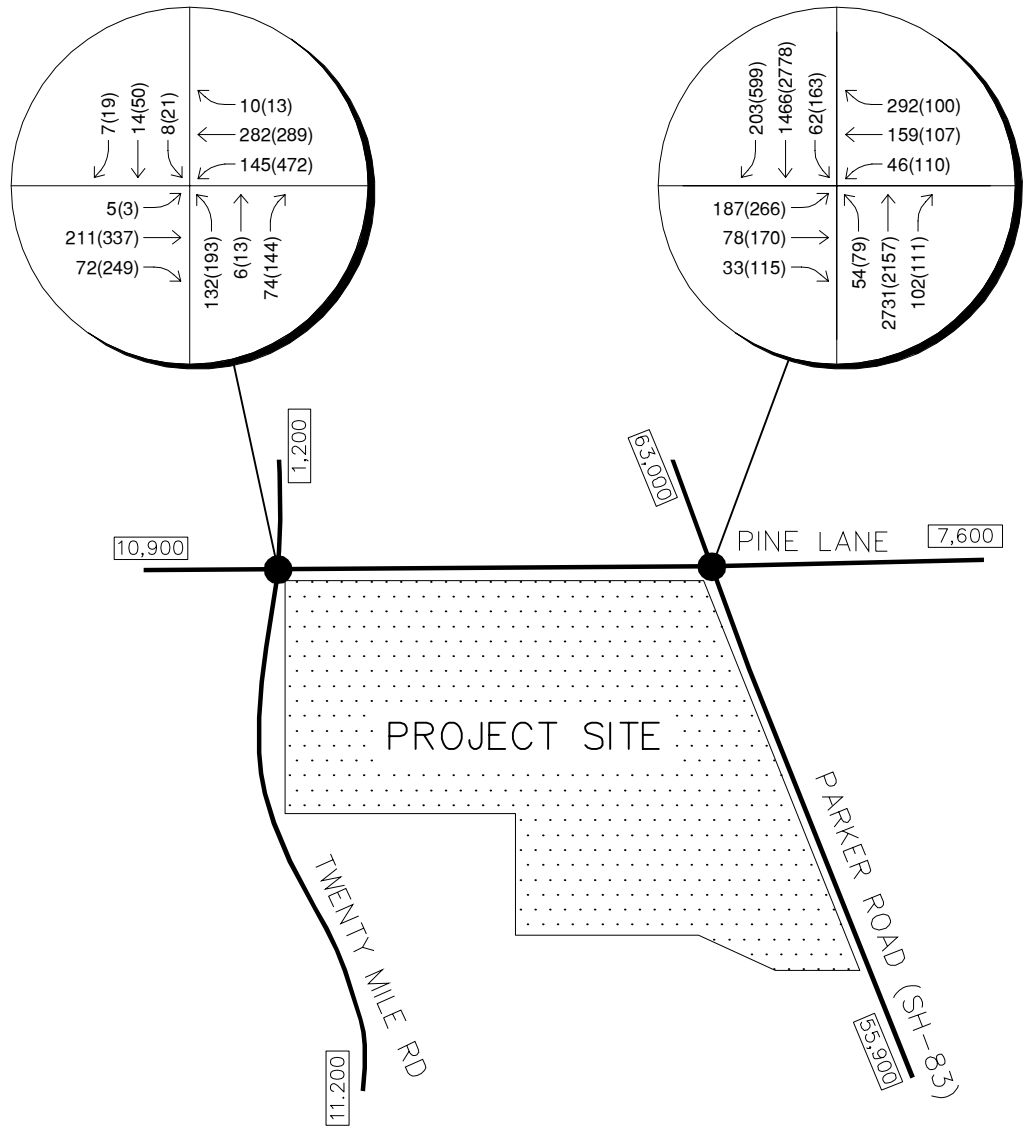


LEGEND

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

PARKER AND PINE
PARKER ROAD & PINE LANE
EXISTING TRAFFIC VOLUMES

FIGURE 3

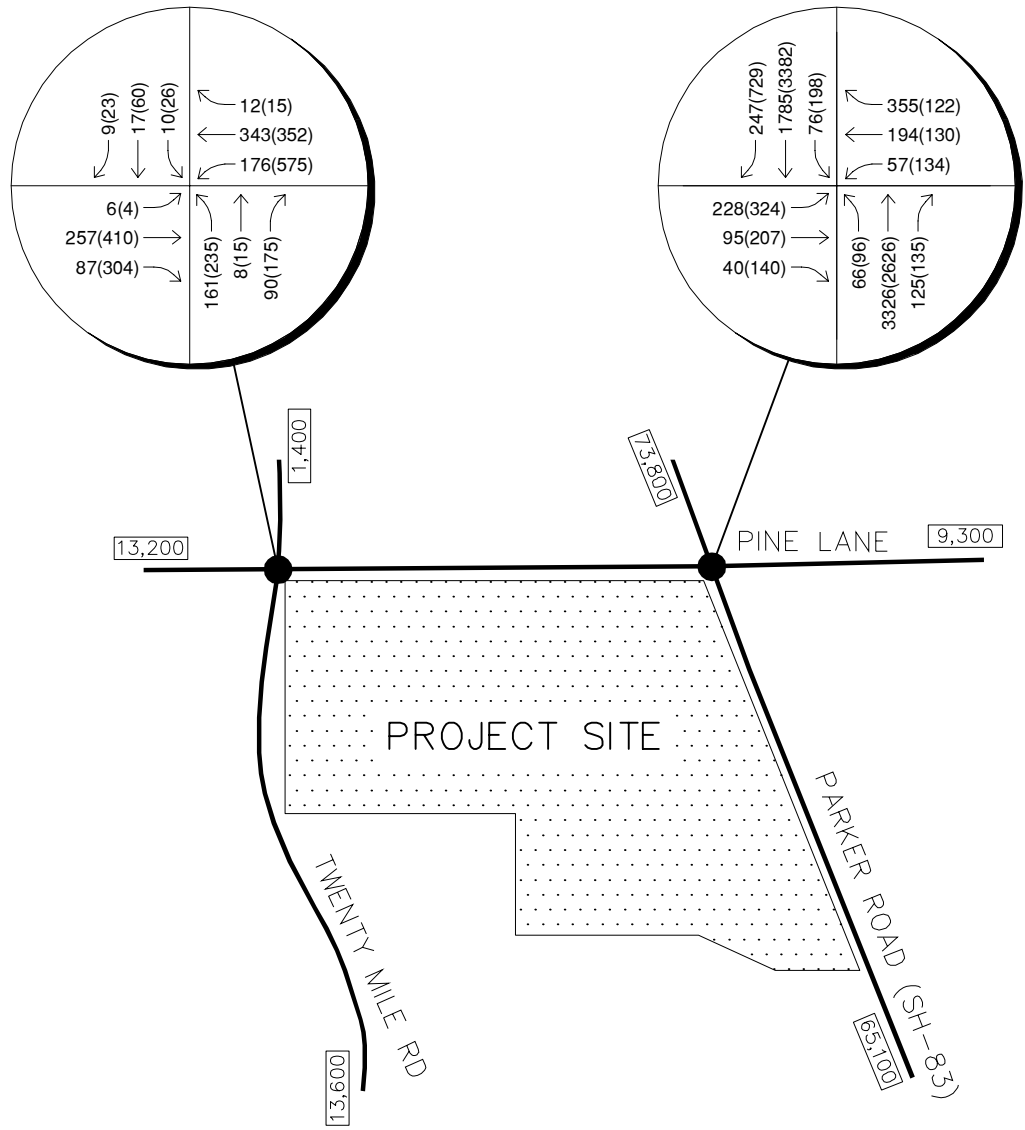


LEGEND

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

PARKER AND PINE
 PARKER ROAD & PINE LANE
 2022 BACKGROUND TRAFFIC VOLUMES

FIGURE 4



LEGEND

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

PARKER AND PINE
 PARKER ROAD & PINE LANE
 2040 BACKGROUND TRAFFIC VOLUMES

FIGURE 5

4.0 PROJECT TRAFFIC CHARACTERISTICS

4.1 Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land uses to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Report*¹ published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. For this study, Kimley-Horn used the ITE Trip Generation Report regression equations and average rates that apply to Gasoline Station with Convenience Market (ITE Code 945), Medical-Dental Office Building (720), Fast Food Restaurant with Drive Through (934), Hotel (310), Shopping Center (820), and Automated Car Wash (948) for traffic associated with the Parker and Pine development.

Since a mix of uses is proposed within the same development, it is anticipated that traffic will be shared between each use. This internal trip generation, or capture, is expected to occur between the various retail uses. Therefore, the ITE internal capture procedure was used to determine the amount of traffic that may be shared between uses, which thereby determines the number of external trips. However, since the ITE internal capture procedure showed a high daily internal capture rate of 60.33 percent. It was determined that wouldn't be justifiable, however this project contains a significant mix of uses which would likely see a higher internal capture percentage of 10 percent as the Town requests. Therefore, for this development type, a 20 percent internal capture percentage is believed to be applicable for use for this analysis. This matches the retail to retail internal capture percentage identified by ITE. Based on this, the proposed development is expected to generate approximately 7,456 daily weekday trips. Of these, 482 trips are expected to occur during the weekday morning peak hour, while 604 trips are expected during the weekday afternoon peak hour.

Since the project is a commercial development, pass-by trips are expected. These pass-by trips are vehicles already on the street network that will be attracted to the retail and fast-food restaurants land uses. Since this project development area is located along Parker Road, with a gas station/convenience market and fast food restaurants proposed, it is believed that the ITE

¹ Institute of Transportation Engineers, *Trip Generation: An Information Report*, Ninth Edition, Washington DC, 2012.

percentages for pass-by are more accurate than the Town prescribed 15 percent pass-by percentage. Therefore, based on this project's location, the ITE pass-by rates were used in the calculations. Of note, pass-by traffic volumes were captured primarily from Parker Road, so this traffic is counted as new traffic along Pine Lane and Twenty Mile Road at the proposed accesses as applicable. With pass-by, expected net new trips (non pass-by) to the surrounding street network results in 4,880 weekday daily trips with 292 and 405 trips anticipated during the weekday morning and afternoon peak hours, respectively. The pass-by percentages were obtained from the ITE "Trip Generation Manual, Ninth Edition Volume 1, Users Guide and Handbook" 2012. **Table 1** summarizes the estimated trip generation for the proposed Parker and Pine development. The trip generation worksheets are included in **Appendix D**. These calculations illustrate the equations used and directional distribution of trips.

Table 1 – Parker and Pine Traffic Generation

Land Use	Size	Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Non Pass-By Trips								
Fast Food Restaurant w/ D.T. (934)	6,000 SF	1,191	56	54	110	41	38	79
Gasoline Station (945)	16 pumps	834	26	26	52	35	35	70
Medical Office Building (720)	35,000 SF	1,013	53	14	67	28	72	100
Hotel (310)	124 rooms	811	31	22	53	30	29	59
Shopping Center (820)	13,000 SF	311	6	4	10	12	13	25
Automated Car Wash (948)	6,400 SF	720	0	0	0	36	36	72
Total	-	4,880	172	120	292	182	223	405
Pass-By Trips								
Fast Food Restaurant w/ D.T. (934)	6,000 SF	1,191	56	54	110	41	38	79
Gasoline Station (945)	16 pumps	1,252	41	39	80	52	52	104
Shopping Center (820)	13,000 SF	133	0	0	0	8	8	16
Total	-	2,576	97	93	190	101	98	199
Total Trips		7,456	269	213	482	283	321	604

4.2 Trip Distribution

Distribution of site traffic was based on the area street system characteristics, existing traffic patterns and volumes, existing demographic information, and the proposed access system for the project. The non-pass-by directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source direction. **Figure 6** illustrates the expected non pass-by trip distribution for the site.

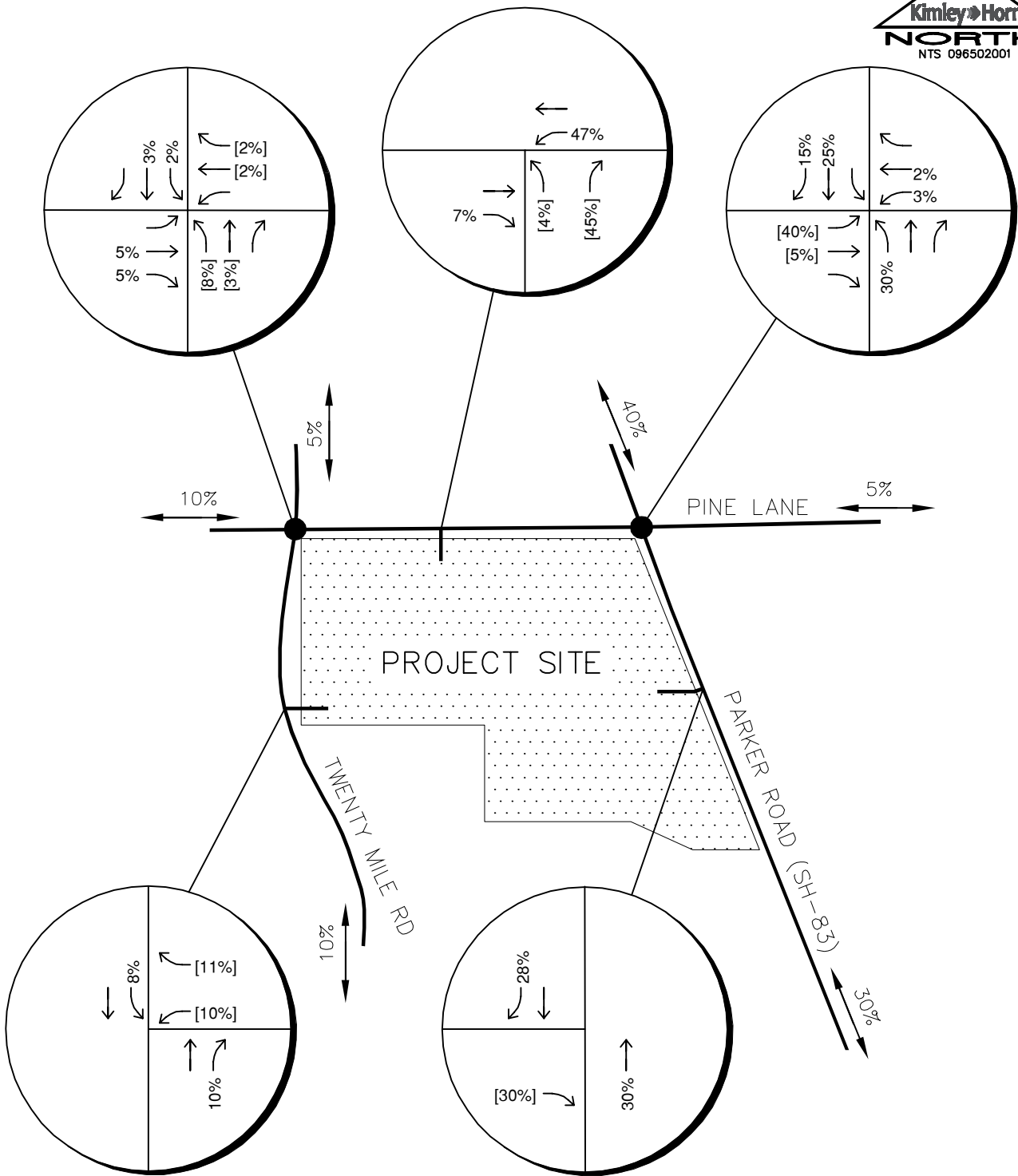
Due to the nature of the proposed uses, both new (non-pass-by) and pass-by trips are anticipated to be generated by this project. Pass-by distributions capture the route of the vehicle, which is a percentage of traffic driving by the site, arriving from a direction and then continuing in that original direction when leaving. Pass-by distributions are prepared directly based on existing traffic volume counts along the adjacent streets. **Figures 7 and 8**, illustrate the pass-by traffic, calculated separately for the morning and afternoon peak hours, respectively, due to the directional differences of traffic during these peak hours.

4.3 Traffic Assignment

Traffic assignment was obtained by applying the distributions from **Figures 6** through **8** to the estimated traffic generation of the project shown in **Table 1**. The non-pass-by traffic assignment is shown in **Figure 9**. Pass-by traffic assignment is shown in **Figure 10**.

4.4 Total (Background Plus Project) Traffic

The project traffic volumes were added to the background volumes to represent estimated traffic conditions for the short term 2022 project build out horizon and long term 2040 horizon. **Figure 11** illustrates the background plus project traffic volumes for the 2022 horizon at the study key intersections and the access intersections proposed with the project. The 2040 background plus project traffic volumes are shown in **Figure 12**.

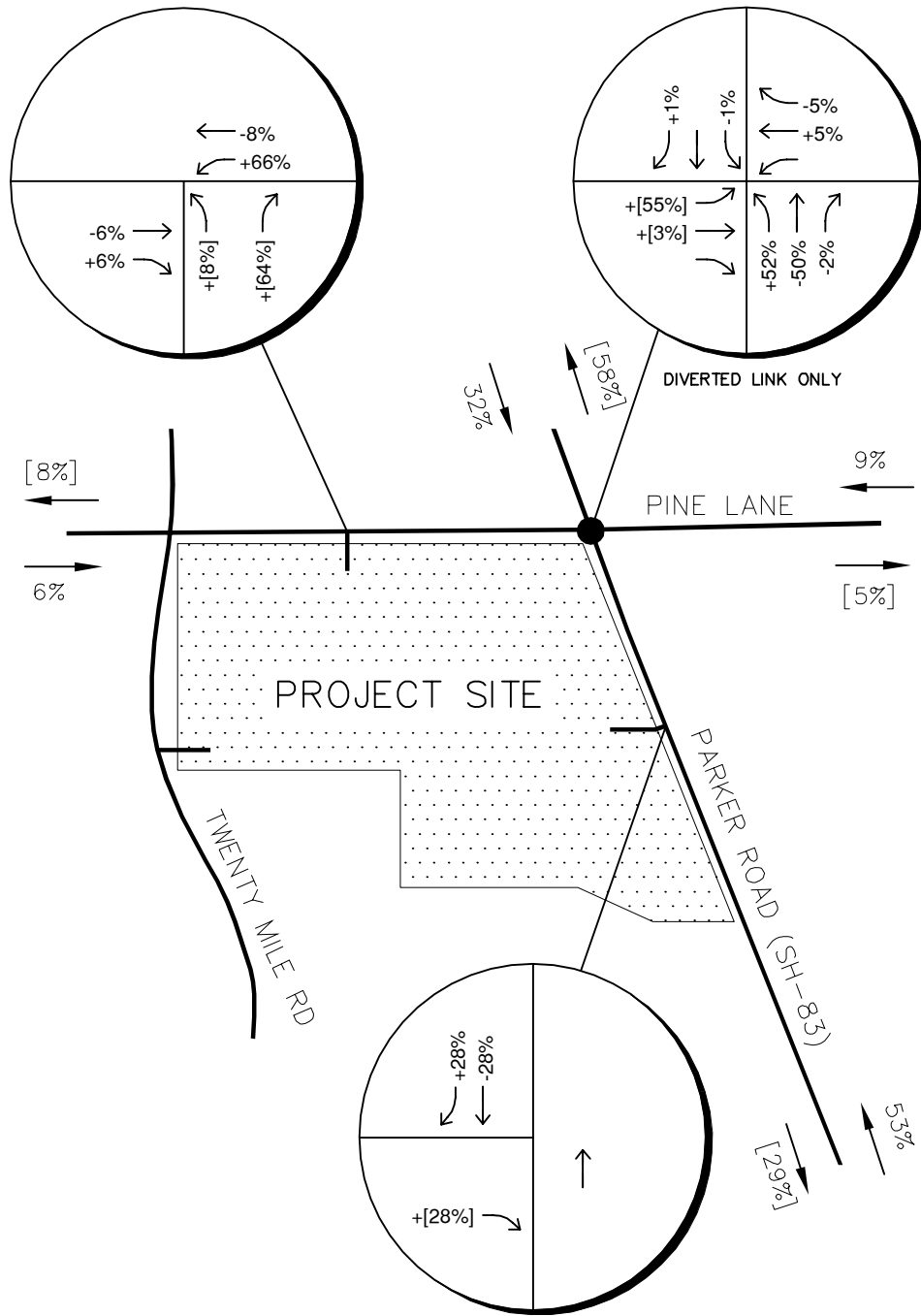


LEGEND

- Study Area Key Intersection
- XX%[XX%] Entering[Exiting] Trip Distribution Percentage

PARKER AND PINE
 PARKER ROAD & PINE LANE
 PROJECT TRIP DISTRIBUTION

FIGURE 6

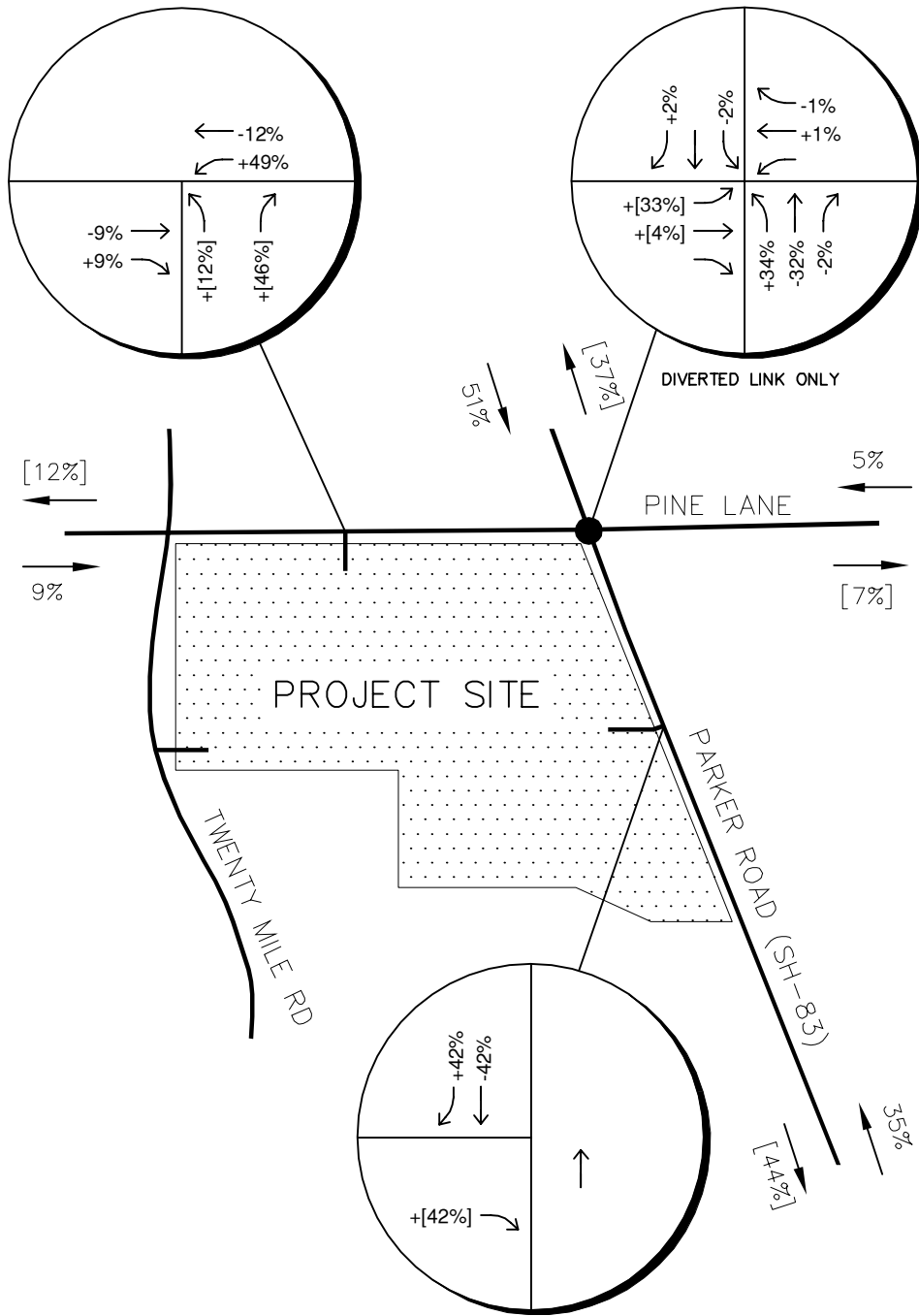


LEGEND

- Study Area Key Intersection
- XX%[XX%] Entering[Exiting] Trip Distribution Percentage

PARKER AND PINE
 PARKER ROAD & PINE LANE
 AM PEAK PASS-BY TRIP DISTRIBUTION

FIGURE 7

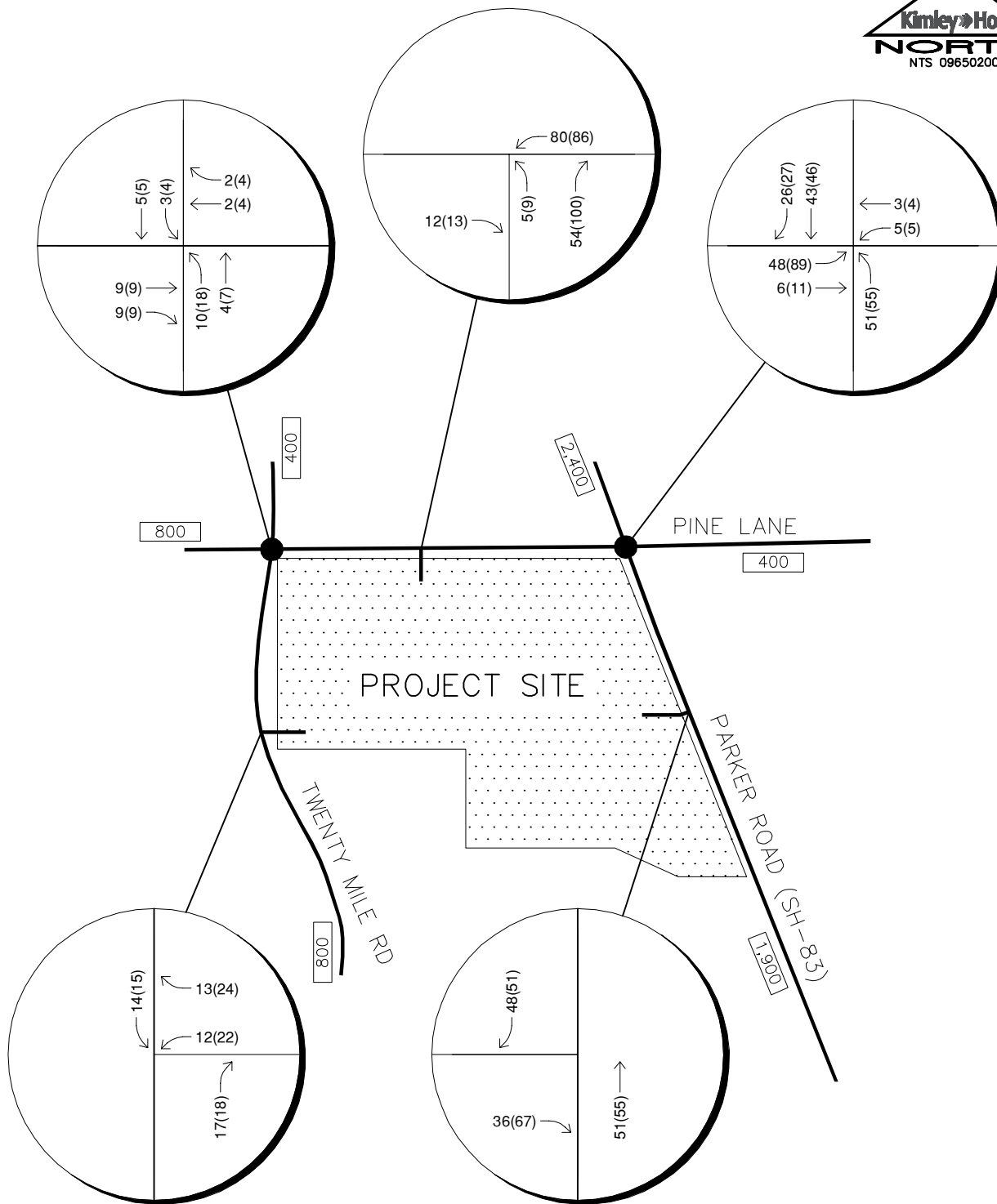


LEGEND

- Study Area Key Intersection
- XX%[XX%] Entering[Exiting] Trip Distribution Percentage

PARKER AND PINE
 PARKER ROAD & PINE LANE
 PM PEAK PASS-BY TRIP DISTRIBUTION

FIGURE 8

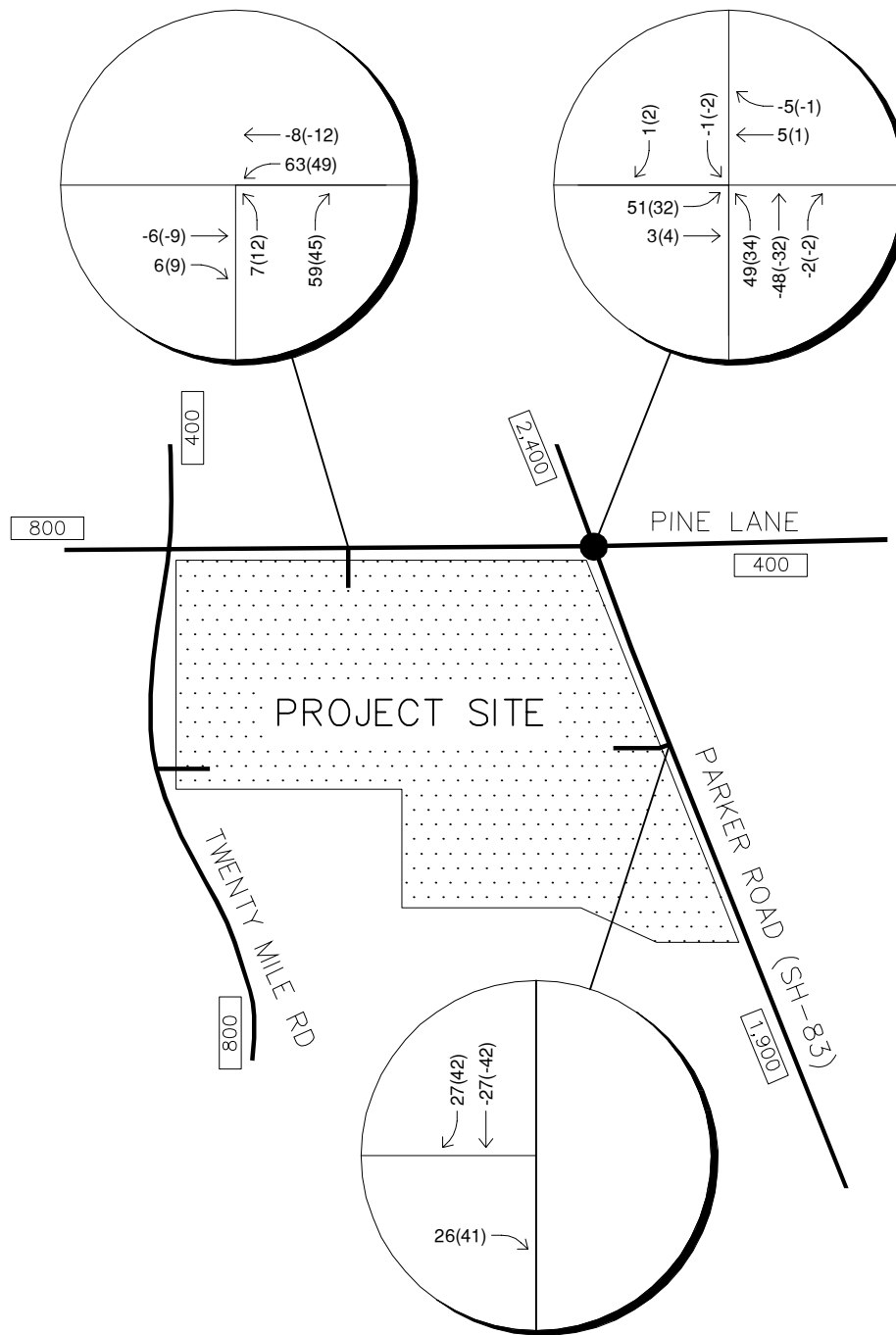


LEGEND

- Study Area Key Intersection
- XX(X) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

PARKER AND PINE
 PARKER ROAD & PINE LANE
 NON PASS-BY TRAFFIC ASSIGNMENT

FIGURE 9

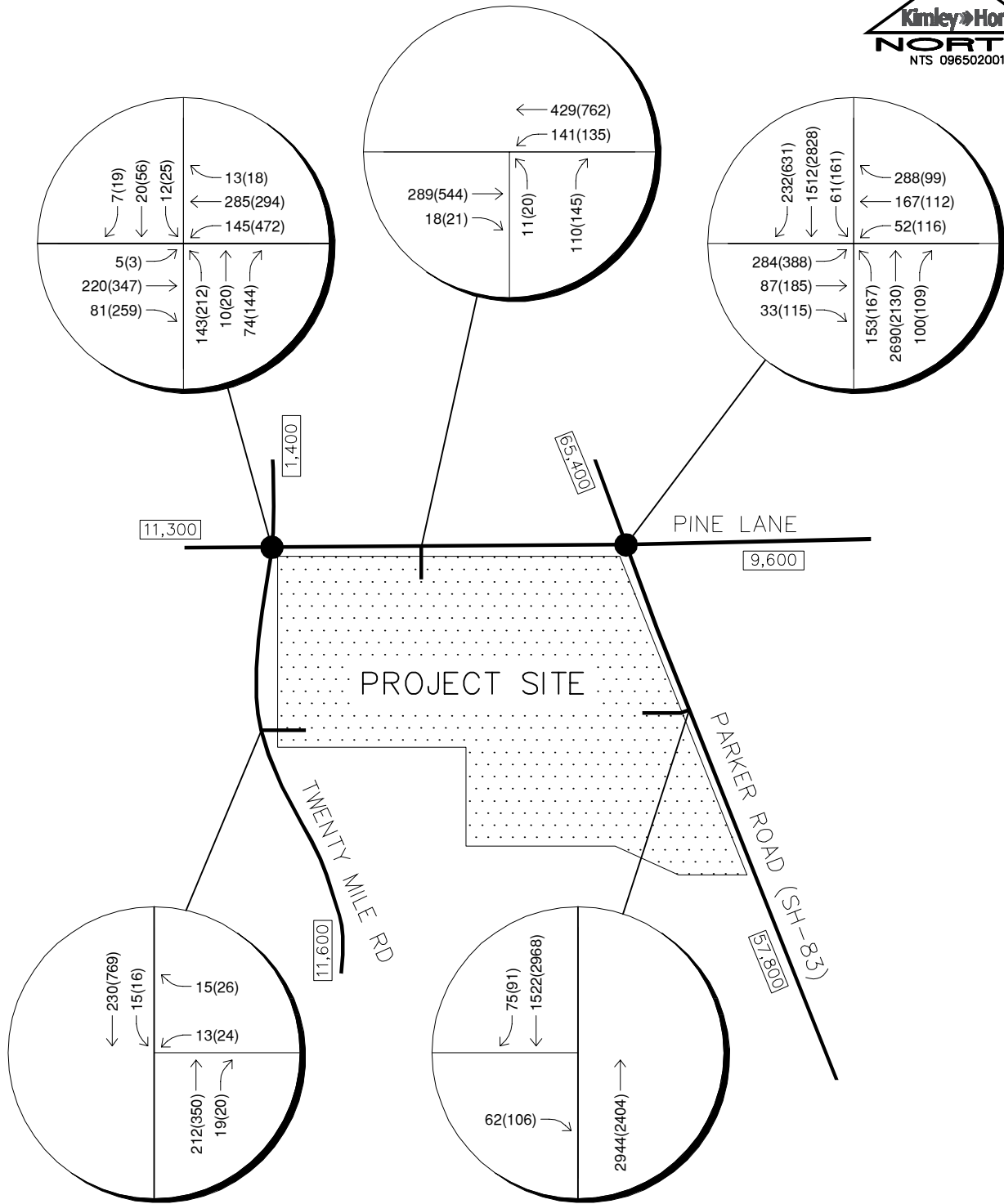


LEGEND

- Study Area Key Intersection
- XX(X) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

PARKER AND PINE
 PARKER ROAD & PINE LANE
 PASS-BY TRAFFIC ASSIGNMENT

FIGURE 10

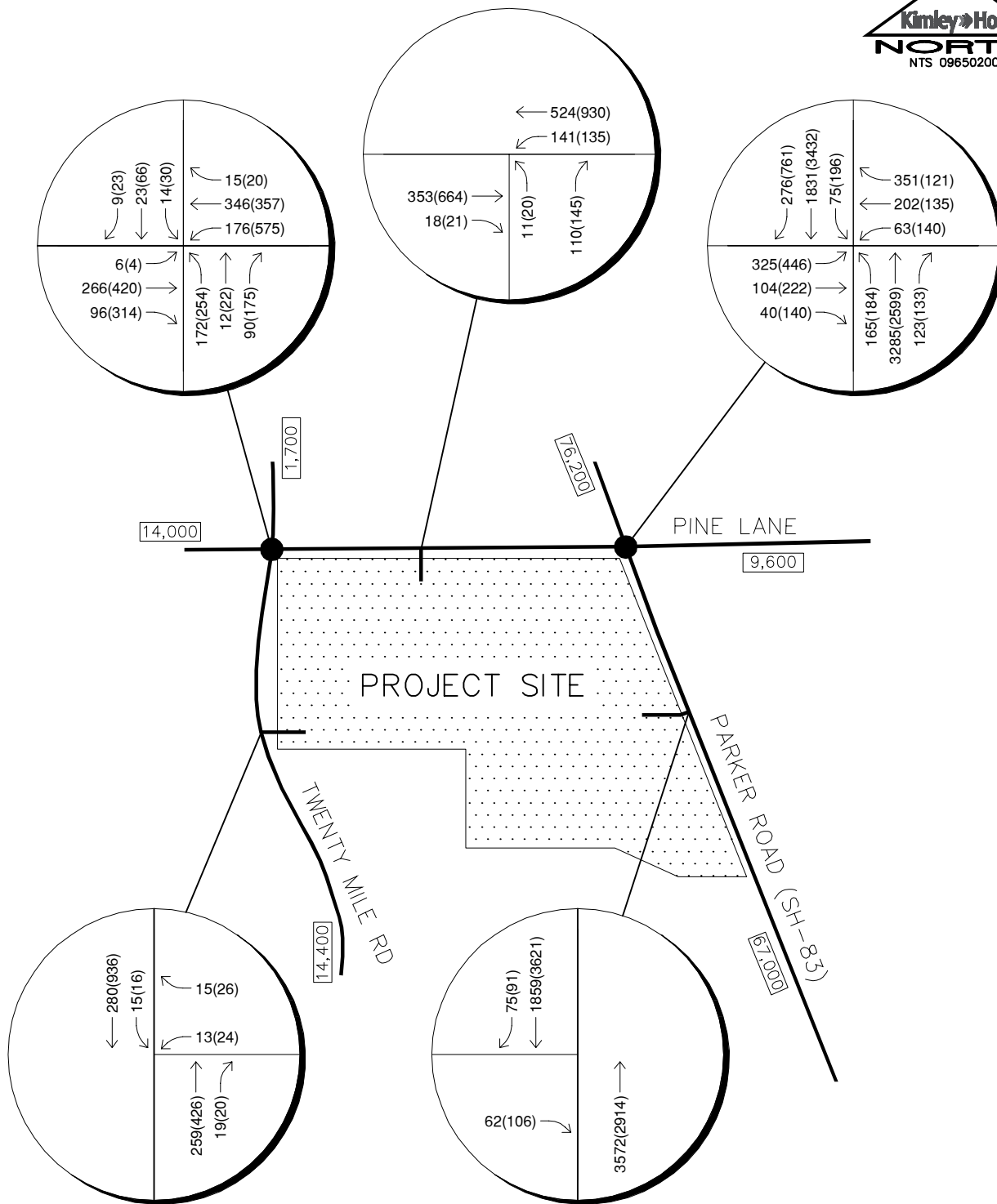


LEGEND

- Study Area Key Intersection
- XX(XX) Weekday AM(PM) Peak Hour Traffic Volumes
- [XX,X00] Estimated Daily Traffic Volume

PARKER AND PINE
 PARKER ROAD & PINE LANE
 2022 BACKGROUND
 PLUS PROJECT TRAFFIC VOLUMES

FIGURE 11



LEGEND

- Study Area Key Intersection
- XX(XX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

PARKER AND PINE
 PARKER ROAD & PINE LANE
 2040 BACKGROUND
 PLUS PROJECT TRAFFIC VOLUMES

FIGURE 12

5.0 TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn's analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2022 and 2040 development horizons at the identified key intersections and access driveways. The acknowledged source for determining overall capacity is the current edition of the *Highway Capacity Manual (HCM)*².

5.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). For intersections and roadways in this study area, Kimley-Horn recommends intersection LOS D as the minimum threshold for acceptable operations for signalized intersections and LOS E for movements and approaches of unsignalized intersections. **Table 2** shows the definition of level of service for signalized and unsignalized intersections.

Table 2 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Special Report 209, Transportation Research Board, 2010.

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. Under the unsignalized analysis, LOS for a two-way stop controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for signalized and four-way stop controlled intersections are defined for each approach and for the overall intersection.

² Transportation Research Board, *Highway Capacity Manual*, Special Report 209, Washington DC, 2010.

5.2 Key Intersection Operational Analysis

Calculations for the level of service at the key intersections and project access driveways for the study area are provided in **Appendix E**. The signalized intersection analysis utilizes the observed cycle lengths for the morning and afternoon peak hours with existing phasing and optimized timing splits. The existing year analysis is based on the lane geometry and intersection control shown in **Figure 2**. LOS for the intersections was calculated using Synchro software presenting the HCM results. Existing peak hour factors (PHF) were used in the existing year and 2022 analyses with the 2040 analysis including a PHF of 0.92 based on the recommendations for the urban area.

Parker Road (SH-82) and Pine Lane

Parker Road and Pine Lane is a four-leg signalized intersection. With this existing configuration, the intersection currently operates at LOS C during both the morning and afternoon peak hours. With or without the addition of project traffic in 2022, the intersection is anticipated to continue operating acceptably at LOS D or better during both the morning and afternoon peak hours.

By 2040, the intersection will likely need to be improved to include dual left turn lanes on the northbound approach. Based on the future traffic volume projections applied, even this intersection configuration wouldn't acceptably accommodate the future 2040 traffic volumes. It is believed that the intersection would be fully constructed providing dual left turn lanes, three through lanes, and separate right turn lanes on the northbound and southbound Parker Road approaches and dual left turn lanes, two through lanes, and separate right turn lanes on the eastbound and westbound Pine Lane approaches. The operational issues occur due to the heavy traffic volume along Parker Road (65,000 to 75,000 vpd). Instead, it is believed that surrounding street network connections will be needed to improve traffic conditions within the study area and reduce the traffic volume through this intersection. With the addition of project traffic in 2040, this intersection is anticipated to operate at LOS E during the morning peak hour and LOS F during the afternoon peak hour. The Town of Parker should monitor traffic conditions to determine if and when future improvements are needed. **Table 3** provides the results of the level of service at this intersection.

Table 3 – Parker Road and Pine Lane LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing	22.7	C	26.6	C
2022 Background	24.8	C	28.9	C
2022 Background Plus Project	33.2	C	45.4	D
2040 Background #	48.4	D	59.5	E
2040 Background Plus Project #	59.8	E	83.5	F

Dual NB Left Turn Lanes

Pine Lane and Twenty Mile Road

Pine Lane and Twenty Mile Road is a four-leg signalized intersection. With this existing configuration, the intersection currently operates at LOS D or better during both the morning and afternoon peak hours. With or without the addition of project traffic in 2022, the intersection is anticipated to continue operating at LOS D or better during both the morning and afternoon peak hours. It is recommended that dual westbound left turn lanes be provided with the completion of this project for queuing purposes. With or without the addition of the project traffic in 2040, the intersection is anticipated to operate acceptably at LOS D or better during both the morning and afternoon peak hour. **Table 4** provides the results of the level of service at this intersection.

Table 4 – Pine Lane and Twenty Mile Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing	28.1	C	41.3	D
2022 Background	27.8	C	42.2	D
2022 Background Plus Project	39.4	D	42.4	D
2022 Background Plus Project #	39.7	D	36.8	D
2040 Background #	28.4	C	25.9	C
2040 Background Plus Project #	40.6	D	37.4	D

Dual WB Left Turn Lanes

Pine Lane Access

The proposed driveway along Pine Lane will allow full turning movements and is located approximately 550 feet west of Parker Road. It is recommended that the northbound project access approach be stop controlled. It is recommended that a R1-1 “STOP” sign be installed for this northbound approach to Pine Lane. This access is anticipated to have all movements operating at LOS C or better during the AM and PM peak hours in 2022 and 2040. **Table 5** provides the results of the level of service at this access intersection.

Table 5 – Pine Lane Access LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2022 Total				
Westbound Left	8.4	A	9.4	A
Northbound Approach	11.4	B	18.2	C
2040 Total				
Westbound Left	8.6	A	10.1	B
Northbound Approach	12.0	B	24.4	C

Parker Road Access

The proposed driveway along Parker Road will be restricted to right turning movements only and is located approximately 500 feet south of Pine Lane. It is recommended that the project access be stop controlled. It is recommended that a R1-1 “STOP” sign be installed for this eastbound access approach to Parker Road. To identify the proposed access to right turn movements only, it is recommended that a with a R3-2 No Left Turn sign be placed underneath the “STOP” sign and a R6-1 (R) “ONE WAY” sign be located within the existing raised median directly in front of the driver’s view from the access to further identify the exiting movement at the driveway for right turns only. A continuous auxiliary lane exists along this segment of Parker Road for deceleration and acceleration. This access is anticipated to have the eastbound movement operating at LOS B or better during the AM and PM peak hours in 2022 and 2040. **Table 6** provides the results of the level of service at this access intersection.

Table 6 – Parker Road Access LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2022 Total Eastbound Right	9.7	A	14.4	B
2040 Total Eastbound Right	10.1	B	14.4	B

Twenty Mile Road Access

The proposed driveway along Twenty Mile Road will allow full turning movements and is located approximately 500 feet south of Pine Lane. It is recommended that the project access approach be stop controlled. It is recommended that a R1-1 “STOP” sign be installed for this westbound approach to Twenty Mile Road. This access is anticipated to have all movements operating at LOS C or better during the AM and PM peak hours in 2022 and 2040. **Table 7** provides the results of the level of service at this access intersection.

Table 7 – Twenty Mile Road Access LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2022 Total				
Westbound Approach	10.2	B	14.0	B
Southbound Left	7.7	A	8.1	A
2040 Total				
Westbound Approach	10.7	B	16.5	C
Southbound Left	7.9	A	8.3	A

5.3 Queuing Analysis

A left turn lane queuing analysis was conducted for the signalized and unsignalized study area intersections including Parker Road/Pine Lane and Pine Lane/Twenty Mile Road. In addition, the accesses along Pine Lane and Twenty Mile Road were studied. The access along Parker Road was not studied because it operates right in/right out only with a free right turn movement into an auxiliary acceleration lane. The queuing analysis was performed using the Synchro analysis software presenting the results of the 95th percentile queue length. Results are shown in the following **Table 8** with calculations provided within the level of service operational sheets of **Appendix E** for the unsignalized intersections and **Appendix F** for signalized intersections.

Table 8 – Left Turn Lane Queuing Analysis Results

Intersection Turn Lane	Existing Turn Lane Length (feet)	2022 Queue Length (feet)	2022 Recommended Turn Lane Length (feet)	2040 Queue Length (feet)	2040 Recommended Turn Lane Length (feet)
Parker Road/Pine Lane					
Eastbound Left	175' DL	307'	250' DL #	346'	250' DL #
Westbound Left	325' DL	82'	325' DL	94'	325' DL
Northbound Left	625'	254'	625'	141'	625' DL
Southbound Left	550' DL	103'	550' DL	134'	550' DL
Pine Lane/Twenty Mile Road					
Eastbound Left	275'	4'	275'	8'	275'
Westbound Left	175'	422'	200' DL	204'	200' DL
Northbound Left	200'	205'	200'	206'	200'
Southbound Left	225'	33'	225'	34'	225'
Pine Lane Access					
Westbound Left	125'	13'	125'	15'	125'
Northbound Approach	DNE	48'	50'	65'	75'
Twenty Mile Road Access					
Westbound Approach	DNE	3'	25'	13'	25'
Southbound Left	100'	0	100'	0'	100'

DL = Dual Left Turn Lanes; DNE = Does Not Exist; C = Continuous

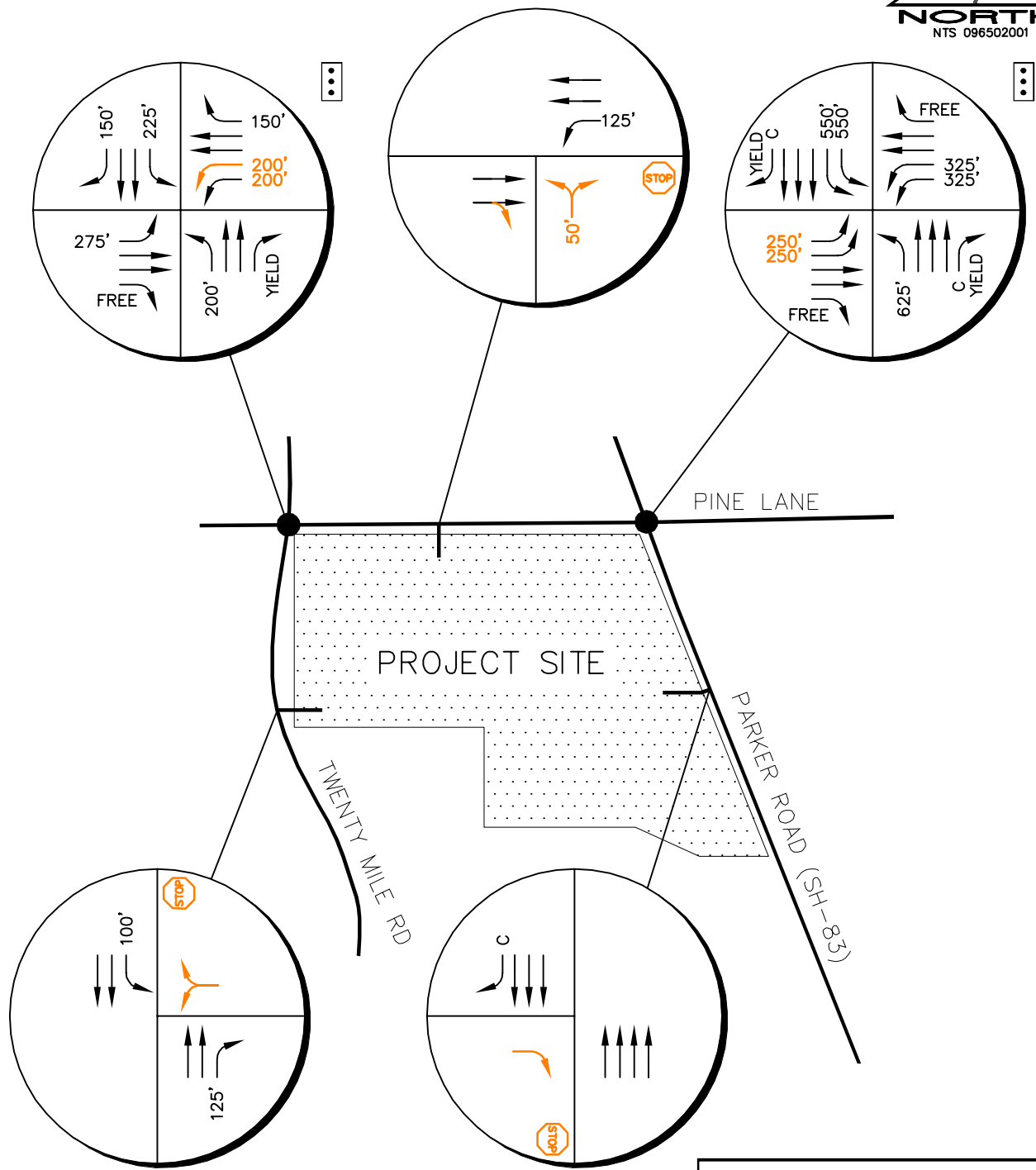
= Maximum Length Possible

Based on the results shown above, it is recommended the eastbound left turn lane at the Parker Road and Pine Lane intersection be extended to the maximum length possible from 175 feet to 250 feet. In addition, it is recommended that the westbound left turn lane at the Pine Lane and Twenty Mile Road intersection be designated to include dual left turn lanes. All other queues either fall within existing storage lengths.

It is recommended that the project access approach to Pine Lane provide a throat depth to accommodate three vehicles of storage (75 feet) to accommodate the long term 2040 horizon traffic volumes. The project access approach to Twenty Mile Road is recommended to provide a throat depth to accommodate one vehicle of storage (25 feet).

By 2040, it is recommended that the northbound left turn lane at Parker Road and Pine Lane be designated to include dual left turn lanes for operational reasons. All other queues either fall within existing storage lengths or cannot be improved due to space restrictions.

Based on the results of the level of service operational analysis and turn lane analysis, recommended lane configurations and control of the study area intersections are shown in **Figures 13** and **14** for the 2022 short term and 2040 long term horizon, respectively.

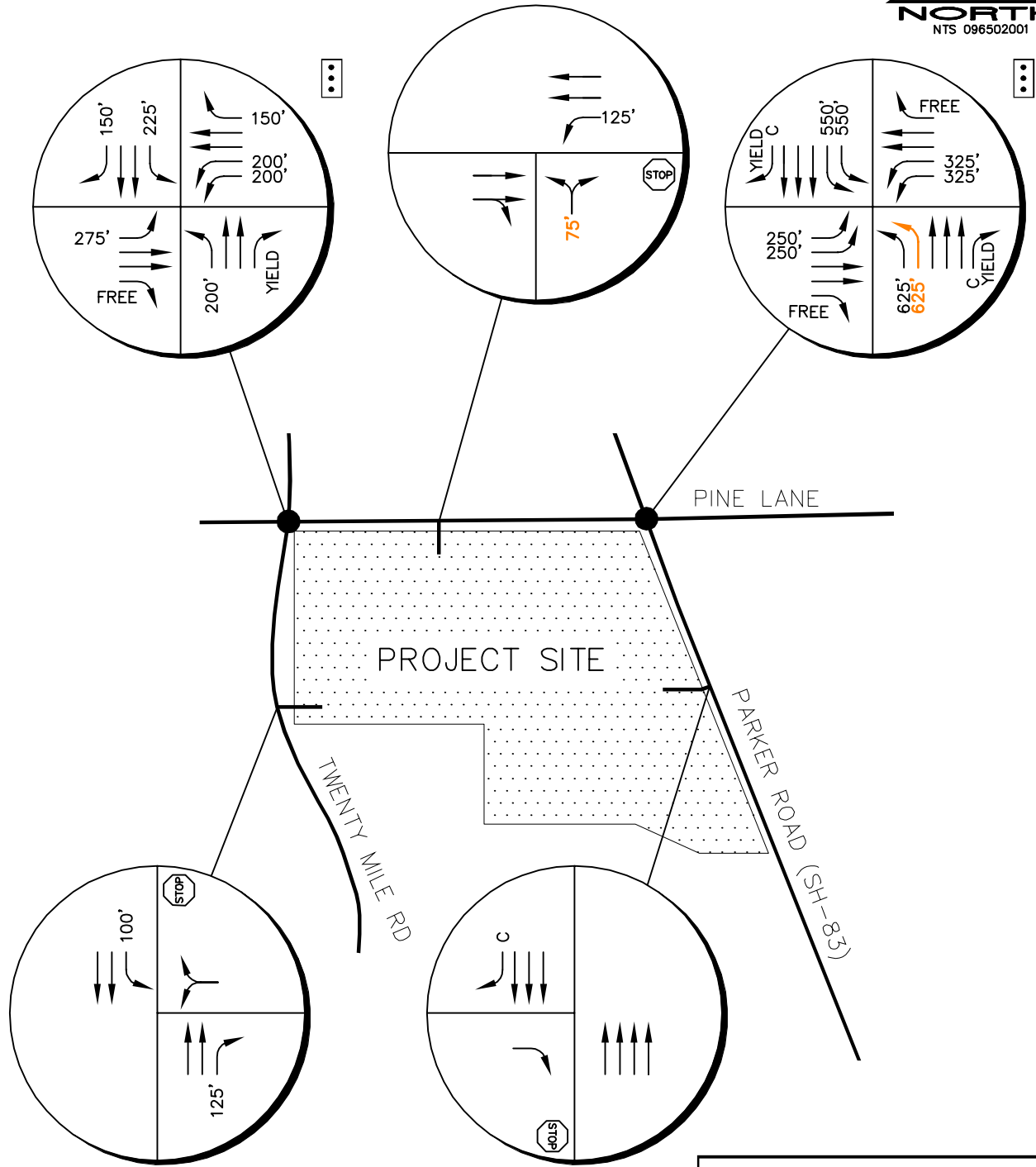


LEGEND

- Study Area Key Intersection
- ⋮ Signalized Intersection
- STOP Stop Controlled Approach
- 100' Turn Lane Length (feet)
- C Continuous Lane

PARKER AND PINE
 PARKER ROAD & PINE LANE
 2022 RECOMMENDED LANE
 CONFIGURATIONS AND CONTROL

FIGURE 13



LEGEND

- Study Area Key Intersection
- ⋮ Signalized Intersection
- STOP Stop Controlled Approach
- 100' Turn Lane Length (feet)
- C Continuous Lane

PARKER AND PINE
 PARKER ROAD & PINE LANE
 2040 RECOMMENDED
 LANE CONFIGURATIONS AND CONTROL

FIGURE 14

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes the proposed Parker and Pine project will be successfully incorporated into the existing roadway network. The proposed project development and expected traffic volumes resulted in the following recommendations:

- It is recommended that the project access along Pine Lane allow full turning movements and that the project access approach be stop controlled. It is recommended that a R1-1 “STOP” sign be installed for this northbound approach to Pine Lane. It is recommended that the project access approach to Pine Lane provide a throat depth to accommodate three vehicles of storage (75 feet) to accommodate the long term 2040 horizon traffic volumes.
- It is recommended that the project access along Parker Road (SH-83) be restricted to right-in/right-out movements and that the project access be stop controlled. It is recommended that a R1-1 “STOP” sign be installed for this eastbound access approach to Parker Road. To identify the proposed access to right turn movements only, it is recommended that a with a R3-2 No Left Turn sign be placed underneath the “STOP” sign and a R6-1 (R) “ONE WAY” sign be located within the existing raised median directly in front of the driver’s view from the access to further identify the exiting movement at the driveway for right turns only.
- It is recommended that the project access along Twenty Mile Road allow full turning movements and that the project access approach be stop controlled. It is recommended that a R1-1 “STOP” sign be installed for this westbound approach to Twenty Mile Road. The project access approach is recommended to provide a throat depth to accommodate one vehicle of storage (25 feet).
- With development of the project, it is recommended the westbound left turn lane at the Pine Lane and Twenty Mile Road intersection be restriped to include 200-foot dual left turn lanes.
- With development of the project, it is recommended the eastbound left turn lane length at the Parker Road (SH-83) and Pine Lane intersection be extended to its maximum possible length from the existing 175 feet to 250 feet. This will require restriping of Pine Lane by modifying the turn bay taper.

- By 2035, the Parker Road (SH-83) and Pine Lane intersection was found to have operational issues if the background traffic volumes are realized. Therefore, to provide the most optimal traffic lanes available, the northbound left turn at the Parker Road (SH-83) and Pine Lane intersection may need to be expanded to include dual left turn lanes. An area is striped out for these dual left turn lanes already (to shadow the southbound dual lefts) so implementation of northbound dual lefts is feasible.
- All off-site and on-site improvements should be incorporated into the Civil Drawings, and conform to standards of the Town of Parker, CDOT, American Association of State Highway and Transportation Officials (AASHTO) Geometric Design of Highways and Streets, Institute of Transportation Engineers (ITE), and the Manual on Traffic Control Devices (MUTCD) – 2009 Edition.

APPENDICES

APPENDIX A

Town of Parker Traffic Impact Study Checklist



TIS Standard Checklist

Development: Parker and Pine
 Filing: _____
 Consultant: Kimley-Horn and Associates, Inc.

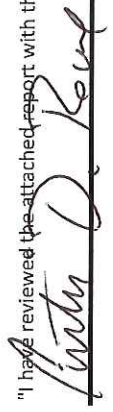
Date: 8/14/2017
 Submittal Number: _____
 Reviewed By: _____

Required Discussions - To be completed by the Transportation Consultant Engineer:

REPORT SECTION	COMPLETED	N/A	COMMENTS
GENERAL	<input type="checkbox"/>	<input type="checkbox"/>	
Original & Revision Dates	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Dated, Checked, Sealed & Signed by P.E.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
INTRODUCTION	<input type="checkbox"/>	<input type="checkbox"/>	
Vicinity Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Proposed Project Site Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Proposed Development Phasing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Existing & Proposed Land Uses Surrounding Site	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXISTING CONDITIONS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Roadway Counts < One Year Old	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>estimated from intersection counts</u>
Intersection Counts < Six Months Old	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Existing LOS Summary (Table)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
PROPOSED CONDITIONS	<input type="checkbox"/>	<input type="checkbox"/>	
Trip Generation Summary (Table)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Internal Trip Reduction Justification (< 10%)	<input type="checkbox"/>	<input type="checkbox"/>	<u>Based on land use, 20% reduction was used</u>
Pass-by Trip Reduction Justification (< 15%)	<input type="checkbox"/>	<input type="checkbox"/>	<u>Based on land use, ITE reduction was used</u>
Trip Distribution Assumptions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>L7 gasoline station, fast food</u>
Site Trip Distribution (Figure)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Projected Site Traffic Volumes (Figure) - Each Phase	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

REPORT SECTION	COMPLETED	N/A	COMMENTS
FUTURE CONDITIONS			
Background Transportation Improvements	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Background Growth Method & Assumptions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Background Traffic Volumes (Figure) - Each Phase	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Total Traffic Volumes (Figure) - Each Phase	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
SITE CIRCULATION & DESIGN EVALUATION			
Level of Service Analysis - Each Phase (Figures/Table)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Queuing Analysis - Vehicle Storage Lengths	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Traffic Signal Warrant Analysis	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Traffic Signal Progression	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Safety Analysis	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
PROPOSED MITIGATION MEASURES			
Level of Service for Each Intersection Movement (Table)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
CONCLUSIONS/RECOMMENDATIONS			
Improvements/Lane Configurations (Figure)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Recommended Construction Phasing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
APPENDIX			
Traffic Count Data	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Traffic Analysis Software Output Reports (All Periods)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Time-space Diagrams	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

"I have reviewed the attached report with this checklist and all required items have been included except as noted above."



Signature of Professional Engineer

APPENDIX B

Intersection Count Sheets



Morrison, CO 80465

Parker, CO
 Parker & Pine Retail
 AM Peak
 Pine Lane and Parker Rd

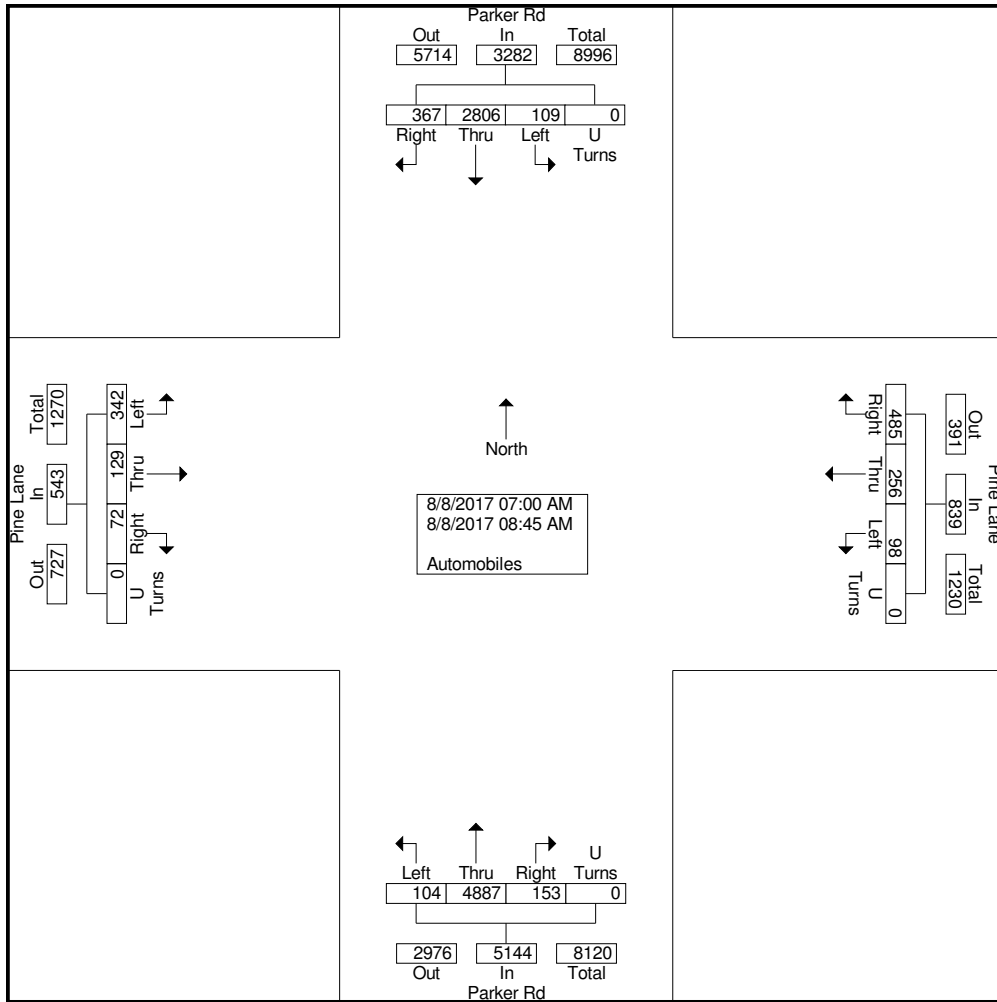
File Name : Pine and Parker AM
 Site Code : IPO 256
 Start Date : 8/8/2017
 Page No : 1

Groups Printed- Automobiles

Start Time	Pine Lane Eastbound					Pine Lane Westbound					Parker Rd Northbound					Parker Rd Southbound					Int. Total
	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	
07:00 AM	49	9	6	0	64	7	23	68	0	98	11	610	20	0	641	9	301	40	0	350	1153
07:15 AM	59	14	7	0	80	7	33	73	0	113	9	702	24	0	735	14	319	41	0	374	1302
07:30 AM	36	15	5	0	56	9	38	67	0	114	13	653	15	0	681	16	366	41	0	423	1274
07:45 AM	45	30	13	0	88	6	38	72	0	116	16	675	38	0	729	12	377	55	0	444	1377
Total	189	68	31	0	288	29	132	280	0	441	49	2640	97	0	2786	51	1363	177	0	1591	5106
08:00 AM	37	15	6	0	58	22	42	64	0	128	13	556	20	0	589	17	326	55	0	398	1173
08:15 AM	35	18	10	0	63	16	32	48	0	96	17	618	10	0	645	12	351	54	0	417	1221
08:30 AM	34	20	7	0	61	14	25	60	0	99	15	534	11	0	560	10	380	40	0	430	1150
08:45 AM	47	8	18	0	73	17	25	33	0	75	10	539	15	0	564	19	386	41	0	446	1158
Total	153	61	41	0	255	69	124	205	0	398	55	2247	56	0	2358	58	1443	190	0	1691	4702
Grand Total	342	129	72	0	543	98	256	485	0	839	104	4887	153	0	5144	109	2806	367	0	3282	9808
Apprch %	63	23.8	13.3	0		11.7	30.5	57.8	0		2	95	3	0		3.3	85.5	11.2	0		
Total %	3.5	1.3	0.7	0	5.5	1	2.6	4.9	0	8.6	1.1	49.8	1.6	0	52.4	1.1	28.6	3.7	0	33.5	

Parker, CO
Parker & Pine Retail
AM Peak
Pine Lane and Parker Rd

File Name : Pine and Parker AM
Site Code : IPO 256
Start Date : 8/8/2017
Page No : 2



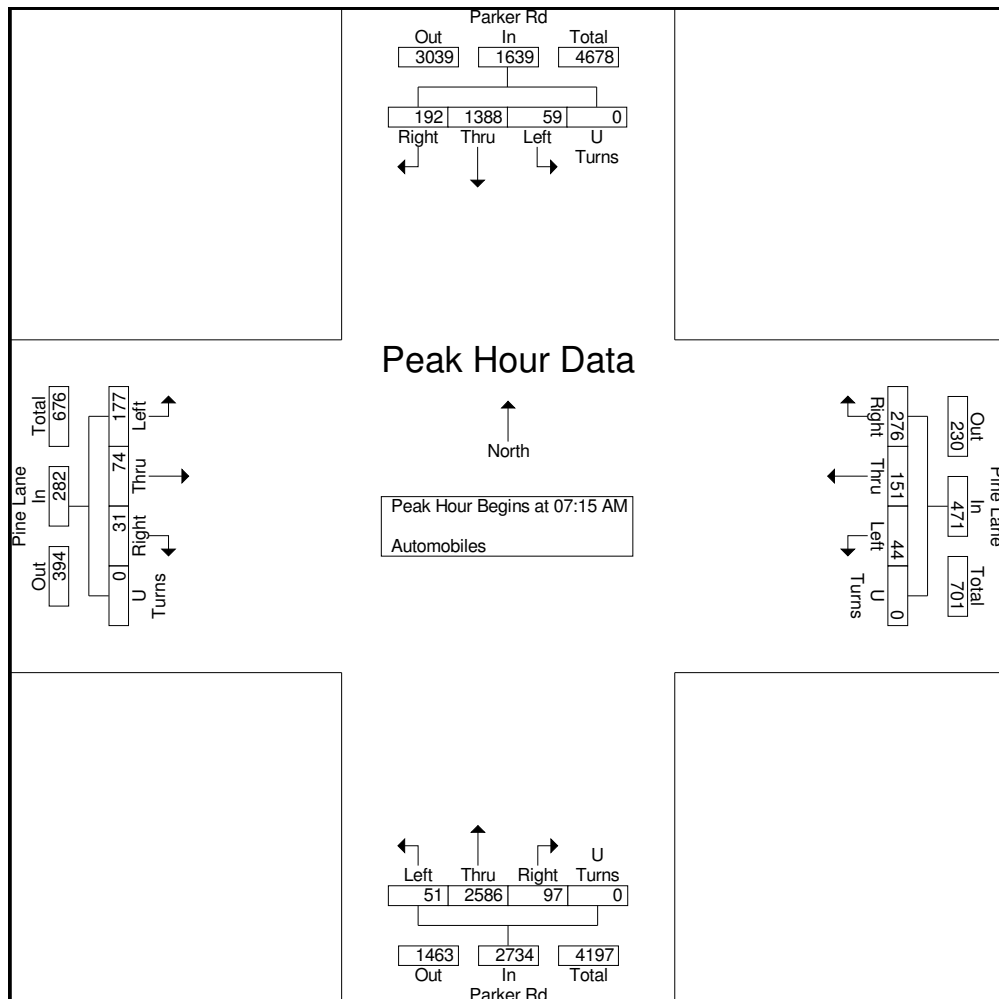


Morrison, CO 80465

Parker, CO
 Parker & Pine Retail
 AM Peak
 Pine Lane and Parker Rd

File Name : Pine and Parker AM
 Site Code : IPO 256
 Start Date : 8/8/2017
 Page No : 3

Start Time	Pine Lane Eastbound					Pine Lane Westbound					Parker Rd Northbound					Parker Rd Southbound					Int. Total
	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	59	14	7	0	80	7	33	73	0	113	9	702	24	0	735	14	319	41	0	374	1302
07:30 AM	36	15	5	0	56	9	38	67	0	114	13	653	15	0	681	16	366	41	0	423	1274
07:45 AM	45	30	13	0	88	6	38	72	0	116	16	675	38	0	729	12	377	55	0	444	1377
08:00 AM	37	15	6	0	58	22	42	64	0	128	13	556	20	0	589	17	326	55	0	398	1173
Total Volume	177	74	31	0	282	44	151	276	0	471	51	2586	97	0	2734	59	1388	192	0	1639	5126
% App. Total	62.8	26.2	11	0		9.3	32.1	58.6	0		1.9	94.6	3.5	0		3.6	84.7	11.7	0		
PHF	.750	.617	.596	.000	.801	.500	.899	.945	.000	.920	.797	.921	.638	.000	.930	.868	.920	.873	.000	.923	.931





Morrison, CO 80465

Parker, CO
 Parker & Pine Retail
 PM Peak
 Pine Lane and Parker Rd

File Name : Pine and Parker PM
 Site Code : IPO 256
 Start Date : 8/3/2017
 Page No : 1

Groups Printed- Automobiles

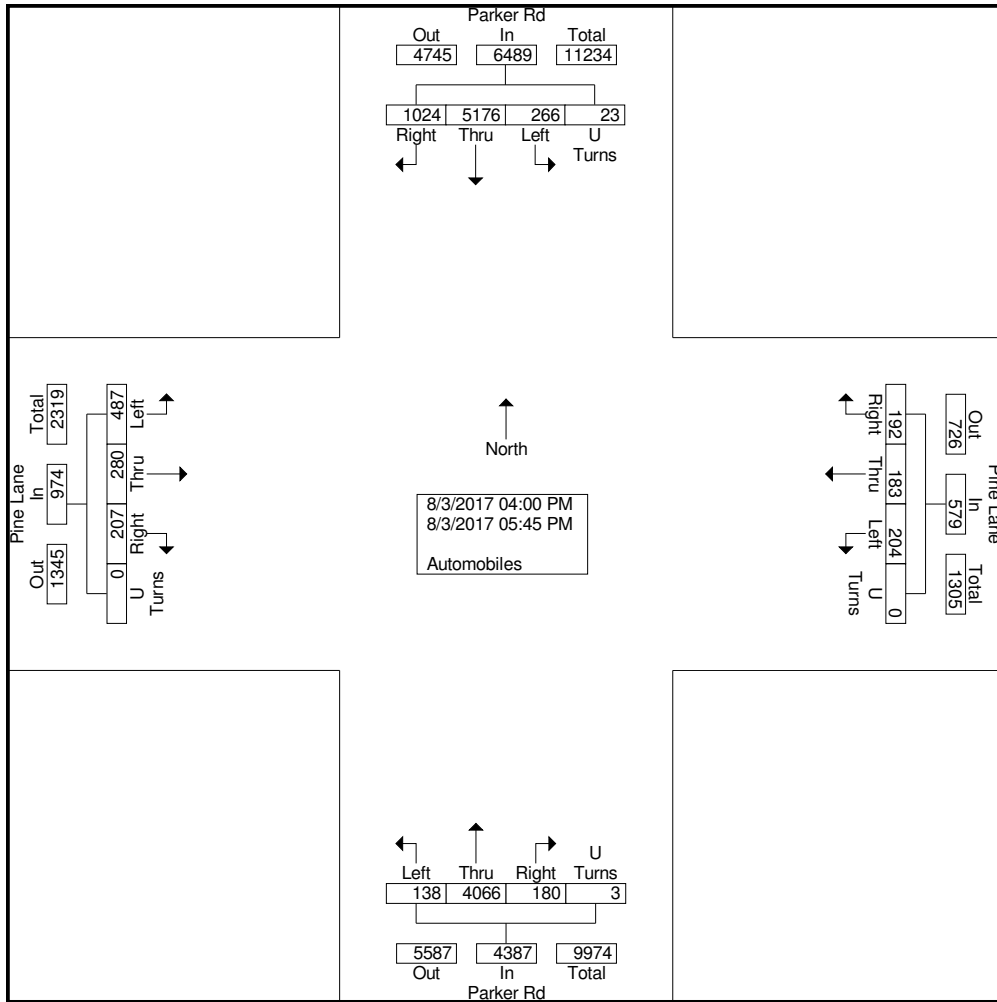
Start Time	Pine Lane Eastbound					Pine Lane Westbound					Parker Rd Northbound					Parker Rd Southbound					Int. Total
	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	
04:00 PM	49	23	29	0	101	19	20	28	0	67	10	525	20	0	555	29	666	86	5	786	1509
04:15 PM	59	39	25	0	123	22	26	19	0	67	16	484	16	0	516	30	586	117	2	735	1441
04:30 PM	63	29	17	0	109	28	16	20	0	64	18	539	21	0	578	27	694	102	3	826	1577
04:45 PM	68	40	21	0	129	26	29	19	0	74	16	474	18	0	508	44	663	130	4	841	1552
Total	239	131	92	0	462	95	91	86	0	272	60	2022	75	0	2157	130	2609	435	14	3188	6079
05:00 PM	68	35	38	0	141	23	27	26	0	76	22	564	33	1	620	37	669	143	1	850	1687
05:15 PM	64	53	22	0	139	30	21	25	0	76	15	478	28	2	523	43	618	143	5	809	1547
05:30 PM	52	33	28	0	113	25	24	25	0	74	19	526	26	0	571	18	680	151	2	851	1609
05:45 PM	64	28	27	0	119	31	20	30	0	81	22	476	18	0	516	38	600	152	1	791	1507
Total	248	149	115	0	512	109	92	106	0	307	78	2044	105	3	2230	136	2567	589	9	3301	6350
Grand Total	487	280	207	0	974	204	183	192	0	579	138	4066	180	3	4387	266	5176	1024	23	6489	12429
Apprch %	50	28.7	21.3	0		35.2	31.6	33.2	0		3.1	92.7	4.1	0.1		4.1	79.8	15.8	0.4		
Total %	3.9	2.3	1.7	0	7.8	1.6	1.5	1.5	0	4.7	1.1	32.7	1.4	0	35.3	2.1	41.6	8.2	0.2	52.2	



Morrison, CO 80465

Parker, CO
 Parker & Pine Retail
 PM Peak
 Pine Lane and Parker Rd

File Name : Pine and Parker PM
 Site Code : IPO 256
 Start Date : 8/3/2017
 Page No : 2



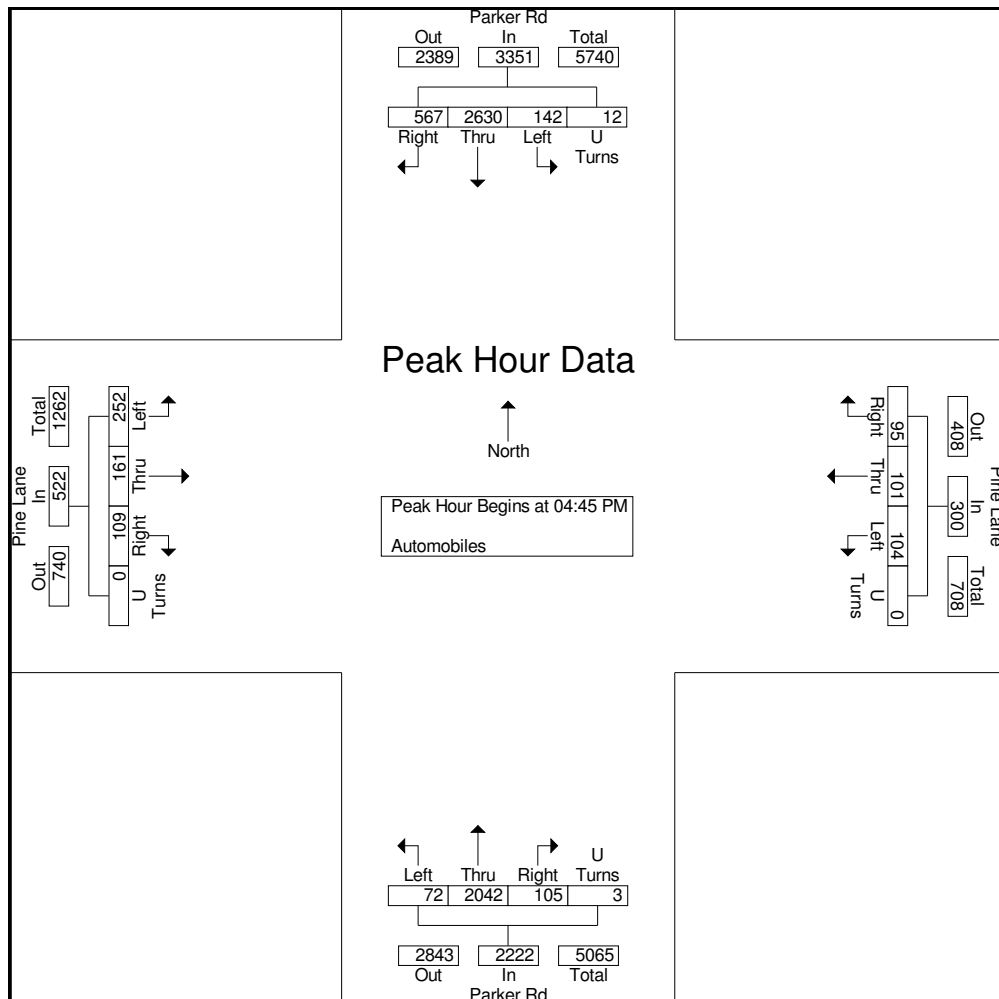


Morrison, CO 80465

Parker, CO
 Parker & Pine Retail
 PM Peak
 Pine Lane and Parker Rd

File Name : Pine and Parker PM
 Site Code : IPO 256
 Start Date : 8/3/2017
 Page No : 3

Start Time	Pine Lane Eastbound					Pine Lane Westbound					Parker Rd Northbound					Parker Rd Southbound					Int. Total
	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	68	40	21	0	129	26	29	19	0	74	16	474	18	0	508	44	663	130	4	841	1552
05:00 PM	68	35	38	0	141	23	27	26	0	76	22	564	33	1	620	37	669	143	1	850	1687
05:15 PM	64	53	22	0	139	30	21	25	0	76	15	478	28	2	523	43	618	143	5	809	1547
05:30 PM	52	33	28	0	113	25	24	25	0	74	19	526	26	0	571	18	680	151	2	851	1609
Total Volume	252	161	109	0	522	104	101	95	0	300	72	2042	105	3	2222	142	2630	567	12	3351	6395
% App. Total	48.3	30.8	20.9	0		34.7	33.7	31.7	0		3.2	91.9	4.7	0.1		4.2	78.5	16.9	0.4		
PHF	.926	.759	.717	.000	.926	.867	.871	.913	.000	.987	.818	.905	.795	.375	.896	.807	.967	.939	.600	.984	.948





Morrison, CO 80465

Parker, CO
 Parker & Pine Retail
 AM Peak
 Pine Lane and Twenty Mile Rd

File Name : Pine and Twenty Mile Rd AM
 Site Code : IPO 256
 Start Date : 8/8/2017
 Page No : 1

Groups Printed- Automobiles

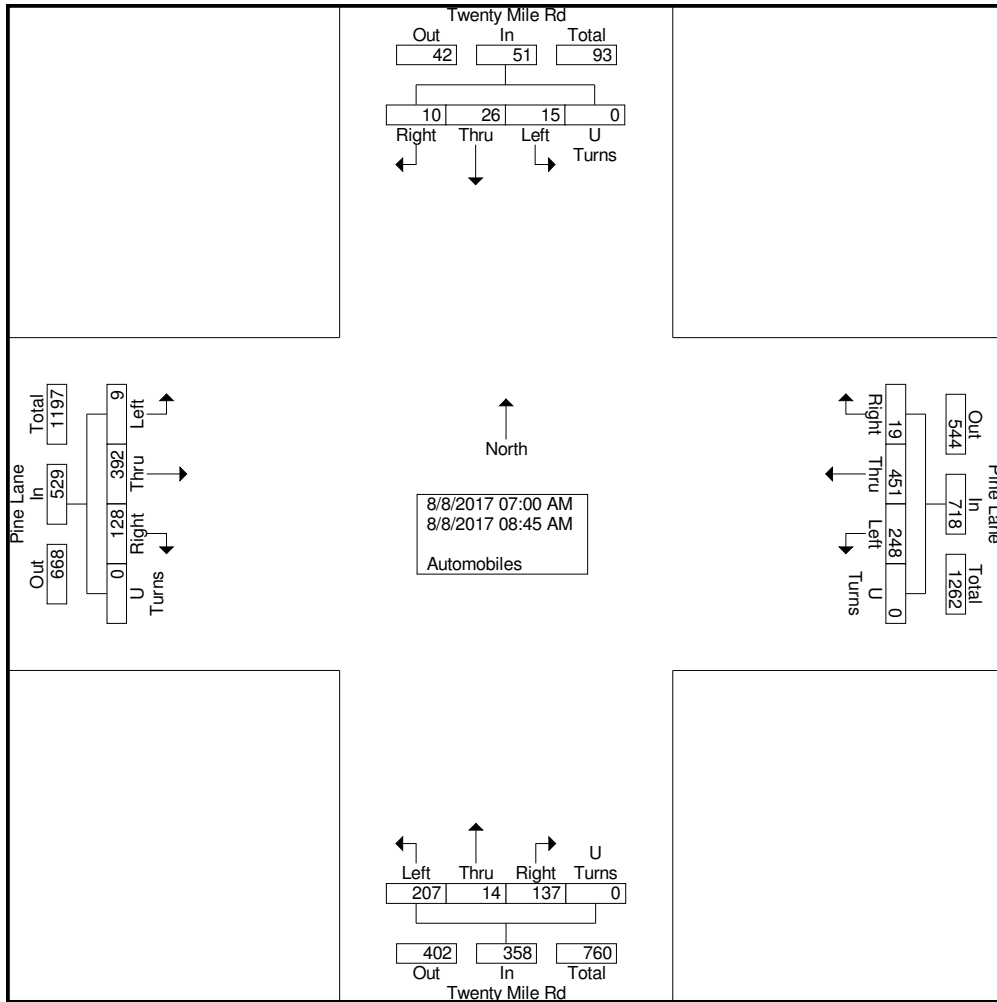
Start Time	Pine Lane Eastbound					Pine Lane Westbound					Twenty Mile Rd Northbound					Twenty Mile Rd Southbound					Int. Total
	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	
07:00 AM	1	46	12	0	59	27	43	2	0	72	23	5	16	0	44	2	2	0	0	4	179
07:15 AM	0	51	13	0	64	26	58	2	0	86	31	1	21	0	53	1	9	2	0	12	215
07:30 AM	0	47	12	0	59	29	58	2	0	89	38	4	23	0	65	2	4	3	0	9	222
07:45 AM	1	64	24	0	89	39	71	4	0	114	31	0	14	0	45	3	5	1	0	9	257
Total	2	208	61	0	271	121	230	10	0	361	123	10	74	0	207	8	20	6	0	34	873
08:00 AM	3	40	11	0	54	36	68	1	0	105	32	2	13	0	47	2	2	2	0	6	212
08:15 AM	1	49	21	0	71	33	70	2	0	105	24	0	20	0	44	1	2	1	0	4	224
08:30 AM	2	45	11	0	58	24	49	4	0	77	15	1	20	0	36	1	2	0	0	3	174
08:45 AM	1	50	24	0	75	34	34	2	0	70	13	1	10	0	24	3	0	1	0	4	173
Total	7	184	67	0	258	127	221	9	0	357	84	4	63	0	151	7	6	4	0	17	783
Grand Total	9	392	128	0	529	248	451	19	0	718	207	14	137	0	358	15	26	10	0	51	1656
Apprch %	1.7	74.1	24.2	0		34.5	62.8	2.6	0		57.8	3.9	38.3	0		29.4	51	19.6	0		
Total %	0.5	23.7	7.7	0	31.9	15	27.2	1.1	0	43.4	12.5	0.8	8.3	0	21.6	0.9	1.6	0.6	0	3.1	



Morrison, CO 80465

Parker, CO
Parker & Pine Retail
AM Peak
Pine Lane and Twenty Mile Rd

File Name : Pine and Twenty Mile Rd AM
Site Code : IPO 256
Start Date : 8/8/2017
Page No : 2



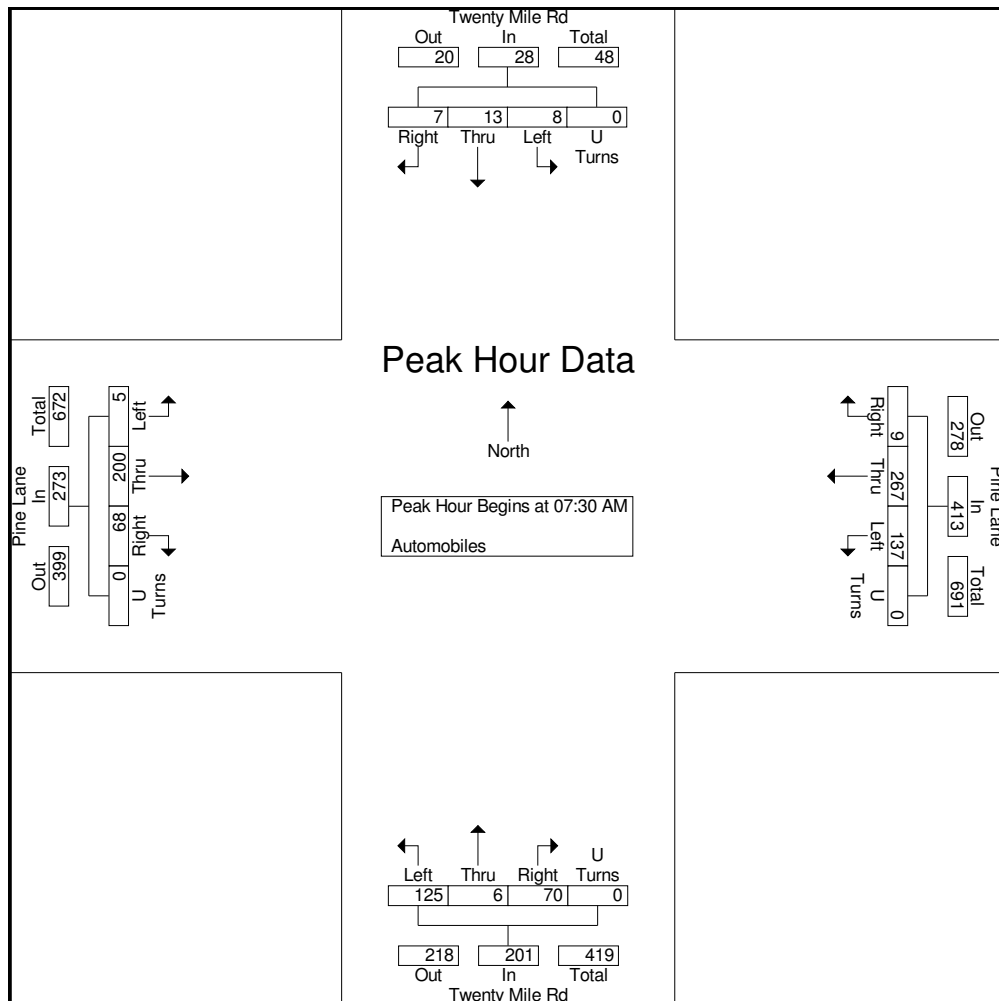


Morrison, CO 80465

Parker, CO
 Parker & Pine Retail
 AM Peak
 Pine Lane and Twenty Mile Rd

File Name : Pine and Twenty Mile Rd AM
 Site Code : IPO 256
 Start Date : 8/8/2017
 Page No : 3

Start Time	Pine Lane Eastbound					Pine Lane Westbound					Twenty Mile Rd Northbound					Twenty Mile Rd Southbound					Int. Total
	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	47	12	0	59	29	58	2	0	89	38	4	23	0	65	2	4	3	0	9	222
07:45 AM	1	64	24	0	89	39	71	4	0	114	31	0	14	0	45	3	5	1	0	9	257
08:00 AM	3	40	11	0	54	36	68	1	0	105	32	2	13	0	47	2	2	2	0	6	212
08:15 AM	1	49	21	0	71	33	70	2	0	105	24	0	20	0	44	1	2	1	0	4	224
Total Volume	5	200	68	0	273	137	267	9	0	413	125	6	70	0	201	8	13	7	0	28	915
% App. Total	1.8	73.3	24.9	0		33.2	64.6	2.2	0		62.2	3	34.8	0		28.6	46.4	25	0		
PHF	.417	.781	.708	.000	.767	.878	.940	.563	.000	.906	.822	.375	.761	.000	.773	.667	.650	.583	.000	.778	.890





Morrison, CO 80465

Parker, CO
 Parker & Pine Retail
 PM Peak
 Pine Lane and Twenty Mile Rd

File Name : Pine and Twenty Mile Rd PM
 Site Code : IPO 256
 Start Date : 8/3/2017
 Page No : 1

Groups Printed- Automobiles

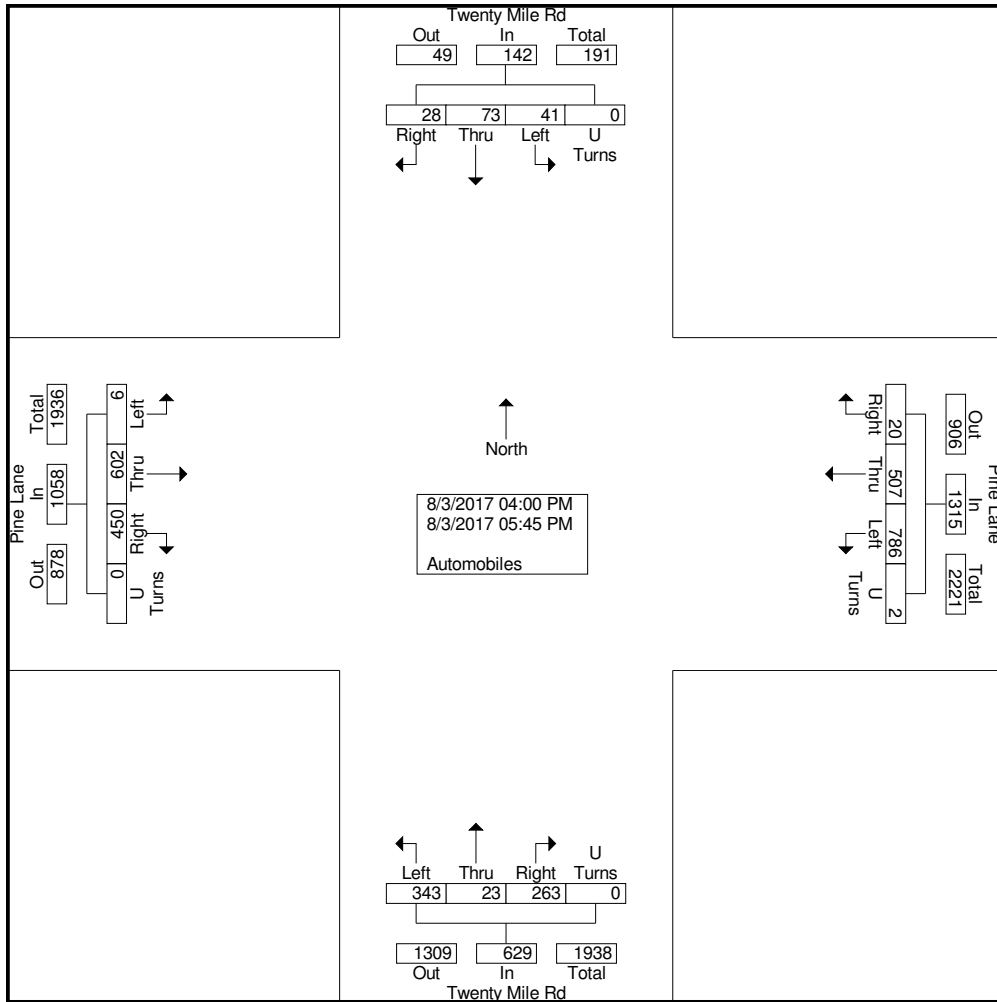
Start Time	Pine Lane Eastbound					Pine Lane Westbound					Twenty Mile Rd Northbound					Twenty Mile Rd Southbound					Int. Total
	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	
04:00 PM	0	73	48	0	121	66	56	1	0	123	39	4	26	0	69	6	5	3	0	14	327
04:15 PM	0	63	51	0	114	87	64	2	0	153	50	2	33	0	85	4	8	0	0	12	364
04:30 PM	1	82	57	0	140	82	50	3	0	135	36	5	36	0	77	3	4	2	0	9	361
04:45 PM	2	65	58	0	125	106	63	2	0	171	35	0	32	0	67	8	9	5	0	22	385
Total	3	283	214	0	500	341	233	8	0	582	160	11	127	0	298	21	26	10	0	57	1437
05:00 PM	0	76	63	0	139	104	59	2	0	165	43	3	53	0	99	6	7	5	0	18	421
05:15 PM	1	96	55	0	152	124	69	2	1	196	48	2	23	0	73	3	10	2	0	15	436
05:30 PM	2	75	69	0	146	111	70	3	0	184	50	7	33	0	90	7	12	3	0	22	442
05:45 PM	0	72	49	0	121	106	76	5	1	188	42	0	27	0	69	4	18	8	0	30	408
Total	3	319	236	0	558	445	274	12	2	733	183	12	136	0	331	20	47	18	0	85	1707
Grand Total	6	602	450	0	1058	786	507	20	2	1315	343	23	263	0	629	41	73	28	0	142	3144
Apprch %	0.6	56.9	42.5	0		59.8	38.6	1.5	0.2		54.5	3.7	41.8	0		28.9	51.4	19.7	0		
Total %	0.2	19.1	14.3	0	33.7	25	16.1	0.6	0.1	41.8	10.9	0.7	8.4	0	20	1.3	2.3	0.9	0	4.5	



Morrison, CO 80465

Parker, CO
Parker & Pine Retail
PM Peak
Pine Lane and Twenty Mile Rd

File Name : Pine and Twenty Mile Rd PM
Site Code : IPO 256
Start Date : 8/3/2017
Page No : 2



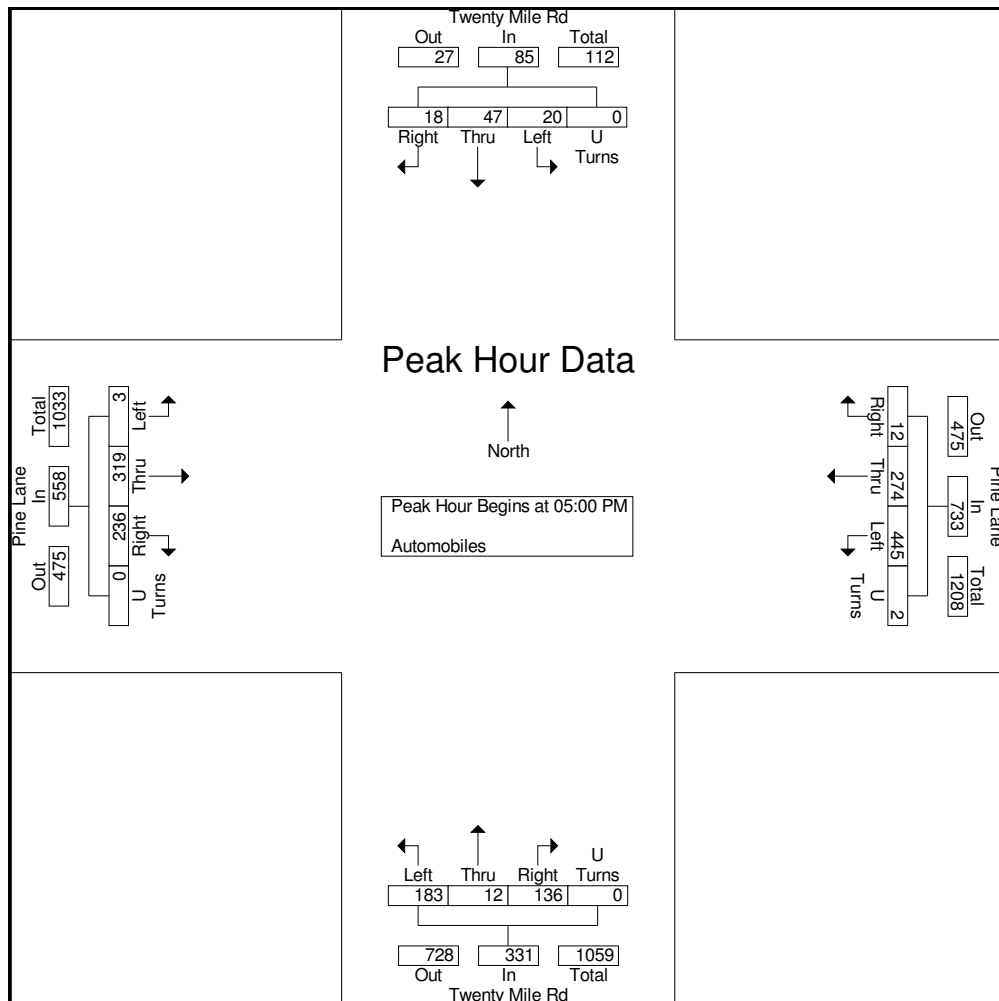


Morrison, CO 80465

Parker, CO
 Parker & Pine Retail
 PM Peak
 Pine Lane and Twenty Mile Rd

File Name : Pine and Twenty Mile Rd PM
 Site Code : IPO 256
 Start Date : 8/3/2017
 Page No : 3

Start Time	Pine Lane Eastbound					Pine Lane Westbound					Twenty Mile Rd Northbound					Twenty Mile Rd Southbound					Int. Total
	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	76	63	0	139	104	59	2	0	165	43	3	53	0	99	6	7	5	0	18	421
05:15 PM	1	96	55	0	152	124	69	2	1	196	48	2	23	0	73	3	10	2	0	15	436
05:30 PM	2	75	69	0	146	111	70	3	0	184	50	7	33	0	90	7	12	3	0	22	442
05:45 PM	0	72	49	0	121	106	76	5	1	188	42	0	27	0	69	4	18	8	0	30	408
Total Volume	3	319	236	0	558	445	274	12	2	733	183	12	136	0	331	20	47	18	0	85	1707
% App. Total	0.5	57.2	42.3	0		60.7	37.4	1.6	0.3		55.3	3.6	41.1	0		23.5	55.3	21.2	0		
PHF	.375	.831	.855	.000	.918	.897	.901	.600	.500	.935	.915	.429	.642	.000	.836	.714	.653	.563	.000	.708	.965

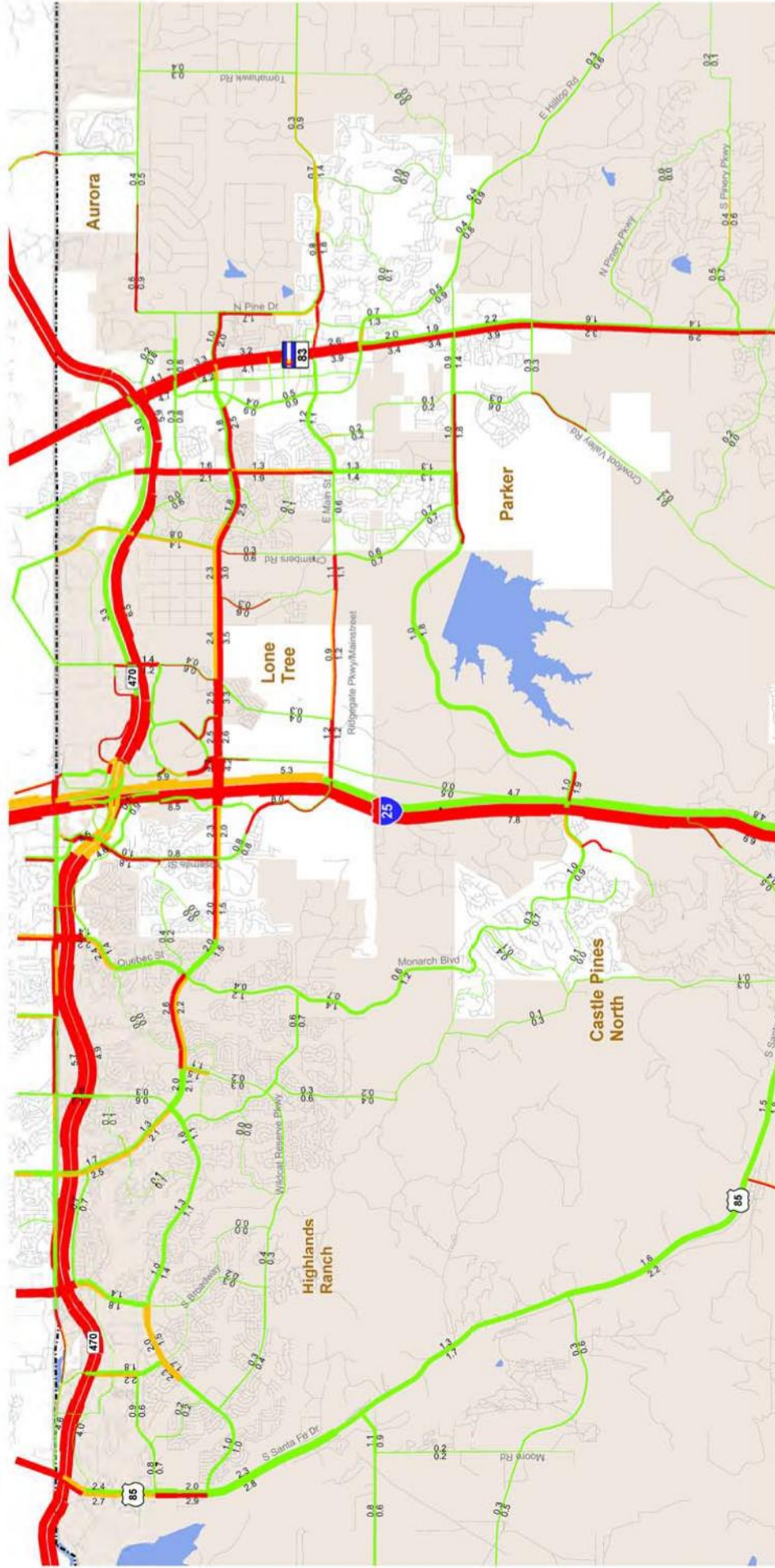
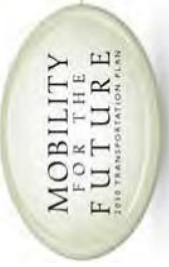


APPENDIX C

CDOT Traffic Data & Douglas County Transportation Plan
Maps

ROUTE	REFPT	ENDREFPT	AADT	AADTYR	YR20FACTOR	DHV	LOCATION
083A	61.448	62.075	60000	2016	1.25	9	ON SH 83 PARKER RD S/O E 470 TOLL RD PARKER

FIGURE 23: 2020 PM PEAK HOUR TRAFFIC FORECASTS AND CONGESTION LEVELS – NORTH CENTRAL DOUGLAS COUNTY



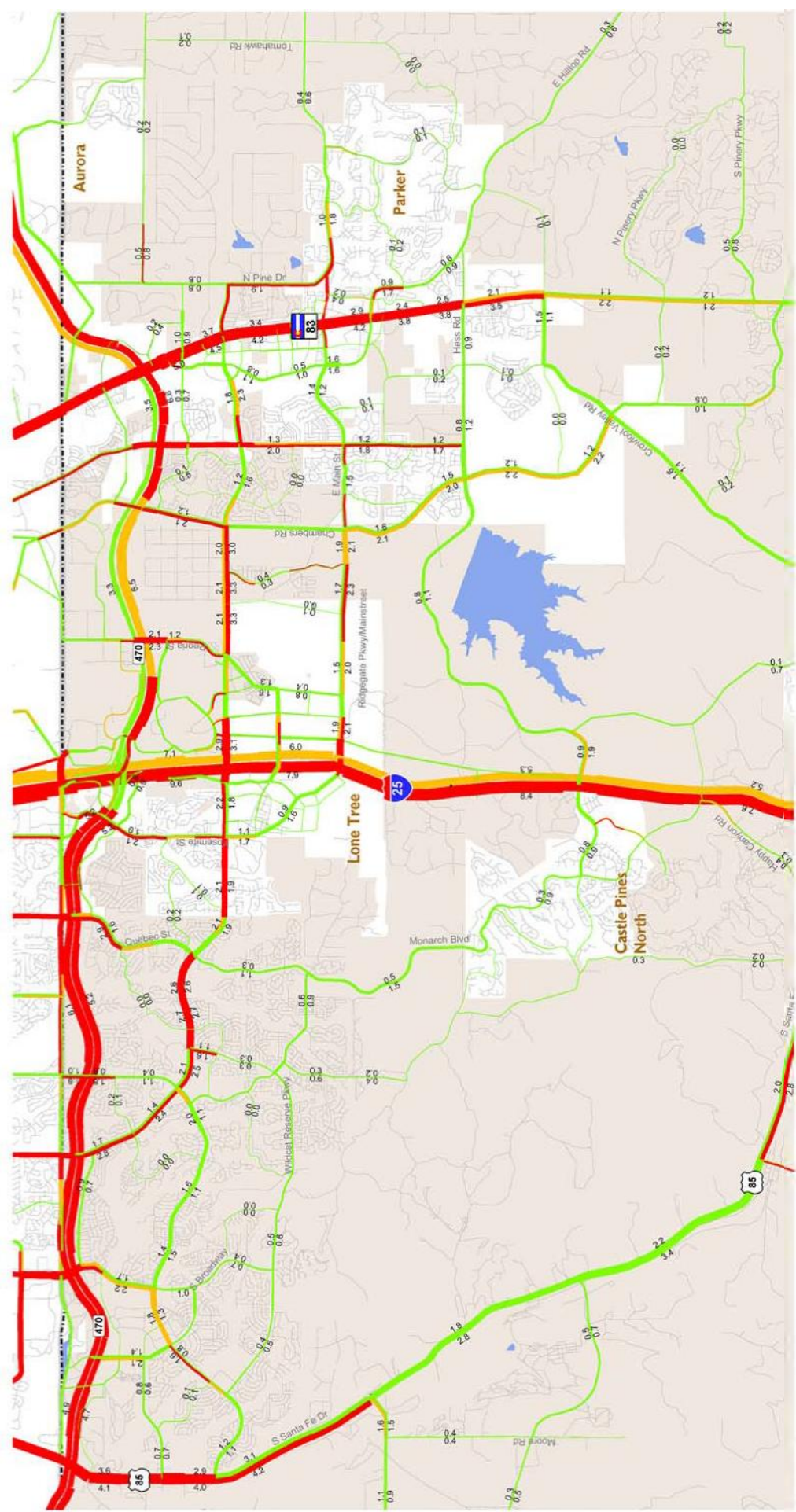
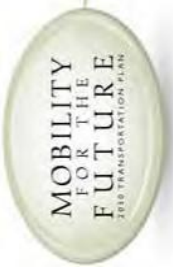
Legend
 Directional PM Peak Hour Level of Service
 Uncongested (A - C)
 Congesting (D)
 Congested (E - F)

Directional PM Peak Hour Traffic Volumes
 7,500 3,750 1,875
 X.X: Directional PM Peak Hour Traffic Volume in thousands

County Boundary
 Lakes
 Incorporated Areas

0 1.25 2.5
 Miles
 N

FIGURE 27: 2030 PM PEAK HOUR TRAFFIC FORECASTS AND CONGESTION LEVELS – NORTH CENTRAL DOUGLAS COUNTY



Legend
 Directional PM Peak Hour Level of Service
 Uncongested (A - C) [Green line]
 Congesting (D) [Orange line]
 Congested (E - F) [Red line]

Directional PM Peak Hour Traffic Volumes
 7,800 3,750 1,875
 X.X: Directional PM Peak Hour Traffic Volume in thousands

County Boundary
 Lakes [Blue area]
 Incorporated Areas [White area]

0 1.25 2.5
 Miles
 N

APPENDIX D

Trip Generation Worksheets

Land Use	Quantity	Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Total Trips								
Fast Food Restaurant w/ D.T. (934)	6,000 SF	2978	139	134	273	102	94	196
Gasoline Station (945)	16 pumps	2606	82	81	163	108	108	216
Medical Office Building (720)	35,000 SF	1266	66	18	84	35	90	125
Hotel (310)	124 rooms	1014	39	27	66	38	36	74
Shopping Center (820)	13,000 SF	556	7	5	12	23	25	48
Automated Car Wash (948)	6,400 SF	900	0	0	0	45	45	90
Total	-	9,320	333	265	598	351	398	749
Total Trips After 20% Internal Capture								
Fast Food Restaurant w/ D.T. (934)	6,000 SF	2382	111	107	218	82	75	157
Gasoline Station (945)	16 pumps	2085	66	65	130	86	86	173
Medical Office Building (720)	35,000 SF	1013	53	14	67	28	72	100
Hotel (310)	124 rooms	811	31	22	53	30	29	59
Shopping Center (820)	13,000 SF	445	6	4	10	18	20	38
Automated Car Wash (948)	6,400 SF	720	0	0	0	36	36	72
Total	-	7,456	266	212	478	281	318	599
Non Pass-By Trips								
Fast Food Restaurant w/ D.T. (934)	6,000 SF	1191	56	54	109	41	38	78
Gasoline Station (945)	16 pumps	834	26	26	52	35	35	69
Medical Office Building (720)	35,000 SF	1013	53	14	67	28	72	100
Hotel (310)	124 rooms	811	31	22	53	30	29	59
Shopping Center (820)	13,000 SF	311	6	4	10	12	13	25
Automated Car Wash (948)	6,400 SF	720	0	0	0	36	36	72
Total	-	4,880	171	120	291	182	222	404
Pass-By Trips								
Fast Food Restaurant w/ D.T. (934)	6,000 SF	1,191	56	54	109	41	38	78
Gasoline Station (945)	16 pumps	1,251	39	39	78	52	52	104
Shopping Center (820)	13,000 SF	133	0	0	0	8	8	16
Total	-	2,575	95	92	187	101	97	198
Total Trips		7,456	266	212	478	283	320	602

Project Parker and Pine



Trip generation for Hotel

Designed by Miranda Mooney

Date August 08, 2017

Job No. 096502001

Checked by _____

Date _____

Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE *Trip Generation 9th Edition*, Average Rate Equations

Land Use Code - 310 Hotel

Independent Variable - Room(s)

Number of Units (X) - 124

T = Trip Ends

Peak Hour Adjacent Street Traffic One Hour Between 7 and 9 AM

AM Peak

Directional Distribution:

$T = (X) * 0.53$ Trip Ends Per Room(s)

59% Entering 41% Exiting

T = 66 Trip Ends

39 Entering 27 Exiting

Peak Hour Adjacent Street Traffic One Hour Between 4 and 6 PM

PM Peak

Directional Distribution:

$T = (X) * 0.60$ Trip Ends Per Room(s)

51% Entering 49% Exiting

T = 74 Trip Ends

38 Entering 36 Exiting

Weekday

Daily Weekday

Directional Distribution:

$T = (X) * 8.17$ Trip Ends Per Room(s)

50% Entering 50% Exiting

T = 1014 Trip Ends

507 Entering 507 Exiting

Non-Pass-By Trip Percentage

Non-Pass-By Trip Volumes

AM 100%

AM Peak 39 Entering 27 Exiting

PM 100%

PM Peak 38 Entering 36 Exiting

Note: Rounding may occur in calculations

Project Parker and Pine



Trip generation for Medical-Dental Office Building

Designed by Miranda Mooney Date August 08, 2017

Job No. 096502001

Checked by _____ Date _____

Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE *Trip Generation 9th Edition*, Average Rate Equations

Land Use Code - 720 Medical-Dental Office Building

Independent Variable - 1,000 Sq Ft

Number of Units (X) - 35

T = Trip Ends

Peak Hour Adjacent Street Traffic One Hour Between 7 and 9 AM

AM Peak

Directional Distribution:

$T = (X) * 2.39$ Trip Ends Per 1,000 Sq Ft

79% Entering 21% Exiting

T = 84 Trip Ends

66 Entering 18 Exiting

Peak Hour Adjacent Street Traffic One Hour Between 4 and 6 PM

PM Peak

Directional Distribution:

$T = (X) * 3.57$ Trip Ends Per 1,000 Sq Ft

28% Entering 72% Exiting

T = 125 Trip Ends

35 Entering 90 Exiting

Weekday

Daily Weekday

Directional Distribution:

$T = (X) * 36.13$ Trip Ends Per 1,000 Sq Ft

50% Entering 50% Exiting

T = 1266 Trip Ends

633 Entering 633 Exiting

Non-Pass-By Trip Percentage

Non-Pass-By Trip Volumes

AM 100%

AM Peak 66 Entering 18 Exiting

PM 100%

PM Peak 35 Entering 90 Exiting

Note: Rounding may occur in calculations

Project Parker and Pine
 Trip generation for Shopping Center
 Designed by Miranda Mooney Date 8/8/2017
 Checked by _____ Date _____



Job No. 096502001
 Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE *Trip Generation 9th Edition*, Fitted Curve Equations

Land Use Code - 820 Shopping Center

Independent Variable - 1,000 Sq Ft GLA

Number of Units (X) - 13

T = Trip Ends

Peak Hour Adjacent Street Traffic One Hour Between 7 and 9 AM

AM Peak	$R^2 = 0.56$	Directional Distribution:	
$\ln(T) = 0.61\ln(X) + 2.24$	Trip Ends Per 1,000 Sq Ft GLA	62% Entering	38% Exiting
T = 45	Trip Ends	28 Entering	17 Exiting

Peak Hour Adjacent Street Traffic One Hour Between 4 and 6 PM

PM Peak	$R^2 = 0.81$	Directional Distribution:	
$\ln(T) = 0.67\ln(X) + 3.31$	Trip Ends Per 1,000 Sq Ft GLA	48% Entering	52% Exiting
T = 153	Trip Ends	73 Entering	79 Exiting

Weekday

Daily Weekday	$R^2 = 0.79$	Directional Distribution:	
$\ln(T) = 0.65\ln(X) + 5.83$	Trip Ends Per 1,000 Sq Ft GLA	50% Entering	50% Exiting
T = 1804	Trip Ends	902 Entering	902 Exiting

Non-Pass-By Trip Percentage

AM 100%
 PM 66%

Non-Pass-By Trip Volumes

AM Peak	28 Entering	17 Exiting
PM Peak	48 Entering	52 Exiting

Note: Rounding may occur in calculations

Project Parker and Pine



Trip generation for Fast-Food Restaurant w/ D.T.

Designed by Miranda Mooney Date August 08, 2017

Job No. 096502001

Checked by _____ Date _____

Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE *Trip Generation 9th Edition*, Average Rate Equations

Land Use Code - 934 Fast-Food Restaurant w/ D.T.

Independent Variable - 1,000 Sq Ft

Number of Units (X) - 6

T = Trip Ends

Peak Hour Adjacent Street Traffic One Hour Between 7 and 9 AM

AM Peak

Directional Distribution:

T = (X) * 45.42 Trip Ends Per 1,000 Sq Ft

51% Entering 49% Exiting

T = 273 Trip Ends

139 Entering 134 Exiting

Peak Hour Adjacent Street Traffic One Hour Between 4 and 6 PM

PM Peak

Directional Distribution:

T = (X) * 32.65 Trip Ends Per 1,000 Sq Ft

52% Entering 48% Exiting

T = 196 Trip Ends

102 Entering 94 Exiting

Weekday

Daily Weekday

Directional Distribution:

T = (X) * 496.12 Trip Ends Per 1,000 Sq Ft

50% Entering 50% Exiting

T = 2978 Trip Ends

1489 Entering 1489 Exiting

Non-Pass-By Trip Percentage

Non-Pass-By Trip Volumes

AM 51%

AM Peak

71 Entering

68 Exiting

PM 50%

PM Peak

51 Entering

47 Exiting

Note: Rounding may occur in calculations

Project Parker and Pine



Trip generation for Gasoline Station w/ Convenience Market

Designed by Miranda Mooney Date August 08, 2017

Job No. 096502001

Checked by _____ Date _____

Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE *Trip Generation 9th Edition*, Average Rate Equations

Land Use Code - 945 Gasoline Station w/ Convenience Market

Independent Variable - Fueling Position(s)

Number of Units (X) - 16

T = Trip Ends

Peak Hour Adjacent Street Traffic One Hour Between 7 and 9 AM

AM Peak

Directional Distribution:

T = (X) * 10.16 Trip Ends Per Fueling Position(s)

50% Entering

50% Exiting

T = 163 Trip Ends

82 Entering

81 Exiting

Peak Hour Adjacent Street Traffic One Hour Between 4 and 6 PM

PM Peak

Directional Distribution:

T = (X) * 13.51 Trip Ends Per Fueling Position(s)

50% Entering

50% Exiting

T = 216 Trip Ends

108 Entering

108 Exiting

Weekday

Daily Weekday

Directional Distribution:

T = (X) * 162.78 Trip Ends Per Fueling Position(s)

50% Entering

50% Exiting

T = 2606 Trip Ends

1303 Entering

1303 Exiting

Non-Pass-By Trip Percentage

Non-Pass-By Trip Volumes

AM 38%

AM Peak

31 Entering

31 Exiting

PM 44%

PM Peak

48 Entering

47 Exiting

Note: Rounding may occur in calculations

Project Parker and Pine



Trip generation for Automated Car Wash

Designed by Miranda Mooney Date August 08, 2017

Job No. 096502001

Checked by _____ Date _____

Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE *Trip Generation 9th Edition*, Average Rate Equations

Land Use Code - 948 Automated Car Wash

Independent Variable - 1,000 Sq Ft

Number of Units (X) - 6.4

T = Trip Ends

Peak Hour Adjacent Street Traffic One Hour Between 7 and 9 AM

AM Peak

Directional Distribution:

$T = (X) * *$ Trip Ends Per 1,000 Sq Ft

0% Entering 0% Exiting

T = 0 Trip Ends

0 Entering 0 Exiting

Peak Hour Adjacent Street Traffic One Hour Between 4 and 6 PM

PM Peak

Directional Distribution:

$T = (X) * 14.12$ Trip Ends Per 1,000 Sq Ft

50% Entering 50% Exiting

T = 90 Trip Ends

45 Entering 45 Exiting

Weekday

Daily Weekday

Directional Distribution:

$T = (X) * *$ Trip Ends Per 1,000 Sq Ft

50% Entering 50% Exiting

T = 0 Trip Ends

0 Entering 0 Exiting

Non-Pass-By Trip Percentage

Non-Pass-By Trip Volumes

AM 100%

AM Peak 0 Entering

0 Exiting

PM 100%

PM Peak 45 Entering

45 Exiting

























Note: Rounding may occur in calculations

APPENDIX E

Intersection Analysis Worksheets

























HCM 2010 Signalized Intersection Summary
 1: Parker Road & Pine Lane

2017 Ex AM.syn
 08/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	177	74	31	44	151	276	51	2586	97	59	1388	192
Future Volume (veh/h)	177	74	31	44	151	276	51	2586	97	59	1388	192
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	236	119	0	88	168	0	64	2811	0	68	1509	0
Adj No. of Lanes	2	2	1	2	2	1	1	3	1	2	3	1
Peak Hour Factor	0.75	0.62	0.60	0.50	0.90	0.95	0.80	0.92	0.64	0.87	0.92	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	272	398	178	137	259	116	82	3358	1109	129	3312	1157
Arrive On Green	0.08	0.11	0.00	0.04	0.07	0.00	0.05	0.66	0.00	0.04	0.65	0.00
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	236	119	0	88	168	0	64	2811	0	68	1509	0
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1695	1583	1721	1695	1583
Q Serve(g_s), s	8.1	3.7	0.0	3.0	5.5	0.0	4.3	50.4	0.0	2.3	17.7	0.0
Cycle Q Clear(g_c), s	8.1	3.7	0.0	3.0	5.5	0.0	4.3	50.4	0.0	2.3	17.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	272	398	178	137	259	116	82	3358	1109	129	3312	1157
V/C Ratio(X)	0.87	0.30	0.00	0.64	0.65	0.00	0.78	0.84	0.00	0.53	0.46	0.00
Avail Cap(c_a), veh/h	272	602	269	204	531	237	146	3358	1109	143	3312	1157
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.6	48.9	0.0	56.8	54.1	0.0	56.6	15.5	0.0	56.7	10.4	0.0
Incr Delay (d2), s/veh	22.5	0.4	0.0	4.9	2.7	0.0	14.4	2.7	0.0	3.3	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	1.8	0.0	1.5	2.8	0.0	2.4	24.0	0.0	1.2	8.4	0.0
LnGrp Delay(d),s/veh	77.1	49.3	0.0	61.6	56.8	0.0	71.1	18.1	0.0	60.1	10.8	0.0
LnGrp LOS	E	D		E	E		E	B		E	B	
Approach Vol, veh/h		355			256			2875			1577	
Approach Delay, s/veh		67.8			58.5			19.3			13.0	
Approach LOS		E			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	83.7	9.3	18.0	10.1	82.7	14.0	13.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	69.5	7.1	20.4	9.9	64.6	9.5	18.0				
Max Q Clear Time (g_c+I1), s	4.3	52.4	5.0	5.7	6.3	19.7	10.1	7.5				
Green Ext Time (p_c), s	0.0	16.9	0.0	1.5	0.0	43.8	0.0	1.2				
Intersection Summary												
HCM 2010 Ctrl Delay			22.7									
HCM 2010 LOS			C									

























HCM 2010 Signalized Intersection Summary
 1: Parker Road & Pine Lane

2017 Ex PM.syn
 08/09/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	252	161	109	104	101	95	75	2042	105	154	2630	567
Future Volume (veh/h)	252	161	109	104	101	95	75	2042	105	154	2630	567
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	271	212	0	120	116	0	91	2244	0	190	2711	0
Adj No. of Lanes	2	2	1	2	2	1	1	3	1	2	3	1
Peak Hour Factor	0.93	0.76	0.72	0.87	0.87	0.91	0.82	0.91	0.80	0.81	0.97	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	321	366	164	174	215	96	105	3178	1070	245	3238	1156
Arrive On Green	0.03	0.03	0.00	0.05	0.06	0.00	0.06	0.62	0.00	0.07	0.64	0.00
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	271	212	0	120	116	0	91	2244	0	190	2711	0
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1695	1583	1721	1695	1583
Q Serve(g_s), s	9.4	7.1	0.0	4.1	3.8	0.0	6.1	35.5	0.0	6.5	49.8	0.0
Cycle Q Clear(g_c), s	9.4	7.1	0.0	4.1	3.8	0.0	6.1	35.5	0.0	6.5	49.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	321	366	164	174	215	96	105	3178	1070	245	3238	1156
V/C Ratio(X)	0.84	0.58	0.00	0.69	0.54	0.00	0.87	0.71	0.00	0.78	0.84	0.00
Avail Cap(c_a), veh/h	321	605	270	250	531	237	105	3178	1070	258	3238	1156
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.3	55.4	0.0	56.0	54.7	0.0	56.0	15.1	0.0	54.8	17.0	0.0
Incr Delay (d2), s/veh	15.9	1.2	0.0	4.8	2.1	0.0	48.7	1.3	0.0	13.3	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	3.5	0.0	2.1	1.9	0.0	4.4	16.8	0.0	3.5	23.9	0.0
LnGrp Delay(d),s/veh	73.2	56.6	0.0	60.8	56.8	0.0	104.7	16.5	0.0	68.1	19.7	0.0
LnGrp LOS	E	E		E	E		F	B		E	B	
Approach Vol, veh/h		483			236			2335			2901	
Approach Delay, s/veh		65.9			58.9			19.9			22.9	
Approach LOS		E			E			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	79.5	10.6	16.9	11.6	80.9	15.7	11.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.0	63.8	8.7	20.5	7.1	65.7	11.2	18.0				
Max Q Clear Time (g_c+I1), s	8.5	37.5	6.1	9.1	8.1	51.8	11.4	5.8				
Green Ext Time (p_c), s	0.0	26.0	0.1	1.4	0.0	13.9	0.0	1.5				
Intersection Summary												
HCM 2010 Ctrl Delay			26.6									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
 1: Parker Road & Pine Lane

2022 Bk AM.syn
 08/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	187	78	33	46	159	292	54	2731	102	62	1466	203
Future Volume (veh/h)	187	78	33	46	159	292	54	2731	102	62	1466	203
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	249	126	0	92	177	0	68	2968	0	71	1593	0
Adj No. of Lanes	2	2	1	2	2	1	1	3	1	2	3	1
Peak Hour Factor	0.75	0.62	0.60	0.50	0.90	0.95	0.80	0.92	0.64	0.87	0.92	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	272	403	180	142	269	121	87	3341	1106	130	3283	1147
Arrive On Green	0.08	0.11	0.00	0.04	0.08	0.00	0.05	0.66	0.00	0.04	0.65	0.00
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	249	126	0	92	177	0	68	2968	0	71	1593	0
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1695	1583	1721	1695	1583
Q Serve(g_s), s	8.6	3.9	0.0	3.2	5.8	0.0	4.5	57.7	0.0	2.4	19.4	0.0
Cycle Q Clear(g_c), s	8.6	3.9	0.0	3.2	5.8	0.0	4.5	57.7	0.0	2.4	19.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	272	403	180	142	269	121	87	3341	1106	130	3283	1147
V/C Ratio(X)	0.91	0.31	0.00	0.65	0.66	0.00	0.78	0.89	0.00	0.55	0.49	0.00
Avail Cap(c_a), veh/h	272	596	267	209	531	237	151	3341	1106	143	3283	1147
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.8	48.8	0.0	56.7	53.9	0.0	56.4	17.0	0.0	56.7	11.0	0.0
Incr Delay (d2), s/veh	30.7	0.4	0.0	4.9	2.7	0.0	13.8	4.0	0.0	3.5	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	1.9	0.0	1.6	3.0	0.0	2.6	27.9	0.0	1.2	9.2	0.0
LnGrp Delay(d),s/veh	85.6	49.2	0.0	61.5	56.6	0.0	70.2	20.9	0.0	60.3	11.5	0.0
LnGrp LOS	F	D		E	E		E	C		E	B	
Approach Vol, veh/h		375			269			3036			1664	
Approach Delay, s/veh		73.4			58.3			22.0			13.6	
Approach LOS		E			E			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	83.3	9.5	18.2	10.4	82.0	14.0	13.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	69.5	7.3	20.2	10.2	64.3	9.5	18.0				
Max Q Clear Time (g_c+I1), s	4.4	59.7	5.2	5.9	6.5	21.4	10.6	7.8				
Green Ext Time (p_c), s	0.0	9.8	0.0	1.6	0.0	42.3	0.0	1.3				
Intersection Summary												
HCM 2010 Ctrl Delay			24.8									
HCM 2010 LOS			C									

























HCM 2010 Signalized Intersection Summary
 1: Parker Road & Pine Lane

2022 Bk PM.syn
 08/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	266	170	115	110	107	100	79	2157	111	163	2778	599
Future Volume (veh/h)	266	170	115	110	107	100	79	2157	111	163	2778	599
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	286	224	0	126	123	0	96	2370	0	201	2864	0
Adj No. of Lanes	2	2	1	2	2	1	1	3	1	2	3	1
Peak Hour Factor	0.93	0.76	0.72	0.87	0.87	0.91	0.82	0.91	0.80	0.81	0.97	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	321	368	165	181	224	100	105	3148	1063	256	3225	1152
Arrive On Green	0.03	0.03	0.00	0.05	0.06	0.00	0.06	0.62	0.00	0.07	0.63	0.00
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	286	224	0	126	123	0	96	2370	0	201	2864	0
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1695	1583	1721	1695	1583
Q Serve(g_s), s	9.9	7.5	0.0	4.3	4.0	0.0	6.5	39.9	0.0	6.9	56.6	0.0
Cycle Q Clear(g_c), s	9.9	7.5	0.0	4.3	4.0	0.0	6.5	39.9	0.0	6.9	56.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	321	368	165	181	224	100	105	3148	1063	256	3225	1152
V/C Ratio(X)	0.89	0.61	0.00	0.70	0.55	0.00	0.91	0.75	0.00	0.79	0.89	0.00
Avail Cap(c_a), veh/h	321	599	268	255	531	237	105	3148	1063	275	3225	1152
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.5	55.5	0.0	55.9	54.5	0.0	56.1	16.3	0.0	54.6	18.4	0.0
Incr Delay (d2), s/veh	21.9	1.4	0.0	4.8	2.1	0.0	61.3	1.7	0.0	13.1	4.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	3.8	0.0	2.2	2.0	0.0	5.0	18.9	0.0	3.7	27.5	0.0
LnGrp Delay(d),s/veh	79.5	56.9	0.0	60.7	56.6	0.0	117.4	18.0	0.0	67.7	22.5	0.0
LnGrp LOS	E	E		E	E		F	B		E	C	
Approach Vol, veh/h		510			249			2466			3065	
Approach Delay, s/veh		69.6			58.7			21.9			25.4	
Approach LOS		E			E			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.4	78.8	10.8	17.0	11.6	80.6	15.7	12.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.6	63.2	8.9	20.3	7.1	65.7	11.2	18.0				
Max Q Clear Time (g_c+I1), s	8.9	41.9	6.3	9.5	8.5	58.6	11.9	6.0				
Green Ext Time (p_c), s	0.0	21.2	0.1	1.5	0.0	7.1	0.0	1.5				
Intersection Summary												
HCM 2010 Ctrl Delay			28.9									
HCM 2010 LOS			C									

























HCM 2010 Signalized Intersection Summary
 1: Parker Road & Pine Lane

2022 Total AM.syn
 08/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	286	87	33	51	167	287	154	2683	100	61	1509	230
Future Volume (veh/h)	286	87	33	51	167	287	154	2683	100	61	1509	230
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	381	140	0	102	186	0	192	2916	0	70	1640	0
Adj No. of Lanes	2	2	1	2	2	1	1	3	1	2	3	1
Peak Hour Factor	0.75	0.62	0.60	0.50	0.90	0.95	0.80	0.92	0.64	0.87	0.92	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	387	518	232	154	278	124	219	3160	1055	129	2722	1026
Arrive On Green	0.11	0.15	0.00	0.04	0.08	0.00	0.12	0.62	0.00	0.04	0.54	0.00
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	381	140	0	102	186	0	192	2916	0	70	1640	0
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1695	1583	1721	1695	1583
Q Serve(g_s), s	13.3	4.2	0.0	3.5	6.1	0.0	12.8	61.1	0.0	2.4	26.5	0.0
Cycle Q Clear(g_c), s	13.3	4.2	0.0	3.5	6.1	0.0	12.8	61.1	0.0	2.4	26.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	387	518	232	154	278	124	219	3160	1055	129	2722	1026
V/C Ratio(X)	0.98	0.27	0.00	0.66	0.67	0.00	0.87	0.92	0.00	0.54	0.60	0.00
Avail Cap(c_a), veh/h	387	702	314	221	531	237	251	3160	1055	143	2722	1026
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.1	45.5	0.0	56.4	53.8	0.0	51.7	20.2	0.0	56.7	19.1	0.0
Incr Delay (d2), s/veh	41.3	0.3	0.0	4.8	2.8	0.0	25.0	5.8	0.0	3.5	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	2.1	0.0	1.8	3.1	0.0	7.8	30.1	0.0	1.2	12.6	0.0
LnGrp Delay(d),s/veh	94.5	45.8	0.0	61.3	56.6	0.0	76.7	26.0	0.0	60.2	20.1	0.0
LnGrp LOS	F	D		E	E		E	C		E	C	
Approach Vol, veh/h		521			288			3108			1710	
Approach Delay, s/veh		81.4			58.2			29.1			21.8	
Approach LOS		F			E			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	79.1	9.9	22.1	19.3	68.7	18.0	13.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	65.5	7.7	23.8	17.0	53.5	13.5	18.0				
Max Q Clear Time (g_c+I1), s	4.4	63.1	5.5	6.2	14.8	28.5	15.3	8.1				
Green Ext Time (p_c), s	0.0	2.4	0.0	1.7	0.1	24.6	0.0	1.3				
Intersection Summary												
HCM 2010 Ctrl Delay			33.2									
HCM 2010 LOS			C									

























HCM 2010 Signalized Intersection Summary
 1: Parker Road & Pine Lane

2022 Total PM.syn
 08/09/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	387	185	115	116	112	99	168	2126	109	161	2825	629
Future Volume (veh/h)	387	185	115	116	112	99	168	2126	109	161	2825	629
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	416	243	0	133	129	0	205	2336	0	199	2912	0
Adj No. of Lanes	2	2	1	2	2	1	1	3	1	2	3	1
Peak Hour Factor	0.93	0.76	0.72	0.87	0.87	0.91	0.82	0.91	0.80	0.81	0.97	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	359	408	183	188	233	104	170	3089	1048	250	2970	1090
Arrive On Green	0.03	0.04	0.00	0.05	0.07	0.00	0.10	0.61	0.00	0.07	0.58	0.00
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	416	243	0	133	129	0	205	2336	0	199	2912	0
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1695	1583	1721	1695	1583
Q Serve(g_s), s	12.5	8.1	0.0	4.6	4.2	0.0	11.5	40.0	0.0	6.8	66.9	0.0
Cycle Q Clear(g_c), s	12.5	8.1	0.0	4.6	4.2	0.0	11.5	40.0	0.0	6.8	66.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	359	408	183	188	233	104	170	3089	1048	250	2970	1090
V/C Ratio(X)	1.16	0.60	0.00	0.71	0.55	0.00	1.21	0.76	0.00	0.80	0.98	0.00
Avail Cap(c_a), veh/h	359	631	282	261	531	237	170	3089	1048	250	2970	1090
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.9	55.0	0.0	55.8	54.3	0.0	54.3	17.1	0.0	54.8	24.3	0.0
Incr Delay (d2), s/veh	98.7	1.4	0.0	5.1	2.0	0.0	135.1	1.8	0.0	16.4	12.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	4.1	0.0	2.3	2.1	0.0	12.0	19.1	0.0	3.8	34.4	0.0
LnGrp Delay(d),s/veh	156.7	56.3	0.0	60.9	56.4	0.0	189.4	18.9	0.0	71.2	36.8	0.0
LnGrp LOS	F	E		E	E		F	B		E	D	
Approach Vol, veh/h		659			262			2541			3111	
Approach Delay, s/veh		119.7			58.7			32.6			39.0	
Approach LOS		F			E			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.2	77.4	11.1	18.3	16.0	74.6	17.0	12.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	8.7	62.8	9.1	21.4	11.5	60.0	12.5	18.0				
Max Q Clear Time (g_c+I1), s	8.8	42.0	6.6	10.1	13.5	68.9	14.5	6.2				
Green Ext Time (p_c), s	0.0	20.7	0.1	1.6	0.0	0.0	0.0	1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			45.4									
HCM 2010 LOS			D									

























HCM 2010 Signalized Intersection Summary
 1: Parker Road & Pine Lane

2040 Bk AM.syn
 08/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	228	95	40	57	194	355	66	3326	125	76	1785	247
Future Volume (veh/h)	228	95	40	57	194	355	66	3326	125	76	1785	247
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	248	103	0	62	211	0	72	3615	0	83	1940	0
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	215	394	176	125	301	135	130	3373	1108	134	3379	1151
Arrive On Green	0.06	0.11	0.00	0.04	0.09	0.00	0.04	0.66	0.00	0.04	0.66	0.00
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	248	103	0	62	211	0	72	3615	0	83	1940	0
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	7.5	3.2	0.0	2.1	7.0	0.0	2.5	79.6	0.0	2.8	24.8	0.0
Cycle Q Clear(g_c), s	7.5	3.2	0.0	2.1	7.0	0.0	2.5	79.6	0.0	2.8	24.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	215	394	176	125	301	135	130	3373	1108	134	3379	1151
V/C Ratio(X)	1.15	0.26	0.00	0.50	0.70	0.00	0.55	1.07	0.00	0.62	0.57	0.00
Avail Cap(c_a), veh/h	215	584	261	163	531	237	169	3373	1108	143	3379	1151
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	56.3	48.8	0.0	56.7	53.4	0.0	56.7	20.2	0.0	56.8	10.9	0.0
Incr Delay (d2), s/veh	105.9	0.3	0.0	3.0	2.9	0.0	3.6	38.9	0.0	7.1	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	1.6	0.0	1.1	3.5	0.0	1.2	49.0	0.0	1.5	11.7	0.0
LnGrp Delay(d),s/veh	162.1	49.1	0.0	59.7	56.3	0.0	60.3	59.1	0.0	63.8	11.6	0.0
LnGrp LOS	F	D		E	E		E	F		E	B	
Approach Vol, veh/h		351			273			3687			2023	
Approach Delay, s/veh		129.0			57.1			59.1			13.8	
Approach LOS		F			E			E			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	84.1	8.9	17.9	9.0	84.2	12.0	14.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	71.5	5.7	19.8	5.9	70.6	7.5	18.0				
Max Q Clear Time (g_c+I1), s	4.8	81.6	4.1	5.2	4.5	26.8	9.5	9.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.0	43.6	0.0	1.3				
Intersection Summary												
HCM 2010 Ctrl Delay			48.4									
HCM 2010 LOS			D									

























HCM 2010 Signalized Intersection Summary
 1: Parker Road & Pine Lane

2040 Bk PM.syn
 08/09/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	324	207	140	134	130	122	96	2626	135	198	3382	729
Future Volume (veh/h)	324	207	140	134	130	122	96	2626	135	198	3382	729
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	352	225	0	146	141	0	104	2854	0	215	3676	0
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	349	156	201	247	110	143	3197	1088	221	3311	1170
Arrive On Green	0.09	0.10	0.00	0.06	0.07	0.00	0.04	0.63	0.00	0.06	0.65	0.00
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	352	225	0	146	141	0	104	2854	0	215	3676	0
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	10.5	7.3	0.0	5.0	4.6	0.0	3.6	57.0	0.0	7.5	78.1	0.0
Cycle Q Clear(g_c), s	10.5	7.3	0.0	5.0	4.6	0.0	3.6	57.0	0.0	7.5	78.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	301	349	156	201	247	110	143	3197	1088	221	3311	1170
V/C Ratio(X)	1.17	0.64	0.00	0.72	0.57	0.00	0.73	0.89	0.00	0.97	1.11	0.00
Avail Cap(c_a), veh/h	301	578	259	255	531	237	143	3197	1088	221	3311	1170
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.8	52.1	0.0	55.5	54.1	0.0	56.8	18.9	0.0	56.0	20.9	0.0
Incr Delay (d2), s/veh	101.7	1.7	0.0	7.3	2.1	0.0	16.6	4.3	0.0	52.9	54.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	3.7	0.0	2.6	2.3	0.0	2.0	27.7	0.0	5.2	52.9	0.0
LnGrp Delay(d),s/veh	156.5	53.7	0.0	62.8	56.2	0.0	73.4	23.2	0.0	108.9	75.5	0.0
LnGrp LOS	F	D		E	E		E	C		F	F	
Approach Vol, veh/h		577			287			2958			3891	
Approach Delay, s/veh		116.4			59.6			24.9			77.3	
Approach LOS		F			E			C			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.2	79.9	11.5	16.3	9.5	82.6	15.0	12.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.7	65.8	8.9	19.6	5.0	68.5	10.5	18.0				
Max Q Clear Time (g_c+I1), s	9.5	59.0	7.0	9.3	5.6	80.1	12.5	6.6				
Green Ext Time (p_c), s	0.0	6.8	0.1	1.6	0.0	0.0	0.0	1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			59.5									
HCM 2010 LOS			E									

























HCM 2010 Signalized Intersection Summary
 1: Parker Road & Pine Lane

2040 Total AM.syn
 08/14/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	325	104	40	63	202	351	165	3285	123	75	1831	276
Future Volume (veh/h)	325	104	40	63	202	351	165	3285	123	75	1831	276
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	353	113	0	68	220	0	179	3571	0	82	1990	0
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	487	218	129	309	138	237	3235	1066	134	3083	1098
Arrive On Green	0.03	0.05	0.00	0.04	0.09	0.00	0.07	0.64	0.00	0.04	0.61	0.00
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	353	113	0	68	220	0	179	3571	0	82	1990	0
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	10.5	3.7	0.0	2.3	7.3	0.0	6.1	76.3	0.0	2.8	30.4	0.0
Cycle Q Clear(g_c), s	10.5	3.7	0.0	2.3	7.3	0.0	6.1	76.3	0.0	2.8	30.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	301	487	218	129	309	138	237	3235	1066	134	3083	1098
V/C Ratio(X)	1.17	0.23	0.00	0.53	0.71	0.00	0.76	1.10	0.00	0.61	0.65	0.00
Avail Cap(c_a), veh/h	301	667	298	169	531	237	324	3235	1066	143	3083	1098
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.3	51.2	0.0	56.7	53.3	0.0	54.9	21.8	0.0	56.8	15.3	0.0
Incr Delay (d2), s/veh	107.0	0.2	0.0	3.3	3.0	0.0	6.6	52.0	0.0	6.7	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	1.8	0.0	1.2	3.7	0.0	3.1	50.9	0.0	1.5	14.5	0.0
LnGrp Delay(d),s/veh	165.2	51.4	0.0	60.1	56.3	0.0	61.5	73.9	0.0	63.5	16.3	0.0
LnGrp LOS	F	D		E	E		E	F		E	B	
Approach Vol, veh/h		466			288			3750			2072	
Approach Delay, s/veh		137.6			57.2			73.3			18.2	
Approach LOS		F			E			E			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	80.8	9.0	21.0	12.8	77.3	15.0	15.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	68.5	5.9	22.6	11.3	62.2	10.5	18.0				
Max Q Clear Time (g_c+I1), s	4.8	78.3	4.3	5.7	8.1	32.4	12.5	9.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.2	29.7	0.0	1.2				
Intersection Summary												
HCM 2010 Ctrl Delay			59.8									
HCM 2010 LOS			E									

























HCM 2010 Signalized Intersection Summary
 1: Parker Road & Pine Lane

2040 Total PM.syn
 08/14/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	446	222	140	140	135	121	184	2599	133	196	3432	761
Future Volume (veh/h)	446	222	140	140	135	121	184	2599	133	196	3432	761
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	485	241	0	152	147	0	200	2825	0	213	3730	0
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	359	406	181	209	252	113	158	3156	1079	186	3198	1161
Arrive On Green	0.03	0.04	0.00	0.06	0.07	0.00	0.05	0.62	0.00	0.05	0.63	0.00
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	485	241	0	152	147	0	200	2825	0	213	3730	0
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	12.5	8.0	0.0	5.2	4.8	0.0	5.5	56.9	0.0	6.5	75.5	0.0
Cycle Q Clear(g_c), s	12.5	8.0	0.0	5.2	4.8	0.0	5.5	56.9	0.0	6.5	75.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	359	406	181	209	252	113	158	3156	1079	186	3198	1161
V/C Ratio(X)	1.35	0.59	0.00	0.73	0.58	0.00	1.27	0.90	0.00	1.14	1.17	0.00
Avail Cap(c_a), veh/h	359	602	269	290	531	237	158	3156	1079	186	3198	1161
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.9	55.0	0.0	55.4	54.0	0.0	57.3	19.4	0.0	56.8	22.3	0.0
Incr Delay (d2), s/veh	176.1	1.4	0.0	5.6	2.1	0.0	161.0	4.4	0.0	109.5	78.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.7	4.0	0.0	2.6	2.4	0.0	6.1	27.7	0.0	5.9	58.2	0.0
LnGrp Delay(d),s/veh	234.1	56.4	0.0	61.0	56.2	0.0	218.2	23.9	0.0	166.2	100.8	0.0
LnGrp LOS	F	E		E	E		F	C		F	F	
Approach Vol, veh/h		726			299			3025			3943	
Approach Delay, s/veh		175.1			58.6			36.7			104.4	
Approach LOS		F			E			D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	79.0	11.8	18.3	10.0	80.0	17.0	13.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.5	65.0	10.1	20.4	5.5	66.0	12.5	18.0				
Max Q Clear Time (g_c+I1), s	8.5	58.9	7.2	10.0	7.5	77.5	14.5	6.8				
Green Ext Time (p_c), s	0.0	6.1	0.1	1.6	0.0	0.0	0.0	1.7				
Intersection Summary												
HCM 2010 Ctrl Delay				83.5								
HCM 2010 LOS				F								

























HCM 2010 Signalized Intersection Summary
2: Twenty Mile Road & Pine Lane

2017 Ex AM.syn
08/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	200	68	137	267	9	125	6	70	8	13	7
Future Volume (veh/h)	5	200	68	137	267	9	125	6	70	8	13	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	12	256	0	156	284	0	152	16	0	12	20	0
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.42	0.78	0.71	0.88	0.94	0.56	0.82	0.38	0.76	0.67	0.65	0.58
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	439	196	312	726	348	905	2004	1047	828	1838	845
Arrive On Green	0.01	0.12	0.00	0.10	0.21	0.00	0.06	0.57	0.00	0.01	0.52	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	12	256	0	156	284	0	152	16	0	12	20	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.5	6.1	0.0	6.6	6.2	0.0	3.4	0.2	0.0	0.3	0.2	0.0
Cycle Q Clear(g_c), s	0.5	6.1	0.0	6.6	6.2	0.0	3.4	0.2	0.0	0.3	0.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	241	439	196	312	726	348	905	2004	1047	828	1838	845
V/C Ratio(X)	0.05	0.58	0.00	0.50	0.39	0.00	0.17	0.01	0.00	0.01	0.01	0.00
Avail Cap(c_a), veh/h	363	885	396	428	1160	542	1082	2004	1047	951	1838	845
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.95	0.95	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.6	37.2	0.0	28.8	30.9	0.0	7.9	8.5	0.0	9.8	10.5	0.0
Incr Delay (d2), s/veh	0.1	1.2	0.0	1.2	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.1	0.0	3.3	3.1	0.0	1.6	0.1	0.0	0.1	0.1	0.0
LnGrp Delay(d),s/veh	33.7	38.5	0.0	30.0	31.2	0.0	8.0	8.5	0.0	9.9	10.5	0.0
LnGrp LOS	C	D		C	C		A	A		A	B	
Approach Vol, veh/h		268			440			168			32	
Approach Delay, s/veh		38.2			30.8			8.1			10.2	
Approach LOS		D			C			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	55.5	13.1	15.7	10.0	51.2	5.8	23.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	27.5	14.5	22.5	14.5	20.5	7.5	29.5				
Max Q Clear Time (g_c+I1), s	2.3	2.2	8.6	8.1	5.4	2.2	2.5	8.2				
Green Ext Time (p_c), s	0.0	0.1	0.2	3.0	0.2	0.1	0.0	3.5				
Intersection Summary												
HCM 2010 Ctrl Delay			28.1									
HCM 2010 LOS			C									

























HCM 2010 Signalized Intersection Summary
2: Twenty Mile Road & Pine Lane

2017 Ex PM.syn
08/09/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	319	236	447	274	12	183	12	136	20	47	18
Future Volume (veh/h)	3	319	236	447	274	12	183	12	136	20	47	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	8	384	0	497	304	0	199	28	0	28	72	0
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.38	0.83	0.86	0.90	0.90	0.60	0.92	0.43	0.64	0.71	0.65	0.56
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	228	499	223	543	1356	647	686	1528	1083	617	1318	605
Arrive On Green	0.01	0.14	0.00	0.08	0.13	0.00	0.08	0.43	0.00	0.03	0.37	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	8	384	0	497	304	0	199	28	0	28	72	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.5	12.5	0.0	26.8	9.3	0.0	8.0	0.5	0.0	1.2	1.6	0.0
Cycle Q Clear(g_c), s	0.5	12.5	0.0	26.8	9.3	0.0	8.0	0.5	0.0	1.2	1.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	499	223	543	1356	647	686	1528	1083	617	1318	605
V/C Ratio(X)	0.04	0.77	0.00	0.92	0.22	0.00	0.29	0.02	0.00	0.05	0.05	0.00
Avail Cap(c_a), veh/h	292	634	284	754	1784	838	750	1528	1083	654	1318	605
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.87	0.87	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.5	49.7	0.0	37.0	36.4	0.0	18.8	19.5	0.0	22.1	24.1	0.0
Incr Delay (d2), s/veh	0.1	4.4	0.0	11.2	0.1	0.0	0.2	0.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	6.4	0.0	14.7	4.6	0.0	3.9	0.3	0.0	0.6	0.8	0.0
LnGrp Delay(d),s/veh	43.5	54.1	0.0	48.2	36.5	0.0	19.0	19.5	0.0	22.1	24.2	0.0
LnGrp LOS	D	D		D	D		B	B		C	C	
Approach Vol, veh/h		392			801			227			100	
Approach Delay, s/veh		53.9			43.7			19.1			23.6	
Approach LOS		D			D			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	56.3	34.7	21.4	14.7	49.2	5.7	50.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	30.5	44.5	21.5	14.5	21.5	5.5	60.5				
Max Q Clear Time (g_c+I1), s	3.2	2.5	28.8	14.5	10.0	3.6	2.5	11.3				
Green Ext Time (p_c), s	0.0	0.5	1.4	2.4	0.2	0.4	0.0	4.8				
Intersection Summary												
HCM 2010 Ctrl Delay			41.3									
HCM 2010 LOS			D									

























HCM 2010 Signalized Intersection Summary
 2: Twenty Mile Road & Pine Lane

2022 Bk AM.syn
 08/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	211	72	145	282	10	132	6	74	8	14	7
Future Volume (veh/h)	5	211	72	145	282	10	132	6	74	8	14	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	12	271	0	165	300	0	161	16	0	12	22	0
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.42	0.78	0.71	0.88	0.94	0.56	0.82	0.38	0.76	0.67	0.65	0.58
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	459	205	320	760	363	891	1969	1039	810	1793	825
Arrive On Green	0.01	0.13	0.00	0.10	0.21	0.00	0.06	0.56	0.00	0.01	0.51	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	12	271	0	165	300	0	161	16	0	12	22	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.5	6.5	0.0	6.9	6.5	0.0	3.7	0.2	0.0	0.3	0.3	0.0
Cycle Q Clear(g_c), s	0.5	6.5	0.0	6.9	6.5	0.0	3.7	0.2	0.0	0.3	0.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	245	459	205	320	760	363	891	1969	1039	810	1793	825
V/C Ratio(X)	0.05	0.59	0.00	0.52	0.39	0.00	0.18	0.01	0.00	0.01	0.01	0.00
Avail Cap(c_a), veh/h	367	885	396	429	1160	542	1043	1969	1039	933	1793	825
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.94	0.94	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.2	36.9	0.0	28.3	30.3	0.0	8.2	8.9	0.0	10.4	11.0	0.0
Incr Delay (d2), s/veh	0.1	1.2	0.0	1.2	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.2	0.0	3.5	3.2	0.0	1.8	0.1	0.0	0.1	0.1	0.0
LnGrp Delay(d),s/veh	33.3	38.1	0.0	29.5	30.6	0.0	8.3	8.9	0.0	10.4	11.0	0.0
LnGrp LOS	C	D		C	C		A	A		B	B	
Approach Vol, veh/h		283			465			177				34
Approach Delay, s/veh		37.9			30.2			8.4				10.8
Approach LOS		D			C			A				B
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	54.6	13.5	16.2	10.3	50.1	5.8	23.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	27.5	14.5	22.5	13.5	21.5	7.5	29.5				
Max Q Clear Time (g_c+I1), s	2.3	2.2	8.9	8.5	5.7	2.3	2.5	8.5				
Green Ext Time (p_c), s	0.0	0.1	0.2	3.2	0.2	0.1	0.0	3.7				
Intersection Summary												
HCM 2010 Ctrl Delay			27.8									
HCM 2010 LOS			C									

























HCM 2010 Signalized Intersection Summary
2: Twenty Mile Road & Pine Lane

2022 Bk PM.syn
08/09/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	337	249	472	289	13	193	13	144	21	50	19
Future Volume (veh/h)	3	337	249	472	289	13	193	13	144	21	50	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	8	406	0	524	321	0	210	30	0	30	77	0
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.38	0.83	0.86	0.90	0.90	0.60	0.92	0.43	0.64	0.71	0.65	0.56
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	232	519	232	570	1432	682	657	1449	1072	579	1216	559
Arrive On Green	0.01	0.15	0.00	0.09	0.13	0.00	0.09	0.41	0.00	0.03	0.34	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	8	406	0	524	321	0	210	30	0	30	77	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.5	13.3	0.0	28.7	9.7	0.0	8.8	0.6	0.0	1.3	1.8	0.0
Cycle Q Clear(g_c), s	0.5	13.3	0.0	28.7	9.7	0.0	8.8	0.6	0.0	1.3	1.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	232	519	232	570	1432	682	657	1449	1072	579	1216	559
V/C Ratio(X)	0.03	0.78	0.00	0.92	0.22	0.00	0.32	0.02	0.00	0.05	0.06	0.00
Avail Cap(c_a), veh/h	290	634	284	753	1796	845	722	1449	1072	607	1216	559
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.85	0.85	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.9	49.4	0.0	38.0	35.2	0.0	20.5	21.1	0.0	24.2	26.4	0.0
Incr Delay (d2), s/veh	0.1	5.2	0.0	12.0	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	6.9	0.0	19.2	4.8	0.0	4.3	0.3	0.0	0.6	0.9	0.0
LnGrp Delay(d),s/veh	43.0	54.5	0.0	49.9	35.2	0.0	20.8	21.1	0.0	24.3	26.5	0.0
LnGrp LOS	D	D		D	D		C	C		C	C	
Approach Vol, veh/h		414			845			240			107	
Approach Delay, s/veh		54.3			44.4			20.8			25.9	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	53.6	36.6	22.1	15.5	45.7	5.7	53.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	30.9	44.5	21.5	15.5	20.5	5.1	60.9				
Max Q Clear Time (g_c+I1), s	3.3	2.6	30.7	15.3	10.8	3.8	2.5	11.7				
Green Ext Time (p_c), s	0.0	0.6	1.5	2.3	0.2	0.4	0.0	5.2				
Intersection Summary												
HCM 2010 Ctrl Delay			42.2									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
2: Twenty Mile Road & Pine Lane

2022 Total AM.syn
08/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	220	81	145	284	12	142	10	74	11	19	7
Future Volume (veh/h)	5	220	81	145	284	12	142	10	74	11	19	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	12	282	0	165	302	0	173	26	0	16	29	0
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.42	0.78	0.71	0.88	0.94	0.56	0.82	0.38	0.76	0.67	0.65	0.58
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	429	192	282	726	352	946	2173	1127	881	2029	929
Arrive On Green	0.01	0.12	0.00	0.03	0.07	0.00	0.06	0.61	0.00	0.02	0.57	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	12	282	0	165	302	0	173	26	0	16	29	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.7	9.1	0.0	9.4	9.8	0.0	4.6	0.3	0.0	0.4	0.4	0.0
Cycle Q Clear(g_c), s	0.7	9.1	0.0	9.4	9.8	0.0	4.6	0.3	0.0	0.4	0.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	429	192	282	726	352	946	2173	1127	881	2029	929
V/C Ratio(X)	0.06	0.66	0.00	0.58	0.42	0.00	0.18	0.01	0.00	0.02	0.01	0.00
Avail Cap(c_a), veh/h	331	900	402	457	1312	614	1206	2173	1127	991	2029	929
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.2	50.3	0.0	42.1	49.0	0.0	8.3	9.0	0.0	10.2	11.0	0.0
Incr Delay (d2), s/veh	0.1	1.7	0.0	1.9	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	4.6	0.0	4.8	4.9	0.0	2.2	0.2	0.0	0.2	0.2	0.0
LnGrp Delay(d),s/veh	45.3	52.1	0.0	44.1	49.4	0.0	8.4	9.0	0.0	10.2	11.0	0.0
LnGrp LOS	D	D		D	D		A	A		B	B	
Approach Vol, veh/h		294			467			199				45
Approach Delay, s/veh		51.8			47.5			8.4				10.7
Approach LOS		D			D			A				B
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.6	78.2	16.2	19.1	11.4	73.3	6.1	29.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	38.5	23.5	30.5	24.5	23.5	9.5	44.5				
Max Q Clear Time (g_c+I1), s	2.4	2.3	11.4	11.1	6.6	2.4	2.7	11.8				
Green Ext Time (p_c), s	0.0	0.3	0.3	3.4	0.4	0.2	0.0	3.9				
Intersection Summary												
HCM 2010 Ctrl Delay			39.4									
HCM 2010 LOS			D									

























HCM 2010 Signalized Intersection Summary
 2: Twenty Mile Road & Pine Lane

2022 Total PM.syn
 08/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	346	258	472	294	18	211	20	144	25	56	19
Future Volume (veh/h)	3	346	258	472	294	18	211	20	144	25	56	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	8	417	0	524	327	0	229	47	0	35	86	0
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.38	0.83	0.86	0.90	0.90	0.60	0.92	0.43	0.64	0.71	0.65	0.56
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	531	238	570	1443	691	650	1429	1063	560	1176	541
Arrive On Green	0.01	0.15	0.00	0.09	0.13	0.00	0.10	0.40	0.00	0.03	0.33	0.00
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	8	417	0	524	327	0	229	47	0	35	86	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.5	13.6	0.0	28.7	9.9	0.0	9.8	1.0	0.0	1.5	2.0	0.0
Cycle Q Clear(g_c), s	0.5	13.6	0.0	28.7	9.9	0.0	9.8	1.0	0.0	1.5	2.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	531	238	570	1443	691	650	1429	1063	560	1176	541
V/C Ratio(X)	0.03	0.79	0.00	0.92	0.23	0.00	0.35	0.03	0.00	0.06	0.07	0.00
Avail Cap(c_a), veh/h	293	646	289	738	1778	841	710	1429	1063	585	1176	541
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.5	49.1	0.0	38.0	35.0	0.0	21.0	21.6	0.0	25.0	27.4	0.0
Incr Delay (d2), s/veh	0.1	5.2	0.0	14.2	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	7.0	0.0	19.5	4.9	0.0	4.8	0.5	0.0	0.8	1.0	0.0
LnGrp Delay(d),s/veh	42.6	54.4	0.0	52.2	35.1	0.0	21.3	21.7	0.0	25.0	27.5	0.0
LnGrp LOS	D	D		D	D		C	C		C	C	
Approach Vol, veh/h		425			851			276			121	
Approach Delay, s/veh		54.1			45.6			21.4			26.8	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	53.0	36.6	22.5	16.5	44.4	5.7	53.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	31.5	43.5	21.9	16.1	20.5	5.1	60.3				
Max Q Clear Time (g_c+I1), s	3.5	3.0	30.7	15.6	11.8	4.0	2.5	11.9				
Green Ext Time (p_c), s	0.0	0.7	1.4	2.4	0.2	0.6	0.0	5.3				
Intersection Summary												
HCM 2010 Ctrl Delay			42.4									
HCM 2010 LOS			D									

























HCM 2010 Signalized Intersection Summary
 2: Twenty Mile Road & Pine Lane

2022 Total AM_improved.syn
 08/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	220	81	145	284	12	142	10	74	11	19	7
Future Volume (veh/h)	5	220	81	145	284	12	142	10	74	11	19	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	12	282	0	165	302	0	173	26	0	16	29	0
Adj No. of Lanes	1	2	1	2	2	1	1	2	1	1	2	1
Peak Hour Factor	0.42	0.78	0.71	0.88	0.94	0.56	0.82	0.38	0.76	0.67	0.65	0.58
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	433	194	424	596	294	996	2303	1125	937	2172	993
Arrive On Green	0.01	0.12	0.00	0.02	0.06	0.00	0.05	0.65	0.00	0.02	0.61	0.00
Sat Flow, veh/h	1774	3539	1583	3442	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	12	282	0	165	302	0	173	26	0	16	29	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.7	9.1	0.0	4.9	10.0	0.0	4.1	0.3	0.0	0.4	0.4	0.0
Cycle Q Clear(g_c), s	0.7	9.1	0.0	4.9	10.0	0.0	4.1	0.3	0.0	0.4	0.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	176	433	194	424	596	294	996	2303	1125	937	2172	993
V/C Ratio(X)	0.07	0.65	0.00	0.39	0.51	0.00	0.17	0.01	0.00	0.02	0.01	0.00
Avail Cap(c_a), veh/h	307	988	442	663	1135	535	1336	2303	1125	1061	2172	993
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.2	50.2	0.0	42.8	51.8	0.0	6.7	7.4	0.0	8.2	9.0	0.0
Incr Delay (d2), s/veh	0.2	1.7	0.0	0.6	0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	4.6	0.0	2.4	4.9	0.0	2.0	0.2	0.0	0.2	0.2	0.0
LnGrp Delay(d),s/veh	45.3	51.9	0.0	43.4	52.5	0.0	6.7	7.4	0.0	8.3	9.0	0.0
LnGrp LOS	D	D		D	D		A	A		A	A	
Approach Vol, veh/h		294			467			199				45
Approach Delay, s/veh		51.6			49.3			6.8				8.8
Approach LOS		D			D			A				A
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.6	82.6	11.7	19.2	11.0	78.1	6.1	24.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	10.5	42.5	15.5	33.5	29.5	23.5	10.5	38.5				
Max Q Clear Time (g_c+I1), s	2.4	2.3	6.9	11.1	6.1	2.4	2.7	12.0				
Green Ext Time (p_c), s	0.0	0.3	0.3	3.6	0.4	0.2	0.0	3.7				
Intersection Summary												
HCM 2010 Ctrl Delay			39.7									
HCM 2010 LOS			D									

























HCM 2010 Signalized Intersection Summary
2: Twenty Mile Road & Pine Lane

2022 Total PM_improved.syn
08/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	346	258	472	294	18	211	20	144	25	56	19
Future Volume (veh/h)	3	346	258	472	294	18	211	20	144	25	56	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	8	417	0	524	327	0	229	47	0	35	86	0
Adj No. of Lanes	1	2	1	2	2	1	1	2	1	1	2	1
Peak Hour Factor	0.38	0.83	0.86	0.90	0.90	0.60	0.92	0.43	0.64	0.71	0.65	0.56
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	246	571	255	725	1064	521	788	1808	1045	724	1604	733
Arrive On Green	0.01	0.16	0.00	0.05	0.10	0.00	0.09	0.51	0.00	0.03	0.45	0.00
Sat Flow, veh/h	1774	3539	1583	3442	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	8	417	0	524	327	0	229	47	0	35	86	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.5	13.4	0.0	14.5	10.3	0.0	7.9	0.8	0.0	1.3	1.6	0.0
Cycle Q Clear(g_c), s	0.5	13.4	0.0	14.5	10.3	0.0	7.9	0.8	0.0	1.3	1.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	246	571	255	725	1064	521	788	1808	1045	724	1604	733
V/C Ratio(X)	0.03	0.73	0.00	0.72	0.31	0.00	0.29	0.03	0.00	0.05	0.05	0.00
Avail Cap(c_a), veh/h	340	870	389	972	1430	685	967	1808	1045	784	1604	733
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.4	47.8	0.0	37.4	42.4	0.0	13.6	14.5	0.0	16.4	18.4	0.0
Incr Delay (d2), s/veh	0.1	1.8	0.0	1.8	0.2	0.0	0.2	0.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	6.7	0.0	7.0	5.1	0.0	3.9	0.4	0.0	0.6	0.8	0.0
LnGrp Delay(d),s/veh	41.5	49.7	0.0	39.2	42.6	0.0	13.8	14.6	0.0	16.5	18.5	0.0
LnGrp LOS	D	D		D	D		B	B		B	B	
Approach Vol, veh/h		425			851			276			121	
Approach Delay, s/veh		49.5			40.5			14.0			17.9	
Approach LOS		D			D			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	65.8	22.4	23.9	14.9	58.9	5.7	40.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	38.5	26.5	29.5	22.5	23.5	7.5	48.5				
Max Q Clear Time (g_c+I1), s	3.3	2.8	16.5	15.4	9.9	3.6	2.5	12.3				
Green Ext Time (p_c), s	0.0	0.8	1.4	3.9	0.5	0.6	0.0	5.2				
Intersection Summary												
HCM 2010 Ctrl Delay			36.8									
HCM 2010 LOS			D									

























HCM 2010 Signalized Intersection Summary
 2: Twenty Mile Road & Pine Lane

2040 Bk AM.syn
 08/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	257	87	176	343	12	161	8	90	10	17	9
Future Volume (veh/h)	6	257	87	176	343	12	161	8	90	10	17	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	7	279	0	191	373	0	175	9	0	11	18	0
Adj No. of Lanes	1	2	1	2	2	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	488	218	535	702	335	926	2050	1027	840	1860	846
Arrive On Green	0.01	0.14	0.00	0.07	0.20	0.00	0.07	0.58	0.00	0.01	0.53	0.00
Sat Flow, veh/h	1774	3539	1583	3442	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	7	279	0	191	373	0	175	9	0	11	18	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.3	6.6	0.0	4.1	8.5	0.0	3.8	0.1	0.0	0.3	0.2	0.0
Cycle Q Clear(g_c), s	0.3	6.6	0.0	4.1	8.5	0.0	3.8	0.1	0.0	0.3	0.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	200	488	218	535	702	335	926	2050	1027	840	1860	846
V/C Ratio(X)	0.03	0.57	0.00	0.36	0.53	0.00	0.19	0.00	0.00	0.01	0.01	0.00
Avail Cap(c_a), veh/h	332	924	413	698	1042	487	1112	2050	1027	964	1860	846
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.94	0.94	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.9	36.3	0.0	28.7	32.3	0.0	7.4	8.0	0.0	9.6	10.2	0.0
Incr Delay (d2), s/veh	0.1	1.1	0.0	0.4	0.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.3	0.0	1.9	4.2	0.0	1.8	0.0	0.0	0.1	0.1	0.0
LnGrp Delay(d),s/veh	33.0	37.4	0.0	29.1	32.9	0.0	7.5	8.0	0.0	9.6	10.2	0.0
LnGrp LOS	C	D		C	C		A	A		A	B	
Approach Vol, veh/h		286			564			184			29	
Approach Delay, s/veh		37.3			31.6			7.6			10.0	
Approach LOS		D			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.7	56.6	10.8	16.9	10.5	51.8	5.3	22.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	30.5	10.5	23.5	15.5	22.5	7.5	26.5				
Max Q Clear Time (g_c+I1), s	2.3	2.1	6.1	8.6	5.8	2.2	2.3	10.5				
Green Ext Time (p_c), s	0.0	0.1	0.2	3.8	0.3	0.1	0.0	3.9				
Intersection Summary												
HCM 2010 Ctrl Delay			28.4									
HCM 2010 LOS			C									

























HCM 2010 Signalized Intersection Summary
2: Twenty Mile Road & Pine Lane

2040 Bk PM.syn
08/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	410	304	575	352	15	235	15	175	26	60	23
Future Volume (veh/h)	4	410	304	575	352	15	235	15	175	26	60	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	4	446	0	625	383	0	255	16	0	28	65	0
Adj No. of Lanes	1	2	1	2	2	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	260	605	270	857	1206	584	718	1507	952	604	1207	548
Arrive On Green	0.01	0.17	0.00	0.18	0.34	0.00	0.11	0.43	0.00	0.03	0.34	0.00
Sat Flow, veh/h	1774	3539	1583	3442	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	4	446	0	625	383	0	255	16	0	28	65	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.2	10.8	0.0	12.6	7.2	0.0	7.9	0.2	0.0	0.9	1.1	0.0
Cycle Q Clear(g_c), s	0.2	10.8	0.0	12.6	7.2	0.0	7.9	0.2	0.0	0.9	1.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	260	605	270	857	1206	584	718	1507	952	604	1207	548
V/C Ratio(X)	0.02	0.74	0.00	0.73	0.32	0.00	0.36	0.01	0.00	0.05	0.05	0.00
Avail Cap(c_a), veh/h	359	728	325	999	1278	616	784	1507	952	663	1207	548
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.77	0.77	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.6	35.4	0.0	23.3	21.9	0.0	14.5	14.9	0.0	18.2	19.9	0.0
Incr Delay (d2), s/veh	0.0	3.2	0.0	1.8	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	5.5	0.0	6.1	3.5	0.0	3.9	0.1	0.0	0.4	0.6	0.0
LnGrp Delay(d),s/veh	30.6	38.6	0.0	25.0	22.0	0.0	14.8	14.9	0.0	18.2	20.0	0.0
LnGrp LOS	C	D		C	C		B	B		B	B	
Approach Vol, veh/h		450			1008			271			93	
Approach Delay, s/veh		38.5			23.9			14.8			19.5	
Approach LOS		D			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	42.8	20.3	19.9	14.7	35.2	5.0	35.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	28.5	19.5	18.5	13.5	20.5	5.5	32.5				
Max Q Clear Time (g_c+I1), s	2.9	2.2	14.6	12.8	9.9	3.1	2.2	9.2				
Green Ext Time (p_c), s	0.0	0.4	1.2	2.6	0.3	0.3	0.0	5.9				
Intersection Summary												
HCM 2010 Ctrl Delay			25.9									
HCM 2010 LOS			C									

























HCM 2010 Signalized Intersection Summary
 2: Twenty Mile Road & Pine Lane

2040 Total AM.syn
 08/14/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	266	96	176	346	15	172	12	90	14	23	9
Future Volume (veh/h)	6	266	96	176	346	15	172	12	90	14	23	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	7	289	0	191	376	0	187	13	0	15	25	0
Adj No. of Lanes	1	2	1	2	2	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	455	204	455	658	320	984	2261	1116	921	2110	958
Arrive On Green	0.01	0.13	0.00	0.02	0.06	0.00	0.06	0.64	0.00	0.02	0.60	0.00
Sat Flow, veh/h	1774	3539	1583	3442	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	7	289	0	191	376	0	187	13	0	15	25	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.4	9.3	0.0	5.6	12.4	0.0	4.6	0.2	0.0	0.4	0.3	0.0
Cycle Q Clear(g_c), s	0.4	9.3	0.0	5.6	12.4	0.0	4.6	0.2	0.0	0.4	0.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	455	204	455	658	320	984	2261	1116	921	2110	958
V/C Ratio(X)	0.04	0.64	0.00	0.42	0.57	0.00	0.19	0.01	0.00	0.02	0.01	0.00
Avail Cap(c_a), veh/h	283	988	442	672	1165	547	1330	2261	1116	1032	2110	958
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.0	49.6	0.0	42.0	51.7	0.0	7.2	7.9	0.0	9.1	9.9	0.0
Incr Delay (d2), s/veh	0.1	1.5	0.0	0.6	0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.6	0.0	2.7	6.2	0.0	2.3	0.1	0.0	0.2	0.2	0.0
LnGrp Delay(d),s/veh	45.1	51.1	0.0	42.6	52.4	0.0	7.3	7.9	0.0	9.1	9.9	0.0
LnGrp LOS	D	D		D	D		A	A		A	A	
Approach Vol, veh/h		296			567			200			40	
Approach Delay, s/veh		51.0			49.1			7.4			9.6	
Approach LOS		D			D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	81.2	12.4	19.9	11.6	76.0	5.5	26.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	43.5	15.5	33.5	30.5	22.5	9.5	39.5				
Max Q Clear Time (g_c+I1), s	2.4	2.2	7.6	11.3	6.6	2.3	2.4	14.4				
Green Ext Time (p_c), s	0.0	0.2	0.3	4.1	0.5	0.1	0.0	4.3				
Intersection Summary												
HCM 2010 Ctrl Delay			40.6									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
 2: Twenty Mile Road & Pine Lane

2040 Total PM.syn
 08/14/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	420	314	575	357	20	254	22	175	30	66	23
Future Volume (veh/h)	4	420	314	575	357	20	254	22	175	30	66	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	4	457	0	625	388	0	276	24	0	33	72	0
Adj No. of Lanes	1	2	1	2	2	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	613	274	801	1202	582	761	1690	1027	656	1400	635
Arrive On Green	0.01	0.17	0.00	0.06	0.11	0.00	0.11	0.48	0.00	0.03	0.40	0.00
Sat Flow, veh/h	1774	3539	1583	3442	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	4	457	0	625	388	0	276	24	0	33	72	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.2	14.7	0.0	16.9	12.1	0.0	10.6	0.4	0.0	1.3	1.5	0.0
Cycle Q Clear(g_c), s	0.2	14.7	0.0	16.9	12.1	0.0	10.6	0.4	0.0	1.3	1.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	241	613	274	801	1202	582	761	1690	1027	656	1400	635
V/C Ratio(X)	0.02	0.75	0.00	0.78	0.32	0.00	0.36	0.01	0.00	0.05	0.05	0.00
Avail Cap(c_a), veh/h	313	841	376	1029	1519	724	914	1690	1027	688	1400	635
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.6	47.1	0.0	36.0	40.6	0.0	16.3	16.5	0.0	20.3	22.4	0.0
Incr Delay (d2), s/veh	0.0	2.4	0.0	3.0	0.2	0.0	0.3	0.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	7.4	0.0	8.4	6.0	0.0	5.2	0.2	0.0	0.6	0.8	0.0
LnGrp Delay(d),s/veh	40.6	49.5	0.0	39.0	40.7	0.0	16.6	16.5	0.0	20.4	22.4	0.0
LnGrp LOS	D	D		D	D		B	B		C	C	
Approach Vol, veh/h		461			1013			300			105	
Approach Delay, s/veh		49.4			39.6			16.6			21.8	
Approach LOS		D			D			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.8	61.8	25.1	25.3	17.7	52.0	5.1	45.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	39.5	28.5	28.5	23.5	21.5	5.5	51.5				
Max Q Clear Time (g_c+I1), s	3.3	2.4	18.9	16.7	12.6	3.5	2.2	14.1				
Green Ext Time (p_c), s	0.0	0.5	1.7	4.1	0.6	0.4	0.0	6.1				
Intersection Summary												
HCM 2010 Ctrl Delay			37.4									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	288	18	143	428	12	114
Future Vol, veh/h	288	18	143	428	12	114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	313	20	155	465	13	124

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	333
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	1223
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1223
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	696	-	-	1223	-
HCM Lane V/C Ratio	0.197	-	-	0.127	-
HCM Control Delay (s)	11.4	-	-	8.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0.4	-

Intersection

Int Delay, s/veh 2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	542	22	135	760	20	144
Future Vol, veh/h	542	22	135	760	20	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	589	24	147	826	22	157

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	613
Stage 1	-	-	601
Stage 2	-	-	707
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	962
Stage 1	-	-	510
Stage 2	-	-	450
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	962
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	510
Stage 2	-	-	381

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	18.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	449	-	-	962	-
HCM Lane V/C Ratio	0.397	-	-	0.153	-
HCM Control Delay (s)	18.2	-	-	9.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.9	-	-	0.5	-

Intersection

Int Delay, s/veh 2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	353	18	141	524	11	110
Future Vol, veh/h	353	18	141	524	11	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	384	20	153	570	12	120

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	403	984
Stage 1	-	-	393
Stage 2	-	-	591
Critical Hdwy	-	4.14	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	2.22	3.52
Pot Cap-1 Maneuver	-	1152	246
Stage 1	-	-	651
Stage 2	-	-	516
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1152	213
Mov Cap-2 Maneuver	-	-	213
Stage 1	-	-	651
Stage 2	-	-	447

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	643	-	-	1152	-
HCM Lane V/C Ratio	0.205	-	-	0.133	-
HCM Control Delay (s)	12	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.8	-	-	0.5	-

Intersection

Int Delay, s/veh 2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	664	21	135	930	20	145
Future Vol, veh/h	664	21	135	930	20	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	722	23	147	1011	22	158

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	745
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	859
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	859
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	24.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	361	-	-	859	-
HCM Lane V/C Ratio	0.497	-	-	0.171	-
HCM Control Delay (s)	24.4	-	-	10.1	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	2.7	-	-	0.6	-



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	↗
Traffic Volume (veh/h)	0	62	0	2939	1518	75
Future Volume (Veh/h)	0	62	0	2939	1518	75
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	67	0	3195	1650	82
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)					470	
pX, platoon unblocked	0.76	0.76	0.76			
vC, conflicting volume	2449	550	1732			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1813	0	874			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	100			
cM capacity (veh/h)	53	828	586			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	67	799	799	799	799	550	550	550	82
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	67	0	0	0	0	0	0	0	82
cSH	828	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.08	0.47	0.47	0.47	0.47	0.32	0.32	0.32	0.05
Queue Length 95th (ft)	7	0	0	0	0	0	0	0	0
Control Delay (s)	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS									
Approach Delay (s)	9.7	0.0				0.0			
Approach LOS									

Intersection Summary									
Average Delay			0.1						
Intersection Capacity Utilization			45.9%			ICU Level of Service		A	
Analysis Period (min)			15						

HCM Unsignalized Intersection Capacity Analysis

4: Parker Road & Parker Access

2022 Total PM.syn
08/09/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR				
Lane Configurations		↗		↑↑↑	↑↑↑	↗				
Traffic Volume (veh/h)	0	107	0	2400	2962	93				
Future Volume (Veh/h)	0	107	0	2400	2962	93				
Sign Control	Stop			Free		Free				
Grade	0%			0%		0%				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Hourly flow rate (vph)	0	116	0	2609	3220	101				
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type				None		None				
Median storage (veh)										
Upstream signal (ft)					470					
pX, platoon unblocked	0.46	0.46	0.46							
vC, conflicting volume	3872	1073	3321							
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	3134	0	1934							
tC, single (s)	6.8	6.9	4.1							
tC, 2 stage (s)										
tF (s)	3.5	3.3	2.2							
p0 queue free %	100	77	100							
cM capacity (veh/h)	4	498	138							
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4	
Volume Total	116	652	652	652	652	1073	1073	1073	101	
Volume Left	0	0	0	0	0	0	0	0	0	
Volume Right	116	0	0	0	0	0	0	0	101	
cSH	498	1700	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.23	0.38	0.38	0.38	0.38	0.63	0.63	0.63	0.06	
Queue Length 95th (ft)	22	0	0	0	0	0	0	0	0	
Control Delay (s)	14.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS										
Approach Delay (s)	14.4	0.0					0.0			
Approach LOS										
B										
Intersection Summary										
Average Delay			0.3							
Intersection Capacity Utilization			70.5%				ICU Level of Service		C	
Analysis Period (min)			15							



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↓↓↓	↘
Traffic Volume (veh/h)	0	62	0	3572	1859	75
Future Volume (Veh/h)	0	62	0	3572	1859	75
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	67	0	3883	2021	82
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)					470	
pX, platoon unblocked	0.72	0.72	0.72			
vC, conflicting volume	2992	674	2103			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2398	0	1160			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	100			
cM capacity (veh/h)	20	778	429			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	67	971	971	971	971	674	674	674	82
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	67	0	0	0	0	0	0	0	82
cSH	778	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.09	0.57	0.57	0.57	0.57	0.40	0.40	0.40	0.05
Queue Length 95th (ft)	7	0	0	0	0	0	0	0	0
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	10.1	0.0				0.0			
Approach LOS	B								

Intersection Summary									
Average Delay	0.1								
Intersection Capacity Utilization	55.1%			ICU Level of Service				B	
Analysis Period (min)	15								



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	↗
Traffic Volume (veh/h)	0	106	0	2914	3621	91
Future Volume (Veh/h)	0	106	0	2914	3621	91
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	115	0	3167	3936	99
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)					470	
pX, platoon unblocked	0.46	0.46	0.46			
vC, conflicting volume	4728	1312	4035			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	4998	0	3482			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	77	100			
cM capacity (veh/h)	0	496	33			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	115	792	792	792	792	1312	1312	1312	99
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	115	0	0	0	0	0	0	0	99
cSH	496	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.23	0.47	0.47	0.47	0.47	0.77	0.77	0.77	0.06
Queue Length 95th (ft)	22	0	0	0	0	0	0	0	0
Control Delay (s)	14.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B								
Approach Delay (s)	14.4	0.0				0.0			
Approach LOS	B								

Intersection Summary		
Average Delay		0.2
Intersection Capacity Utilization	83.2%	ICU Level of Service
Analysis Period (min)	15	E

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↑↑	↗	↘	↑↑	↗
Traffic Vol, veh/h	0	0	0	12	0	13	0	212	17	14	230	0
Future Vol, veh/h	0	0	0	12	0	13	0	212	17	14	230	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	125	100	-	0
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	13	0	14	0	230	18	15	250	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	385	510	115	-	0	0	230	0	0
Stage 1	230	230	-	-	-	-	-	-	-
Stage 2	155	280	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	-	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	-	-	-	2.22	-	-
Pot Cap-1 Maneuver	591	465	916	0	-	-	1335	-	-
Stage 1	786	713	-	0	-	-	-	-	-
Stage 2	857	678	-	0	-	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	584	0	916	-	-	-	1335	-	-
Mov Cap-2 Maneuver	584	0	-	-	-	-	-	-	-
Stage 1	786	0	-	-	-	-	-	-	-
Stage 2	847	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	720	1335	-
HCM Lane V/C Ratio	-	-	0.038	0.011	-
HCM Control Delay (s)	-	-	10.2	7.7	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↑↑	↗	↖	↑↑	↗
Traffic Vol, veh/h	0	0	0	23	0	25	0	350	19	15	769	0
Future Vol, veh/h	0	0	0	23	0	25	0	350	19	15	769	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	125	100	-	0
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	25	0	27	0	380	21	16	836	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	831	1248	190	-	0	0	380	0	0
Stage 1	380	380	-	-	-	-	-	-	-
Stage 2	451	868	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	-	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	-	-	-	2.22	-	-
Pot Cap-1 Maneuver	308	172	820	0	-	-	1175	-	-
Stage 1	661	612	-	0	-	-	-	-	-
Stage 2	609	368	-	0	-	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	304	0	820	-	-	-	1175	-	-
Mov Cap-2 Maneuver	304	0	-	-	-	-	-	-	-
Stage 1	661	0	-	-	-	-	-	-	-
Stage 2	601	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	452	1175	-
HCM Lane V/C Ratio	-	-	0.115	0.014	-
HCM Control Delay (s)	-	-	14	8.1	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↑↑	↗	↘	↑↑	↗
Traffic Vol, veh/h	0	0	0	13	0	15	0	259	19	15	280	0
Future Vol, veh/h	0	0	0	13	0	15	0	259	19	15	280	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	125	100	-	0
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	14	0	16	0	282	21	16	304	0

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	467	619	141	-	0	0	282	0	0
Stage 1	282	282	-	-	-	-	-	-	-
Stage 2	185	337	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	-	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	-	-	-	2.22	-	-
Pot Cap-1 Maneuver	525	403	881	0	-	-	1277	-	-
Stage 1	741	676	-	0	-	-	-	-	-
Stage 2	828	640	-	0	-	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	518	0	881	-	-	-	1277	-	-
Mov Cap-2 Maneuver	518	0	-	-	-	-	-	-	-
Stage 1	741	0	-	-	-	-	-	-	-
Stage 2	818	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	665	1277	-
HCM Lane V/C Ratio	-	-	0.046	0.013	-
HCM Control Delay (s)	-	-	10.7	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↑↑	↗	↘	↑↑	↗
Traffic Vol, veh/h	0	0	0	24	0	26	0	426	20	16	936	0
Future Vol, veh/h	0	0	0	24	0	26	0	426	20	16	936	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	125	100	-	0
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	26	0	28	0	463	22	17	1017	0

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1006	1515	232
Stage 1	463	463	-
Stage 2	543	1052	-
Critical Hdwy	6.84	6.54	6.94
Critical Hdwy Stg 1	5.84	5.54	-
Critical Hdwy Stg 2	5.84	5.54	-
Follow-up Hdwy	3.52	4.02	3.32
Pot Cap-1 Maneuver	238	118	770
Stage 1	600	562	-
Stage 2	546	302	-
Platoon blocked, %			
Mov Cap-1 Maneuver	234	0	770
Mov Cap-2 Maneuver	234	0	-
Stage 1	600	0	-
Stage 2	538	0	-

Approach	WB	NB	SB
HCM Control Delay, s	16.5	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	367	1095	-
HCM Lane V/C Ratio	-	-	0.148	0.016	-
HCM Control Delay (s)	-	-	16.5	8.3	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

APPENDIX F

Queue Analysis Worksheets

Queues

2017 Ex AM.syn

1: Parker Road & Pine Lane

08/10/2017



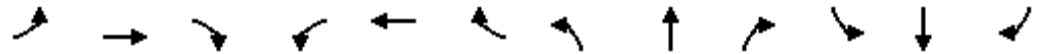
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	236	119	52	88	168	291	64	2811	152	68	1509	221
v/c Ratio	0.87	0.30	0.03	0.44	0.52	0.18	0.45	0.87	0.13	0.31	0.48	0.18
Control Delay	84.6	50.3	0.0	62.0	57.4	0.3	61.7	23.4	1.3	57.1	14.3	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.6	50.3	0.0	62.0	57.4	0.3	61.7	23.4	1.3	57.1	14.3	1.3
Queue Length 50th (ft)	94	45	0	34	66	0	48	644	0	26	230	0
Queue Length 95th (ft)	#120	50	0	34	101	0	81	#813	4	48	310	23
Internal Link Dist (ft)		920			849			1140			780	
Turn Bay Length (ft)	175		50	325		50	625			550		
Base Capacity (vph)	271	601	1583	203	530	1583	160	3217	1195	218	3130	1218
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.20	0.03	0.43	0.32	0.18	0.40	0.87	0.13	0.31	0.48	0.18

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

1: Parker Road & Pine Lane



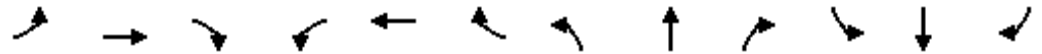
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	271	212	151	120	116	104	91	2244	131	190	2711	603
v/c Ratio	0.85	0.56	0.10	0.51	0.39	0.07	0.53	0.77	0.12	0.56	0.93	0.50
Control Delay	97.5	42.5	0.1	61.5	55.4	0.1	62.6	22.3	1.6	58.1	30.7	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.5	42.5	0.1	61.5	55.4	0.1	62.6	22.3	1.6	58.1	30.7	5.0
Queue Length 50th (ft)	113	35	0	46	45	0	67	463	0	73	683	72
Queue Length 95th (ft)	#185	78	0	76	71	0	112	582	15	98	#867	151
Internal Link Dist (ft)		920			849			1277			780	
Turn Bay Length (ft)	175		50	325		50	625			550		
Base Capacity (vph)	320	604	1583	248	530	1583	173	2923	1125	338	2925	1214
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.35	0.10	0.48	0.22	0.07	0.53	0.77	0.12	0.56	0.93	0.50

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Queues
1: Parker Road & Pine Lane

2022 Total AM.syn
08/10/2017



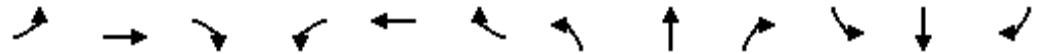
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	516	298	192	232	124	104	210	2311	170	185	3071	723
v/c Ratio	1.45	0.66	0.12	0.89	0.35	0.07	0.81	0.82	0.16	0.59	1.21	0.65
Control Delay	261.2	52.7	0.2	89.0	52.4	0.1	74.5	25.7	4.2	60.0	126.7	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	261.2	52.7	0.2	89.0	52.4	0.1	74.5	25.7	4.2	60.0	126.7	10.8
Queue Length 50th (ft)	~285	86	0	93	47	0	160	523	20	71	~1062	194
Queue Length 95th (ft)	#306	95	0	73	76	0	#278	626	26	107	#1146	288
Internal Link Dist (ft)		525			849			390			780	
Turn Bay Length (ft)	175		50	325		50	625			550		
Base Capacity (vph)	357	631	1583	260	530	1583	259	2817	1087	316	2542	1112
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.45	0.47	0.12	0.89	0.23	0.07	0.81	0.82	0.16	0.59	1.21	0.65

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

1: Parker Road & Pine Lane



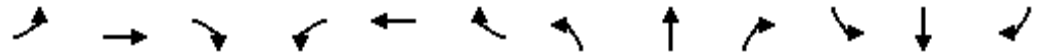
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	416	243	160	133	129	109	205	2336	136	199	2912	669
v/c Ratio	1.17	0.59	0.10	0.54	0.43	0.07	0.72	0.82	0.12	0.58	1.15	0.60
Control Delay	159.4	53.5	0.1	61.9	55.9	0.1	63.9	25.2	1.8	58.3	100.2	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	159.4	53.5	0.1	61.9	55.9	0.1	63.9	25.2	1.8	58.3	100.2	9.6
Queue Length 50th (ft)	~201	68	0	52	51	0	152	520	1	76	~968	162
Queue Length 95th (ft)	#307	105	0	82	77	0	#254	638	17	103	#1054	268
Internal Link Dist (ft)		525			849			390			780	
Turn Bay Length (ft)	175		50	325		50	625			550		
Base Capacity (vph)	357	631	1583	260	530	1583	284	2848	1109	345	2542	1109
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.17	0.39	0.10	0.51	0.24	0.07	0.72	0.82	0.12	0.58	1.15	0.60

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

1: Parker Road & Pine Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	355	113	43	67	220	380	180	3563	134	82	1987	298
v/c Ratio	1.18	0.22	0.03	0.40	0.59	0.24	0.56	1.15	0.12	0.38	0.69	0.26
Control Delay	141.7	29.4	0.0	62.7	57.3	0.4	58.6	94.5	2.6	59.4	21.1	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	141.7	29.4	0.0	62.7	57.3	0.4	58.6	94.5	2.6	59.4	21.1	4.7
Queue Length 50th (ft)	~173	45	0	26	86	0	69	~1221	8	31	388	39
Queue Length 95th (ft)	#251	74	0	51	125	0	106	#1322	30	59	490	86
Internal Link Dist (ft)		525			849			390			780	
Turn Bay Length (ft)	175		50	325		50	625			550		
Base Capacity (vph)	300	666	1583	168	530	1583	344	3110	1135	213	2860	1131
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.17	0.03	0.40	0.42	0.24	0.52	1.15	0.12	0.38	0.69	0.26

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

2040 Total PM.syn

1: Parker Road & Pine Lane

08/10/2017



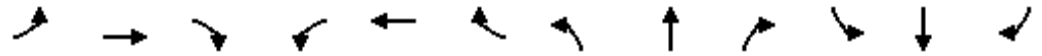
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	484	241	152	152	147	132	201	2821	145	213	3727	825
v/c Ratio	1.36	0.58	0.10	0.56	0.45	0.08	0.56	1.02	0.13	0.57	1.33	0.71
Control Delay	212.9	36.0	0.1	61.5	55.5	0.1	58.7	49.5	1.9	57.8	178.8	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	212.9	36.0	0.1	61.5	55.5	0.1	58.7	49.5	1.9	57.8	178.8	11.5
Queue Length 50th (ft)	~232	93	0	59	57	0	77	~860	3	81	~1374	246
Queue Length 95th (ft)	#346	110	0	94	89	0	#141	#947	25	#134	#1446	392
Internal Link Dist (ft)		525			849			390			780	
Turn Bay Length (ft)	175		50	325		50	625			550		
Base Capacity (vph)	357	601	1583	288	530	1583	356	2771	1098	374	2796	1167
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.36	0.40	0.10	0.53	0.28	0.08	0.56	1.02	0.13	0.57	1.33	0.71

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
2: Twenty Mile Road & Pine Lane

2017 Ex AM.syn
08/10/2017

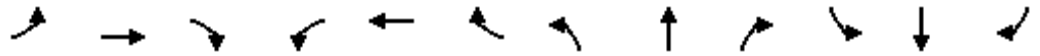


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	12	256	96	156	284	16	152	16	92	12	20	12
v/c Ratio	0.05	0.55	0.06	0.43	0.31	0.02	0.19	0.01	0.08	0.02	0.01	0.01
Control Delay	20.0	40.9	0.1	26.2	28.0	0.1	10.1	14.0	1.8	10.1	17.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	40.9	0.1	26.2	28.0	0.1	10.1	14.0	1.8	10.1	17.8	0.0
Queue Length 50th (ft)	5	72	0	66	63	0	36	1	0	3	3	0
Queue Length 95th (ft)	7	91	0	102	104	0	68	3	11	8	8	0
Internal Link Dist (ft)		644			920			634			469	
Turn Bay Length (ft)	275		50	175		150	200		50	225		150
Base Capacity (vph)	289	884	1583	396	1160	699	816	1925	1217	758	1555	984
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.29	0.06	0.39	0.24	0.02	0.19	0.01	0.08	0.02	0.01	0.01

Intersection Summary

Queues
2: Twenty Mile Road & Pine Lane

2017 Ex PM.syn
08/10/2017

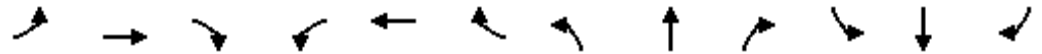


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	8	384	274	497	304	20	199	28	213	28	72	32
v/c Ratio	0.03	0.72	0.17	0.84	0.20	0.02	0.33	0.02	0.18	0.05	0.07	0.05
Control Delay	19.3	56.1	0.2	40.2	25.6	0.1	24.4	29.2	1.4	23.4	35.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	56.1	0.2	40.2	25.6	0.1	24.4	29.2	1.4	23.4	35.1	0.1
Queue Length 50th (ft)	3	151	0	320	95	0	93	7	0	12	21	0
Queue Length 95th (ft)	4	178	0	381	119	0	175	10	2	28	33	0
Internal Link Dist (ft)		644			920			759			469	
Turn Bay Length (ft)	275		50	175		150	200		50	225		150
Base Capacity (vph)	240	641	1583	704	1784	858	605	1400	1314	514	1077	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.60	0.17	0.71	0.17	0.02	0.33	0.02	0.16	0.05	0.07	0.05

Intersection Summary

Queues
2: Twenty Mile Road & Pine Lane

2022 Total AM.syn
08/10/2017



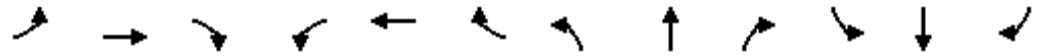
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	7	444	363	536	313	32	257	53	189	37	86	33
v/c Ratio	0.03	0.77	0.23	0.88	0.20	0.04	0.46	0.04	0.16	0.08	0.09	0.05
Control Delay	19.0	57.6	0.3	38.4	21.4	0.5	28.7	31.1	1.4	25.6	38.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	57.6	0.3	38.4	21.4	0.5	28.7	31.1	1.4	25.6	38.8	0.2
Queue Length 50th (ft)	3	174	0	345	93	0	134	14	0	17	27	0
Queue Length 95th (ft)	4	193	0	411	m106	m0	205	13	12	33	38	0
Internal Link Dist (ft)		644			315			440			469	
Turn Bay Length (ft)	275		50	175		150	200		50	225		150
Base Capacity (vph)	245	646	1583	696	1778	903	568	1239	1234	439	911	624
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.69	0.23	0.77	0.18	0.04	0.45	0.04	0.15	0.08	0.09	0.05

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Twenty Mile Road & Pine Lane

2022 Total PM.syn
08/10/2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	8	417	300	524	327	30	229	47	225	35	86	34
v/c Ratio	0.03	0.75	0.19	0.86	0.21	0.03	0.40	0.04	0.19	0.08	0.09	0.05
Control Delay	19.3	57.1	0.3	39.3	23.3	0.3	26.8	30.4	1.9	24.9	37.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	57.1	0.3	39.3	23.3	0.3	26.8	30.4	1.9	24.9	37.5	0.2
Queue Length 50th (ft)	3	163	0	344	104	0	114	12	6	15	26	0
Queue Length 95th (ft)	4	195	0	422	118	m0	205	14	7	33	38	0
Internal Link Dist (ft)		644			315			440			469	
Turn Bay Length (ft)	275		50	175		150	200		50	225		150
Base Capacity (vph)	237	645	1583	696	1778	886	582	1280	1253	463	974	650
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.65	0.19	0.75	0.18	0.03	0.39	0.04	0.18	0.08	0.09	0.05

Intersection Summary

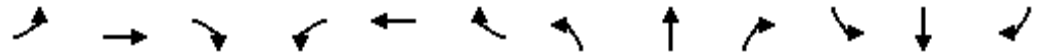
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2022 Total AM_improved.syn

2: Twenty Mile Road & Pine Lane

08/10/2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	12	282	114	165	302	21	173	26	97	16	29	12
v/c Ratio	0.05	0.64	0.07	0.34	0.45	0.04	0.19	0.01	0.08	0.02	0.01	0.01
Control Delay	32.6	56.6	0.1	40.8	50.6	1.7	8.2	11.5	1.4	8.1	14.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	56.6	0.1	40.8	50.6	1.7	8.2	11.5	1.4	8.1	14.3	0.0
Queue Length 50th (ft)	7	111	0	63	125	1	43	4	0	4	5	0
Queue Length 95th (ft)	10	130	0	m92	170	m1	75	4	10	10	10	0
Internal Link Dist (ft)		644			315			440			469	
Turn Bay Length (ft)	275		50	200		150	200		50	225		150
Base Capacity (vph)	286	987	1583	580	1135	564	991	2213	1274	924	1977	1125
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.29	0.07	0.28	0.27	0.04	0.17	0.01	0.08	0.02	0.01	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2022 Total PM_improved.syn

2: Twenty Mile Road & Pine Lane

08/10/2017



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	8	417	300	524	327	30	229	47	225	35	86	34
v/c Ratio	0.03	0.72	0.19	0.70	0.29	0.04	0.31	0.03	0.19	0.05	0.06	0.04
Control Delay	22.7	54.9	0.3	32.7	32.2	0.4	16.3	20.7	1.6	15.5	25.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	54.9	0.3	32.7	32.2	0.4	16.3	20.7	1.6	15.5	25.9	0.1
Queue Length 50th (ft)	4	163	0	179	118	0	86	10	0	12	21	0
Queue Length 95th (ft)	6	188	0	194	146	m1	158	12	1	25	33	0
Internal Link Dist (ft)		644			315			440			469	
Turn Bay Length (ft)	275		50	200		150	200		50	225		150
Base Capacity (vph)	278	870	1583	886	1430	715	769	1696	1226	657	1426	863
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.48	0.19	0.59	0.23	0.04	0.30	0.03	0.18	0.05	0.06	0.04

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2040 Total AM.syn

2: Twenty Mile Road & Pine Lane

08/10/2017



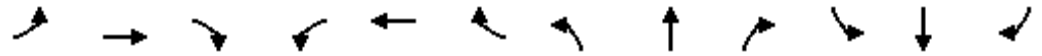
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	7	289	104	191	375	15	186	13	98	14	24	10
v/c Ratio	0.03	0.65	0.07	0.38	0.49	0.03	0.21	0.01	0.08	0.02	0.01	0.01
Control Delay	31.2	56.5	0.1	38.3	46.4	0.9	8.7	12.2	1.4	8.6	15.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	56.5	0.1	38.3	46.4	0.9	8.7	12.2	1.4	8.6	15.2	0.0
Queue Length 50th (ft)	4	113	0	72	148	0	49	2	0	3	4	0
Queue Length 95th (ft)	15	155	0	105	203	m1	92	7	17	12	13	0
Internal Link Dist (ft)		644			315			440			469	
Turn Bay Length (ft)	275		50	200		150	200		50	225		150
Base Capacity (vph)	264	987	1583	593	1164	592	982	2185	1262	902	1934	1095
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.29	0.07	0.32	0.32	0.03	0.19	0.01	0.08	0.02	0.01	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Twenty Mile Road & Pine Lane

2040 Total PM.syn
08/10/2017



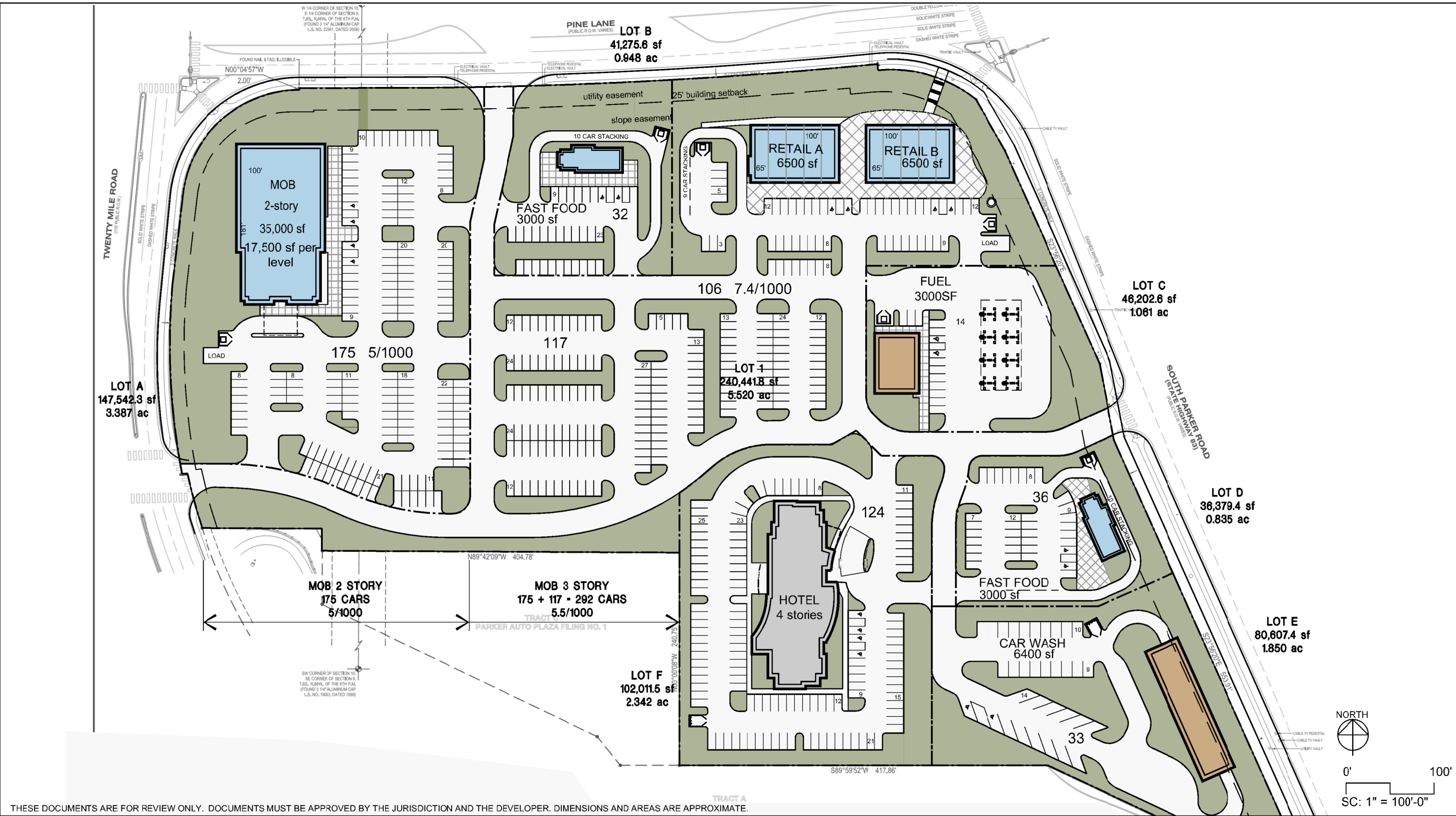
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	4	455	340	625	388	22	275	24	190	33	72	25
v/c Ratio	0.02	0.74	0.21	0.76	0.31	0.03	0.39	0.02	0.17	0.06	0.06	0.03
Control Delay	20.5	54.5	0.3	30.1	27.9	0.2	19.6	23.5	1.7	18.2	31.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.5	54.5	0.3	30.1	27.9	0.2	19.6	23.5	1.7	18.2	31.4	0.1
Queue Length 50th (ft)	2	177	0	195	132	0	117	5	0	12	19	0
Queue Length 95th (ft)	8	223	0	204	148	m0	206	16	29	34	45	0
Internal Link Dist (ft)		644			315			440			469	
Turn Bay Length (ft)	275		50	200		150	200		50	225		150
Base Capacity (vph)	249	840	1583	946	1518	758	734	1577	1193	576	1225	757
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.54	0.21	0.66	0.26	0.03	0.37	0.02	0.16	0.06	0.06	0.03

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

APPENDIX G

Conceptual Site Plan



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Site Study 6a
 SCALE: - JOB#: - ISSUE DATE: 6/2/17
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