TRAFFIC IMPACT ANALYSIS REPORT
WAILUKU CIVIC HUB

Wailuku, Maui, Hawaii

DRAFT FINAL

June 21, 2018

Prepared for:
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AUSTIN, TSUTSUMI & ASSOCIATES, INC. CIVIL ENGINEERS • SURVEYORS
CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

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TRAFFIC IMPACT ANALYSIS REPORT

WAILUKU CIVIC HUB

Wailuku, Maui, Hawaii

1. INTRODUCTION

This report documents the findings of a traffic study conducted by Austin, Tsutsumi & Associates, Inc. (ATA) to evaluate the potential traffic impacts resulting from the proposed Wailuku Civic Hub in Wailuku, Maui, Hawaii (hereinafter referred to as the "Project").

1.1 Location

The Project is located in downtown Wailuku on the island of Maui on the parcels of land identified as TMK: (2) 3-4-013:051, 060, 075, 102, 104, 097 (por). The total Project site is approximately 2.192 acres. The existing parking lot is currently identified as the Wailuku Municipal Parking Lot. The Project is bounded by West Vineyard Street to the north, East Main Street to the south, North Market Street to the east and North Church Street to the west. The Project will also include infrastructure improvements along North Church Street from East Main Street to West Vineyard Street and along West Vineyard Street from North High Street to North Market Street. See Figure 1.1 for the Project location.

1.2 Project Description

The Project proposes to construct a new multi-level parking structure, a mixed-use facility and an outdoor events pavilion. The proposed facility will accommodate a variety of community spaces, government offices and retail, including the following:

- 4,310 SF Community Reception/Classrooms
- 4,579 SF Roof Terrace
- 3,934 SF County Hearing Room
- 1,476 SF County MRA Management Offices
- 1,652 SF Retail
- 12,546 SF Real Property Tax Office

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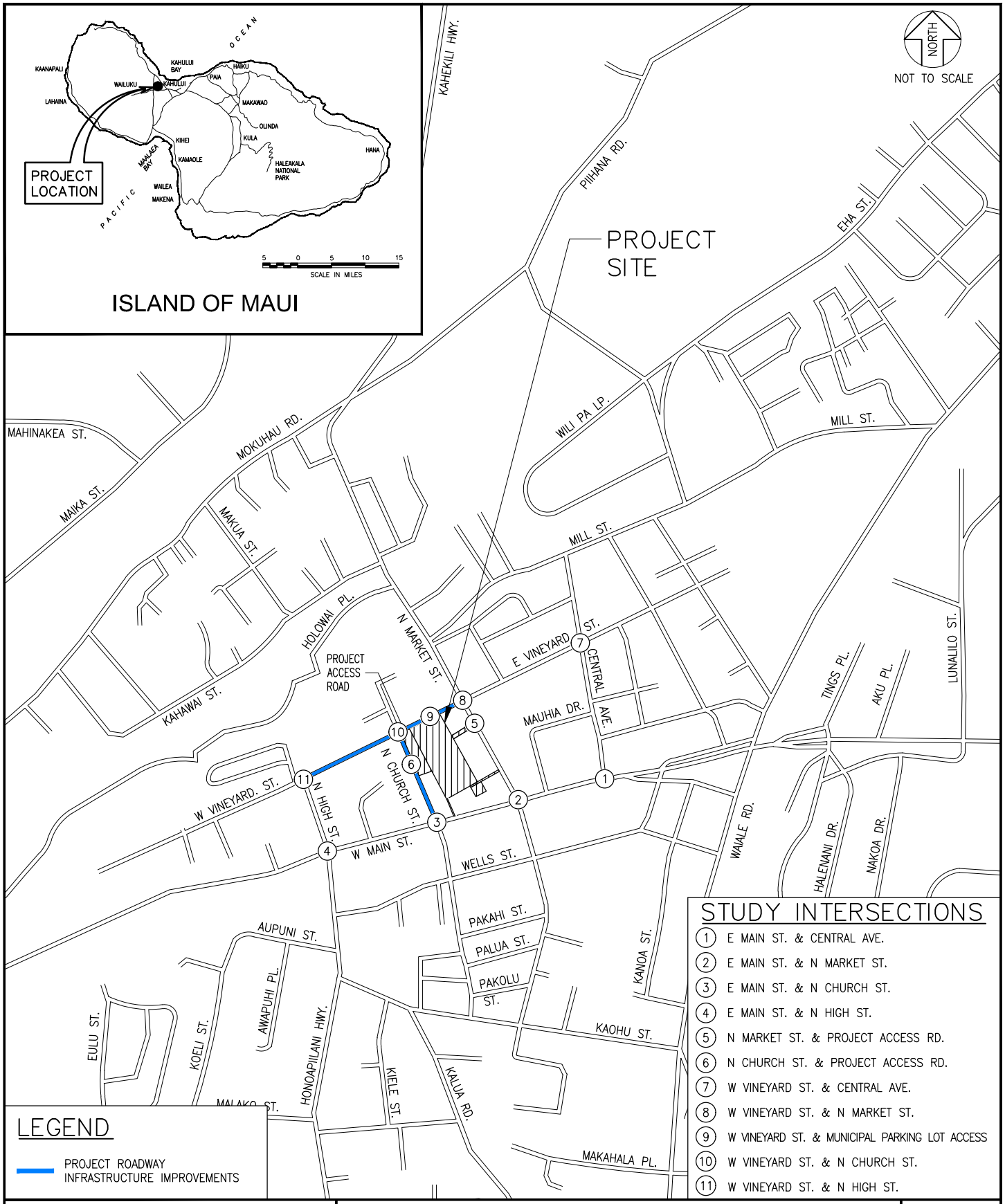
- 10,954 SF Specialty Grocery
- 428-stall parking structure; net increase of 115 new stalls from existing 214 stalls in Wailuku Municipal Parking Lot, 53 stalls programmed for the peak demands for above land uses & 46 stalls absorbed into the parking structure, with the removal of on-street parking stalls on Church Street, Vineyard Street and Main Street as part of the Project's pedestrian-oriented infrastructure improvements.

As part of the Project, the following changes are planned for the roadways and infrastructure in the Project vicinity:

- Removal of the existing parking lot access on West Vineyard Street.
- Conversion of North Church Street to a two-way, two-lane roadway between Main Street and West Vineyard Street.
    - Signalize and provide exclusive eastbound and westbound left-turn lanes at the Main Street/North Church Street intersection. Will require removal of approximately 5 on-street parking stalls on Main Street.
- Relocate primary entrance/exit for the parking garage to the existing driveway via Church Street.
- Provide secondary entrance only access into the parking garage at the existing driveway via Market Street, with limited entrance/exit for auxiliary access to surrounding businesses.
    - Limit entrance/exit for patrons or service vehicles accessing the adjacent First Hawaiian Bank parking lot, American Savings Bank Parking lot and delivery vehicles for the Maui Academy of Performing Arts (MAPA) building and the Main Street Promenade.
- Infrastructure improvements are proposed as part of the Project and include construction of new and/or widened sidewalks and planting street trees along the following corridors:
    - North Church Street between Main Street and West Vineyard Street.
    - West Vineyard Street between North High Street and North Market Street.
    - As part of these pedestrian-oriented improvements, some on-street parking stalls will be removed along the above corridors:
        - North Church Street - removal of 23 on-street parking stalls (23 existing stalls) resulting in no remaining parking stalls between West Vineyard Street and East Main Street. However, 3 parking stalls will be provided for loading and delivery vehicles only.
        - West Vineyard Street - removal of 18 on-street parking stalls (21 existing stalls) resulting in 3 remaining parking stalls between North High Street and North Market Street.
        - Overall removal of 41 stalls from existing 44 on-street parking stalls on North Church Street and West Vineyard Street.

See Figure 1.2 for the proposed Project site plan.



STUDY INTERSECTIONS

1. E MAIN ST. & CENTRAL AVE.
2. E MAIN ST. & N MARKET ST.
3. E MAIN ST. & N CHURCH ST.
4. E MAIN ST. & N HIGH ST.
5. N MARKET ST. & PROJECT ACCESS RD.
6. N CHURCH ST. & PROJECT ACCESS RD.
7. W VINEYARD ST. & CENTRAL AVE.
8. W VINEYARD ST. & N MARKET ST.
9. W VINEYARD ST. & MUNICIPAL PARKING LOT ACCESS
10. W VINEYARD ST. & N CHURCH ST.
11. W VINEYARD ST. & N HIGH ST.

LEGEND

PROJECT ROADWAY INFRASTRUCTURE IMPROVEMENTS

WAILUKU CIVIC HUB

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LOCATION MAP

FIGURE 1.1

WAILUKU CIVIC HUB
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FIGURE
1.2

SITE PLAN

2. METHODOLOGY

2.1 Study Methodology

This study will address the following:

- Assess existing traffic operating conditions and parking at key intersections during the weekday morning (AM) and afternoon (PM) peak hours of traffic within the study area.
- Traffic projections for Base Year 2021 (without the Project) including traffic generated by other known developments in the vicinity of the Project in addition to an ambient growth rate. These other known developments are projects that are currently under construction or known new/future developments that are anticipated to affect traffic demand and operations within the study area.
- Trip generation and traffic assignment characteristics for the proposed Project.
- Traffic projections for Future Year 2021 (with the Project), which includes Base Year traffic volumes in addition to traffic volumes generated by the Project.
- Recommendations for Base Year as well as Future Year roadway improvements or other mitigative measures, as appropriate, to reduce or eliminate the adverse impacts resulting from traffic generated by known developments in the region or the Project.

2.2 Intersection Analysis

Level of Service (LOS) is a qualitative measure used to describe the conditions of traffic flow at intersections, with values ranging from free-flow conditions at LOS A to congested conditions at LOS F. The Highway Capacity Manual (HCM), 6th Edition, includes methods for calculating volume to capacity ratios, delays, and corresponding Levels of Service that were utilized in this study. LOS definitions for signalized and unsignalized intersections are provided in Appendix B.

Analyses for the study intersections were performed using the traffic analysis software Synchro, which is able to prepare reports based on the methodologies described in the HCM. These reports contain control delay results as based on intersection lane geometry, signal timing, and hourly traffic volumes. Based on the vehicular delay at each intersection, a LOS is assigned to each approach and intersection movement as a qualitative measure of performance. These results, as confirmed or refined by field observations, constitute the technical analysis that will form the basis of the recommendations outlined in this report.

Pedestrian analyses for roadway segments within the study area were performed using the LOS Plus 1.0 spreadsheet created by Fehr & Peers, which produces multi-modal LOS reports consistent with Chapter 17 of the 2010 version of the HCM. These reports contain quantitative LOS scores and designate corresponding LOS to those scores based on perceived user comfort levels.

3. EXISTING CONDITIONS

3.1 Roadway System

The following are brief descriptions of the existing roadways in the vicinity of the Project.

High Street – is generally a north-south, two-way, two-lane roadway in the vicinity of the Project. High Street begins to the south at its connection with Honoapiilani Highway near Keanu Street and terminates to the north at its intersection with West Vineyard Street. The portion of High Street from Honoapiilani Highway to the Main Street intersection is a State roadway and is identified as South High Street. The portion from Main Street to West Vineyard Street is a County roadway and is identified as North High Street. In the vicinity of the Project, North High Street has a posted speed limit of 20 miles per hour (mph) and on-street parking is available along the east side of the roadway.

Church Street – is generally a north-south, one-way, one-lane roadway in the vicinity of the Project. Church Street is a County roadway that begins to the south at its intersection with Kaohu Street and terminates to the north at its intersection with Waikahe Trail. Church Street has a speed limit of 20 mph and on-street parking is available along the roadway.

Market Street – is generally a north-south, one-lane roadway in the vicinity of the Project. Market Street is a County roadway that begins to the south at its connection with Kalawi Road and terminates to the north at its connection with Kahekili Highway. Between Wells Street and Vineyard Street (within the Project area), Market Street is one-way in the northbound direction. In the vicinity of the Project, Market Street has a posted speed limit of 20 mph and on-street parking is available along the roadway.

Main Street – is generally an east-west, two-way, two-lane roadway in the vicinity of the Project. West Main Street begins as a County roadway to the west at its connection with Iao Valley Road and transitions to East Main Street just prior to its intersection with North High Street. East Main Street is a State roadway that continues east and terminates at its connection with West Kaahumanu Avenue. In the vicinity of the Project, Main Street has a posted speed limit of 20 mph and limited on-street parking is available along the roadway.

Vineyard Street – is generally an east-west, two-way, two-lane roadway in the vicinity of the Project. Vineyard Street is a County roadway that begins to the west at its connection with Ilina Street and terminates to the east after its intersection with Mission Street. West of its intersection with Market Street, the roadway is identified as West Vineyard Street. East of its intersection with Market Street, the roadway is identified as East Vineyard Street. In the vicinity of the Project, Vineyard Street has a posted speed limit of 20 mph and limited on-street parking is available along the roadway.

Project Access Road (formerly Pili Street) – is an east-west, two-way, two-lane roadway that provides access to the existing Wailuku Municipal Parking Lot. The roadway connects North Church Street on the west and North Market Street on the east to the existing parking lot. The roadway has no posted speed limit.

Central Avenue – is a north-south, two-way, two-lane roadway in the vicinity of the Project. Central Avenue begins to the north at its connection with Mill Street and terminates to the south

at its intersection with Main Street. In the vicinity of the Project, the roadway has a posted speed limit of 20 mph and limited on-street parking is available along the roadway.

3.2 Existing Traffic Volumes

The hourly turning movement data utilized in this report were collected on February 2, 2017 and September 27, 2017. Based on the proximity to the proposed Project site, the following intersections were studied in the existing conditions scenario.

- [1] East Main Street/Central Avenue (signalized)
- [2] East Main Street/North Market Street (signalized)
- [3] East Main Street/North Church Street (unsignalized)
- [4] East Main Street/North High Street (signalized)
- [5] North Market Street/Project Access Road (unsignalized)
- [6] North Church Street/Project Access Road (unsignalized)
- [7] West Vineyard Street/Central Avenue (unsignalized)
- [8] West Vineyard Street/North Market Street (unsignalized)
- [9] West Vineyard Street/Municipal Parking Lot Access (unsignalized)
- [10] West Vineyard Street/North Church Street (unsignalized)
- [11] West Vineyard Street/North High Street (unsignalized)

Based on the count data, it was determined that the AM peak hour of traffic occurs between 7:00 AM and 8:00 AM and the PM peak hour of traffic occurs between 3:45 PM and 4:45 PM. The turning movement count data is included in Appendix A.

3.3 Existing Traffic Conditions Observations and Analysis

The observations and analysis described below are based on prevailing observations during the time at which the data was collected. Hereinafter, observations that are expressed as ongoing and current shall represent the conditions that prevailed at the time at which the data was collected.

3.3.1 Existing Intersection Analysis

All movements at the study intersections currently operate adequately at LOS D or better and under-capacity conditions during the peak hours of traffic. Based on observations, vehicle delay was observed to be minimal however the following congestive conditions were observed to occur temporarily during various peak hours:

- East Main Street experiences stop-and-go traffic conditions, due to on-street parking stalls, pedestrians crossing, and numerous businesses and driveways throughout the stretch in the study area.
- Central Avenue southbound traffic can queue from East Main Street to beyond West Vineyard Street for about 20 minutes from 7:25-7:45 AM and 4:30-4:50 PM.

- North High Street southbound traffic can variably queue at its signalized intersection with East Main Street, in part due to the shared southbound left-turn movement with permissive left turn phasing, with maximum queues reaching West Vineyard Street.
- Northbound congestion along North Market Street further north of the study area, near Piihana Road, spills back into the West Vineyard Street/North Market Street intersection during the PM peak hour. As a result, eastbound West Vineyard Street traffic can queue temporarily from North Market Street to North Church Street (380 feet) and northbound North Market Street traffic can queue from West Vineyard Street to Project Access Road (150 feet) for about 15 minutes from 4:30-4:45PM.

In addition, a traffic signal warrant analysis was conducted at the intersection of North Church Street/East Main Street using the 4-hour signal warrant and 8-hour signal warrant from the Manual on Uniform Traffic Control Devices (MUTCD), Federal Highway Administration, dated 2009. A signal is currently not warranted for existing 2017 conditions based on the 4-hour warrant but is warranted based on the 8-hour warrant. Since a signal is not planned to be constructed by HDOT at this time, the intersection was analyzed as an unsignalized intersection. See Appendix D.

Figure 3.1 illustrates the existing lane configurations, volumes and LOS. See Table 3.1 for a summary of the existing conditions analysis.

3.3.2 Existing Pedestrian Analysis

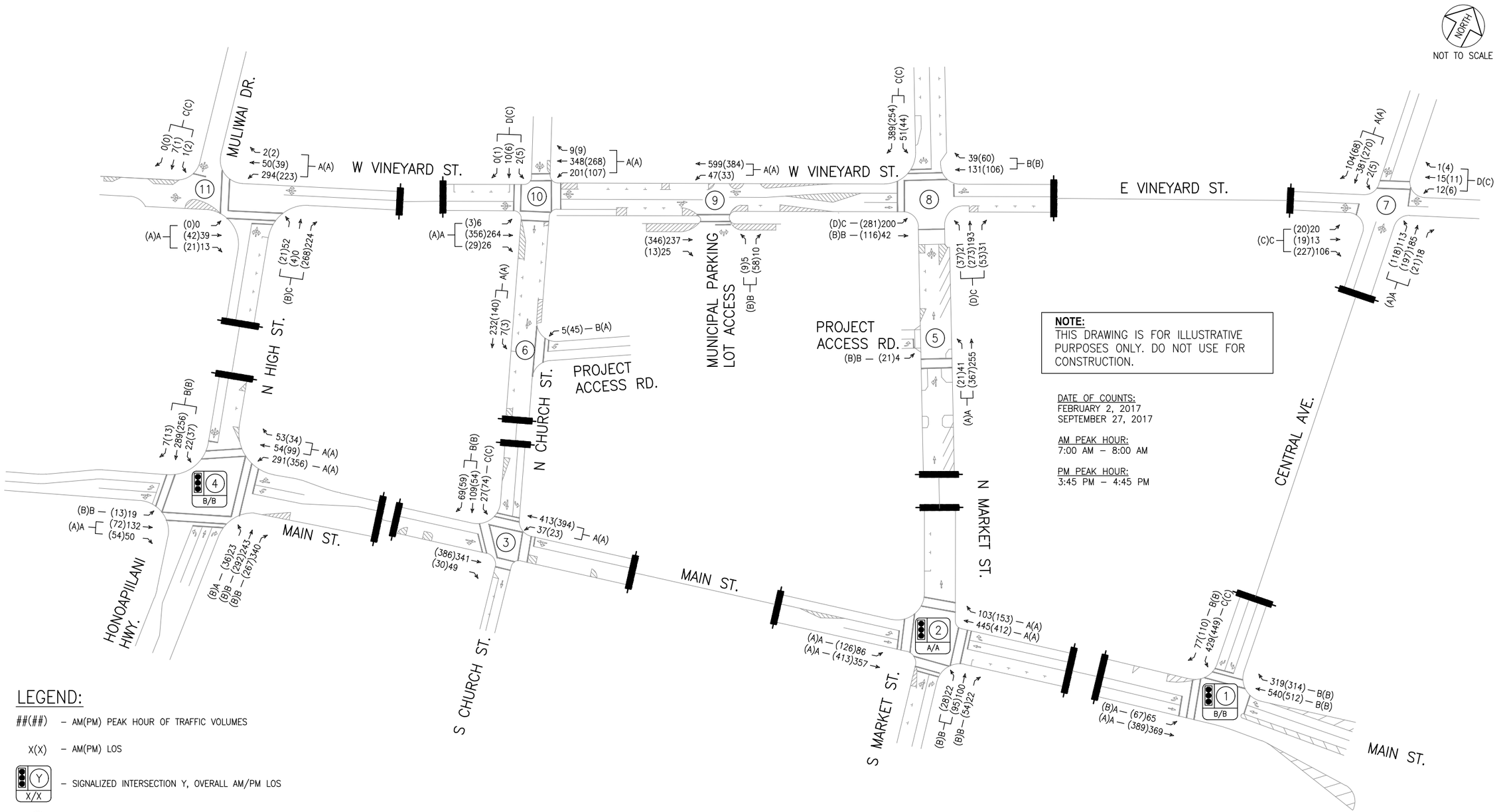
Moderate levels of pedestrian activity were observed in the Project vicinity, with pedestrian volumes generally higher during the AM peak hour of traffic. Figure 3.2 illustrates the existing pedestrian volumes in the Project area.

Based on observed existing conditions, the majority of Project roadway segments operate adequately at LOS C or better during both peak hours of traffic. However, because sidewalks are not provided along some of the studied roadways, several segments operate at LOS F since pedestrians are required to walk in the street or on the shoulder. Some segments that operate at LOS F may contain sidewalks along portions of the roadway however, since sidewalks were not continuous, it was conservatively analyzed without sidewalks and therefore operated at LOS F. With regard to existing frontage adjacent to the Project site, only Church Street from Main Street to Vineyard Street operated at LOS F due to segmented sidewalks along portions of the east side of the roadway. The Project is proposing to improve sidewalks along this stretch of Church Street as much as feasibly possible, within the allowable right-of-way. See Table 3.2 for a summary of the existing conditions pedestrian analysis.

3.3.3 Existing Parking Analysis

Currently, the Wailuku Municipal Parking Lot provides approximately 214 parking stalls. In addition, on-street parking is provided along various segments on North High Street, North Church Street and North Market Street. Limited on-street parking is also provided along East Main Street, West Vineyard Street and Central Avenue. Approximately 130 on-street parking stalls are provided along the Project roadways bounded by the study intersections.

Parking utilization was determined based on observed existing conditions at the Wailuku Municipal Parking Lot. At approximately 8:15 AM, 52 parking stalls in the Municipal Parking Lot were observed to be unoccupied for an occupancy rate of approximately 75%. Based on observations, the majority of parked cars were observed to enter during the AM peak hour of traffic (7:00 AM to 8:00 AM). At approximately 3:35 PM, 61 parking stalls in the lot were observed to be unoccupied for an occupancy rate of approximately 71%. Occupancy was observed to drop off during the PM peak hour of traffic (3:45 PM to 4:45 PM) with 119 stalls unoccupied for an occupancy rate of approximately 43% observed around 4:40 PM. Based on observed existing conditions, parking is generally 75% occupied throughout the day with the majority of vehicles entering during the AM peak hour and exiting during the PM peak hour.



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EXISTING TRAFFIC VOLUMES, LANE CONFIGURATION AND MOVEMENT LOS

FIGURE 3.1

Table 3.1: Existing Conditions Level of Service Summary

Intersection	Existing Conditions					
	AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
1: E Main St & Central Ave						
EB LT	9.7	0.21	A	10.0	0.21	B
EB TH	7.1	0.40	A	7.9	0.43	A
WB TH	15.3	0.79	B	15.8	0.77	B
WB RT	10.1	0.20	B	10.8	0.19	B
SB LT	25.6	0.86	C	21.7	0.85	C
SB RT	12.6	0.05	B	12.7	0.13	B
Overall	15.5	-	B	14.8	-	B
2: N Market St & E Main St						
NB LT/TH	13.7	0.44	B	13.6	0.40	B
NB RT	11.8	0.01	B	12.0	0.03	B
EB LT	5.3	0.18	A	5.7	0.25	A
EB TH	3.6	0.35	A	4.1	0.40	A
WB TH	9.3	0.66	A	10.0	0.64	A
WB RT	6.4	0.08	A	7.2	0.10	A
Overall	7.4	-	A	7.6	-	A
3: N Church St & E Main St						
WB LT/TH	8.4	0.04	A	8.4	0.02	A
SB LT	19.2	0.10	C	22.1	0.28	C
SB TH/RT	13.9	0.33	B	12.3	0.20	B
Overall	3.2	-	-	3.2	-	-
4: N High St & E Main St						
NB LT	9.9	0.05	A	11.4	0.09	B
NB TH	11.8	0.47	B	14.0	0.58	B
NB RT	10.5	0.21	B	11.7	0.21	B
EB LT	11.6	0.04	B	13.5	0.03	B
EB TH/RT	13.1	0.40	A	14.5	0.26	A
WB LT	8.4	0.49	A	8.3	0.51	A
WB TH/RT	5.3	0.10	A	5.3	0.13	A
SB LT/TH/RT	12.5	0.54	B	14.3	0.58	B
Overall	10.8	-	B	11.5	-	B
5: N Market St & Project Access Rd						
NB LT/TH	7.4	0.03	A	7.4	0.02	A
EB LT	11.7	0.01	B	12.3	0.04	B
Overall	1.1	-	-	1.0	-	-
6: N Church St & Project Access Rd						
WB LT	10.4	0.01	B	9.7	0.06	A
SB LT/TH	7.2	0.01	A	7.2	0.00	A
Overall	0.4	-	-	2.5	-	-
7: Central Ave & W Vineyard St						
NB LT/TH/RT	8.9	0.12	A	8.4	0.11	A
EB LT/TH/RT	18.5	0.36	C	17.9	0.51	C
WB LT/TH/RT	28.0	0.16	D	22.9	0.10	C
SB LT/TH/RT	7.7	0.00	A	7.7	0.00	A
Overall	4.5	-	-	6.5	-	-

Table 3.1: Existing Conditions Level of Service Summary Cont'd

Intersection	Existing Conditions					
	AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
8: N Market St & W Vineyard St						
NB LT/TH/RT	15.1	0.47	C	27.3	0.74	D
EB LT	16.9	0.46	C	25.7	0.67	D
EB TH	10.6	0.09	B	12.8	0.26	B
WB TH/RT	13.6	0.35	B	15.0	0.38	B
SB LT/RT	23.0	0.74	C	19.0	0.60	C
Overall	18.2	-	C	21.9	-	C
9: Municipal Parking Lot Access & W Vineyard St						
NB LT/RT	13.6	0.04	B	12.3	0.13	B
WB LT/TH	8.0	0.04	A	8.2	0.03	A
Overall	0.6	-	-	1.3	-	-
10: N Church St & W Vineyard St						
EB LT/TH/RT	8.1	0.01	A	7.9	0.00	A
WB LT/TH/RT	8.5	0.18	A	8.5	0.10	A
SB LT/TH/RT	28.1	0.08	D	18.2	0.05	C
Overall	2.5	-	-	1.5	-	-
11: N High St/Muliwai Dr & W Vineyard St						
NB LT/TH/RT	19.7	0.56	C	11.8	0.38	B
EB LT/TH/RT	0.0	0.00	A	0.0	0.00	A
WB LT/TH/RT	8.4	0.23	A	7.9	0.16	A
SB LT/TH/RT	22.5	0.04	C	20.5	0.01	C
Overall	11.8	-	-	8.4	-	-

NORTH

NOT TO SCALE

MULIWAI DR.

W VINEYARD ST.

E VINEYARD ST.

N HIGH ST.

N CHURCH ST.

S CHURCH ST.

MUNICIPAL PARKING LOT ACCESS

PROJECT ACCESS RD.

PROJECT ACCESS RD.

N MARKET ST.

S MARKET ST.

MAIN ST.

MAIN ST.

CENTRAL AVE.

HONOAPIILANI HWY.

(9)12 **

6(2) **

(1)2

5(5)

5(0) **

13(0) **

(13)2

4(7)

(0)0

60(11)

(3)5

5(6)

3(5)

(26)50

3(3)

0(2) **

(18)41

7(2) **

4(4)

45(8) **

21(25)

(27)38

(5)17

21(11)

(17)18

1(10)

11(19)

(9)19

28(19)

(9)11

(19)13

25(21)

(35)22

18(6)

(9)6

(21)5

1

2

3

4

5

6

7

8

9

10

11

NOTE:
THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. DO NOT USE FOR CONSTRUCTION.

DATE OF COUNTS:
FEBRUARY 2, 2017
SEPTEMBER 27, 2017

AM PEAK HOUR:
7:00 AM – 8:00 AM

PM PEAK HOUR:
3:45 PM – 4:45 PM

LEGEND:

##(##) – AM(PM) PEAK HOUR OF TRAFFIC VOLUMES

(Y) – SIGNALIZED INTERSECTION Y

(X) – UNSIGNALIZED INTERSECTION X

XX(XX) – AM (PM) PEDESTRIAN VOLUMES

** – INDICATES PEDESTRIANS CROSSING IN ABSENCE OF MARKED CROSSWALK

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EXISTING PEDESTRIAN VOLUMES

FIGURE
3.2

Table 3.2: Existing Conditions Pedestrian Mode Roadway Segment LOS

	Segment		AM Peak Hour			PM Peak Hour		
	Start	End	Ped Space[1]	LOS Score	LOS	Ped Space[1]	LOS Score	LOS
East Main Street								
EB	N High St	N Church St	1948.78	1.94	A	2923.19	1.70	A
	N Church St	N Market St	1255.77	1.65	A	1883.68	1.89	A
	N Market St	Central Ave	1482.58	1.68	A	2223.88	1.91	A
WB	Central Ave	N Market St	2387.69	2.23	B	2387.69	2.27	B
	N Market St	N Church St	2242.78	2.75	B	2242.78	2.69	B
	N Church St	N High St	3149.99	2.78	C	3149.99	2.72	B
West Vineyard Street								
EB	N High St	N Church St	779.06	2.32	B	3116.39	1.58	A
	N Church St	N Market St	12600.00	1.45	A	12600.00	1.69	A
	N Market St	Central Ave	0.00	1.56	F*	0.00	2.33	F*
WB	Central Ave	N Market St	0.00	3.79	F*	0.00	3.71	F*
	N Market St	N Church St	8971.20	2.06	B	8971.20	1.76	A
	N Church St	N High St	0.00	4.06	F*	0.00	3.88	F*
North High Street								
NB	E Main St	W Vineyard St	739.76	1.60	A	1322.97	1.69	A
SB	W Vineyard St	E Main St	1000.97	2.40	B	2252.23	2.24	B
North Church Street								
NB	E Main St	W Vineyard St	0.00	1.87	F*	0.00	1.62	F*
SB	W Vineyard St	E Main St	1940.38	1.41	A	2910.59	1.17	A
North Market Street								
NB	E Main St	W Vineyard St	1784.14	1.38	A	1784.14	1.60	A
SB	W Vineyard St	E Main St	1043.25	1.41	A	1738.78	1.63	A
Central Avenue								
NB	E Main St	W Vineyard St	5443.19	2.64	B	5443.19	2.63	B
SB	W Vineyard St	E Main St	0.00	4.40	F*	0.00	4.41	F*

Notes:

1. Pedestrian space is reported in square feet per pedestrian (ft^2/ped).

2. F* does not correspond to heavy pedestrian traffic traveling along the roadway segment, but primarily reflects the lack of continuous sidewalk or segmentation of sidewalks that requires pedestrians to walk in the shoulder or near the vehicle travel lane.

4. BASE YEAR 2021 TRAFFIC CONDITIONS

The Base Year 2021 was selected to reflect the completion of the Project. The Base Year 2021 scenario represents the traffic conditions within the study area without the Project. Base Year traffic projections were formulated by applying a defacto growth rate to the existing 2017 traffic count volumes and adding trips generated by known future developments in the vicinity of the Project.

4.1 Defacto Growth Rate

Projections for Base Year 2021 traffic were based upon existing traffic counts performed by ATA, HDOT's Maui Regional Travel Demand Model (MRTDM) growth for forecast years between 2007 and 2035, and nearby developments in the vicinity of the Project. Annual growth rates of approximately 0.3% to 0.9% were applied along the major roadways in the study area.

4.2 Traffic Forecasts for Known Developments

4.2.1 Background Projects

By Year 2021, traffic in the Project area is expected to experience growth due to several residential and commercial developments in the nearby regions. The majority of trips generated from the known developments are accounted for in the defacto growth rate as described in Section 4.1, and therefore not added separately to the study network.

The following known developments were included in Base Year 2021 traffic projections due to their proximity to the Project and are illustrated in Figure 4.1 and described below based on the best information available:

1. Mokuhau – This project is located along the south side of Mokuhau Road west of North Market Street. The project proposes to develop 16 single-family units. Completion is anticipated in 2017. A summary of the trips generated may be found in Table 4.1 below.
2. West Vineyard Condos – This project is located along the north side of Vineyard Street between North High Street and North Church Street. The project proposes to develop 50 multi-family units. There is currently no expected completion date, however, the project was included in this TIAR. A summary of the trips generated may be found in Table 4.1 below.
3. Mission Street Affordable Apartments – This project is located along the east side of Mission Street just north of Lower Main Street. The project proposes to develop 10 multi-family units. There is currently no expected completion date, however, the project was included in this TIAR. A summary of the trips generated may be found in Table 4.1 below.

Table 4.1: Background Development Trip Generation

Background Development	Land Use	Units	AM Peak Hour			PM Peak Hour		
			Enter (vph)	Exit (vph)	Total (vph)	Enter (vph)	Exit (vph)	Total (vph)
Mokuhau	Single Family Detached Housing (ITE 210)	16 DU	5	16	21	13	7	20
West Vineyard Condos	Residential Condo/Townhouse (ITE 230)	50 DU	5	25	30	23	11	34
Mission Street Affordable Apartments	Apartment (ITE 220)	10 DU	2	7	9	15	8	23
Total			**12**	**48**	**60**	**51**	**26**	**77**

Note:
1. Table 4.1 shows trips generated by known developments in the vicinity of the Project. Not all traffic generated by these developments travel through the study area of this TIAR, since some traffic will be routed to various roadways and intersections that were not included in this TIAR.

4.3 Base Year 2021 Analysis

It is anticipated that by Base Year 2021, traffic will have increased over existing conditions due to the development in Wailuku and the surrounding regions. Actual growth within the study region may vary based upon the approval process of the various projects.

4.3.1 Base Year 2021 Intersection Analysis

By Base Year 2021 without the Project, the majority of study intersections are forecast to operate similarly to existing conditions with increases in movement delay of generally 1-5 seconds. However, the northbound approach at the West Vineyard Street/North Market Street intersection is expected to worsen to LOS E during the PM peak hour of traffic. Because all intersection movements will continue to operate at under capacity conditions, no mitigation is proposed.

As described in Section 3.3.1, at the Church Street/Main Street intersection, a signal is currently not warranted for existing 2017 conditions based on the 4-hour warrant but is warranted based on the 8-hour warrant in the MUTCD. However, since a signal is not planned to be constructed by HDOT at this time, the intersection was analyzed as an unsignalized intersection. All movements are forecast to continue operating adequately at LOS D or better for the Base Year 2021 without Project condition. See Appendix D.

Figure 4.2 illustrates the Base Year 2021 forecast traffic volumes and LOS for the study intersection movements. Table 4.2 summarizes the Base Year 2021 LOS at the study intersections compared to existing conditions. LOS worksheets are provided in Appendix C.

WAILUKU CIVIC HUB

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FIGURE

BACKGROUND DEVELOPMENTS

4.1

NORTH

NOT TO SCALE

MULIWAI DR.

W VINEYARD ST.

E VINEYARD ST.

N HIGH ST.

N CHURCH ST.

S CHURCH ST.

PROJECT ACCESS RD.

MUNICIPAL PARKING LOT ACCESS

PROJECT ACCESS RD.

N MARKET ST.

S MARKET ST.

CENTRAL AVE.

MAIN ST.

HONOAPIILANI HWY.

NOTE:
THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. DO NOT USE FOR CONSTRUCTION.

LEGEND:

##(##) – AM(PM) PEAK HOUR OF TRAFFIC VOLUMES

X(X) – AM(PM) LOS

(Y) X/X – SIGNALIZED INTERSECTION Y, OVERALL AM/PM LOS

(X) – UNSIGNALIZED INTERSECTION X

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BASE YEAR 2021 TRAFFIC VOLUMES, LANE CONFIGURATION AND MOVEMENT LOS

FIGURE 4.2

Table 4.2: Existing Conditions and Base Year 2021 Level of Service Summary

Intersection	Existing Conditions						Base Year 2021					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
1: E Main St & Central Ave												
EB LT	9.7	0.21	A	10.0	0.21	B	10.5	0.23	B	10.9	0.23	B
EB TH	7.1	0.40	A	7.9	0.43	A	7.5	0.42	A	8.4	0.45	A
WB TH	15.3	0.79	B	15.8	0.77	B	16.2	0.80	B	16.7	0.78	B
WB RT	10.1	0.20	B	10.8	0.19	B	10.5	0.21	B	11.3	0.21	B
SB LT	25.6	0.86	C	21.7	0.85	C	29.7	0.88	C	25.2	0.87	C
SB RT	12.6	0.05	B	12.7	0.13	B	13.2	0.05	B	13.5	0.13	B
Overall	15.5	-	B	14.8	-	B	17.1	-	B	16.3	-	B
2: N Market St & E Main St												
NB LT/TH	13.7	0.44	B	13.6	0.40	B	14.2	0.47	B	14.0	0.42	B
NB RT	11.8	0.01	B	12.0	0.03	B	12.1	0.01	B	12.3	0.05	B
EB LT	5.3	0.18	A	5.7	0.25	A	5.4	0.19	A	5.9	0.26	A
EB TH	3.6	0.35	A	4.1	0.40	A	3.6	0.36	A	4.2	0.42	A
WB TH	9.3	0.66	A	10.0	0.64	A	9.5	0.67	A	10.3	0.65	B
WB RT	6.4	0.08	A	7.2	0.10	A	6.5	0.08	A	7.3	0.11	A
Overall	7.4	-	A	7.6	-	A	7.6	-	A	7.9	-	A
3: N Church St & E Main St												
WB LT/TH	8.4	0.04	A	8.4	0.02	A	8.4	0.04	A	8.4	0.03	A
SB LT	19.2	0.10	C	22.1	0.28	C	20.7	0.14	C	24.3	0.32	C
SB TH/RT	13.9	0.33	B	12.3	0.20	B	14.3	0.34	B	12.6	0.21	B
Overall	3.2	-	-	3.2	-	-	3.3	-	-	3.4	-	-
4: N High St & E Main St												
NB LT	9.9	0.05	A	11.4	0.09	B	9.9	0.06	A	11.6	0.10	B
NB TH	11.8	0.47	B	14.0	0.58	B	11.8	0.47	B	14.4	0.60	B
NB RT	10.5	0.21	B	11.7	0.21	B	10.5	0.22	B	12.1	0.25	B
EB LT	11.6	0.04	B	13.5	0.03	B	11.9	0.05	B	14.5	0.04	B
EB TH/RT	13.1	0.40	A	14.5	0.26	A	13.6	0.42	A	15.6	0.29	A
WB LT	8.4	0.49	A	8.3	0.51	A	9.2	0.53	A	9.0	0.53	A
WB TH/RT	5.3	0.10	A	5.3	0.13	A	5.6	0.10	A	5.7	0.13	A
SB LT/TH/RT	12.5	0.54	B	14.3	0.58	B	12.8	0.57	B	14.8	0.61	B
Overall	10.8	-	B	11.5	-	B	11.2	-	B	12.1	-	B
5: N Market St & Project Access Rd												
NB LT/TH	7.4	0.03	A	7.4	0.02	A	7.5	0.03	A	7.4	0.02	A
EB LT	11.7	0.01	B	12.3	0.04	B	11.9	0.01	B	12.7	0.06	B
Overall	1.1	-	-	1.0	-	-	1.3	-	-	1.1	-	-

Table 4.2: Existing Conditions and Base Year 2021 Level of Service Summary Cont'd

Intersection	Existing Conditions						Base Year 2021					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
6: N Church St & Project Access Rd												
WB LT	10.4	0.01	B	9.7	0.06	A	10.6	0.01	B	9.7	0.06	A
SB LT/TH	7.2	0.01	A	7.2	0.00	A	7.2	0.01	A	7.2	0.00	A
Overall	0.4	-	-	2.5	-	-	0.5	-	-	2.4	-	-
7: Central Ave & W Vineyard St												
NB LT/TH/RT	8.9	0.12	A	8.4	0.11	A	9.0	0.13	A	8.5	0.12	A
EB LT/TH/RT	18.5	0.36	C	17.9	0.51	C	20.2	0.40	C	20.4	0.57	C
WB LT/TH/RT	28.0	0.16	D	22.9	0.10	C	30.3	0.24	D	27.5	0.17	D
SB LT/TH/RT	7.7	0.00	A	7.7	0.00	A	7.7	0.00	A	7.7	0.00	A
Overall	4.5	-	-	6.5	-	-	5.2	-	-	7.5	-	-
8: N Market St & W Vineyard St												
NB LT/TH/RT	15.1	0.47	C	27.3	0.74	D	17.0	0.53	C	36.1	0.83	E
EB LT	16.9	0.46	C	25.7	0.67	D	18.8	0.52	C	31.1	0.74	D
EB TH	10.6	0.09	B	12.8	0.26	B	11.0	0.10	B	13.6	0.28	B
WB TH/RT	13.6	0.35	B	15.0	0.38	B	14.8	0.39	B	16.7	0.42	C
SB LT/RT	23.0	0.74	C	19.0	0.60	C	29.0	0.81	D	23.3	0.67	C
Overall	18.2	-	C	21.9	-	C	21.5	-	C	27.1	-	D
9: Municipal Parking Lot Access & W Vineyard St												
NB LT/RT	13.6	0.04	B	12.3	0.13	B	14.1	0.04	B	12.7	0.14	B
WB LT/TH	8.0	0.04	A	8.2	0.03	A	8.0	0.04	A	8.3	0.03	A
Overall	0.6	-	-	1.3	-	-	0.6	-	-	1.3	-	-
10: N Church St & W Vineyard St												
EB LT/TH/RT	8.1	0.01	A	7.9	0.00	A	8.2	0.01	A	8.0	0.00	A
WB LT/TH/RT	8.5	0.18	A	8.5	0.10	A	8.6	0.18	A	8.6	0.11	A
SB LT/TH/RT	28.1	0.08	D	18.2	0.05	C	31.7	0.11	D	16.1	0.06	C
Overall	2.5	-	-	1.5	-	-	2.5	-	-	1.6	-	-
11: N High St/Muliwai Dr & W Vineyard St												
NB LT/TH/RT	19.7	0.56	C	11.8	0.38	B	22.9	0.62	C	12.6	0.43	B
EB LT/TH/RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
WB LT/TH/RT	8.4	0.23	A	7.9	0.16	A	8.5	0.25	A	7.9	0.17	A
SB LT/TH/RT	22.5	0.04	C	20.5	0.01	C	27.1	0.09	D	21.4	0.05	C
Overall	11.8	-	-	8.4	-	-	13.3	-	-	9.0	-	-

5. FUTURE YEAR 2021 TRAFFIC CONDITIONS

5.1 Background

The Project proposes to construct a new multi-level parking structure, a mixed-use facility and an outdoor events pavilion. The proposed facility will accommodate a variety of community spaces, government offices and retail, including the following:

- 4,310 SF Community Reception/Classrooms
- 4,579 SF Roof Terrace
- 3,934 SF County Hearing Room
- 1,476 SF County MRA Management Offices
- 1,652 SF Retail
- 12,546 SF Real Property Tax Office
- 10,954 SF Specialty Grocery
- 428-stall parking structure; net increase of 115 new stalls from existing 214 stalls in Wailuku Municipal Parking Lot, 53 stalls programmed for the peak demands for above land uses & 46 stalls absorbed into the parking structure, with the removal of on-street parking stalls on Church Street, Vineyard Street and Main Street as part of the Project's pedestrian-oriented infrastructure improvements.

As part of the Project, the following changes are planned for the roadways and infrastructure in the Project vicinity:

- Removal of the existing parking lot access on West Vineyard Street.
- Conversion of North Church Street to a two-way, two-lane roadway between Main Street and West Vineyard Street.
    - Signalize and provide exclusive eastbound and westbound left-turn lanes at the Main Street/North Church Street intersection. Will require removal of approximately 5 on-street parking stalls on Main Street.
- Relocate primary entrance/exit for the parking garage to the existing driveway via Church Street.
- Provide secondary entrance only access into the parking garage at the existing driveway via Market Street, with limited entrance/exit for auxiliary access to surrounding businesses.
    - Limit entrance/exit for patrons or service vehicles accessing the adjacent First Hawaiian Bank parking lot, American Savings Bank Parking lot and delivery vehicles for the Maui Academy of Performing Arts (MAPA) building and the Main Street Promenade.
- Infrastructure improvements are proposed as part of the Project and include construction of new and/or widened sidewalks and planting street trees along the following corridors:
    - North Church Street between Main Street and West Vineyard Street.
    - West Vineyard Street between North High Street and North Market Street.

- As part of these pedestrian-oriented improvements, some on-street parking stalls will be removed along the above corridors:
  - North Church Street - removal of 23 on-street parking stalls (23 existing stalls) resulting in no remaining parking stalls between West Vineyard Street and East Main Street. However, 3 parking stalls will be provided for loading and delivery vehicles only.
  - West Vineyard Street - removal of 18 on-street parking stalls (21 existing stalls) resulting in 3 remaining parking stalls between North High Street and North Market Street.
- Overall removal of 41 stalls from existing 44 on-street parking stalls on North Church Street and West Vineyard Street.

5.2 Construction Impacts

During construction of the WCH and infrastructure improvements along West Vineyard Street and North Church Street, various measures should be taken to minimize traffic impacts in the surrounding area. The following are some general initiatives that should be considered to mitigate construction related traffic:

- Based on existing traffic counts, the AM peak hour of traffic occurs from 7:00 AM to 8:00 AM and the PM peak hour of traffic occurs from 3:45 PM to 4:45 PM. Construction hours should avoid these peak hours, when feasible, due to greater impacts on congestion. To minimize impacts on businesses and restaurants, construction hours should also consider avoiding the weekday midday peak hour of traffic generally from 12:00PM to 1:00PM.
- While construction is ongoing, adjacent roadways, including West Vineyard Street and North Church Street, may require lane closures or full roadway closures. Any roadway closures should be verified during construction planning and coordinated with State/County agencies and nearby residences and businesses.
- If road closures are required in the study area, all existing driveways that service adjacent residences and businesses should be maintained at all times.
- Night work and weekend work should be considered as necessary when roadway closures are required. If long-term roadway closures are imminent, considerations should be made to schedule these closures to coincide with the public schools spring, summer and winter breaks, to minimize impacts to school related traffic. Detours should be considered for any full roadway closure.
- A construction staging area should be identified. If employee parking is to occur at the staging area or some other offsite area, contractor should consider shuttling employees to/from the work site to minimize single vehicle use on adjacent roadways.
- The public should be notified in advance of any road closure to plan for any delays or detours that may be needed to modify daily trips. Proper lighting, advance warning signs, flaggers, speed limits and delineation along the roadway to negotiate vehicular, pedestrian and transit travel through the construction area should be accommodated.
- Existing pedestrian and bicycle facilities and bus transit routes should be maintained.

5.3 Travel Demand Estimations

The State of Hawaii Department of Transportation (HDOT) and Maui County provide various Transportation Demand Management (TDM) programs that promote the use of transit, walking, biking and alternative modes of transportation to reduce the use of single-occupant vehicles on roadways. These TDM measures have only been identified and conservatively assumed to yield no vehicular reductions for Project generated traffic.

Maui County currently provides a bus system that offers several routes that connect the major areas in Maui. The Lahaina Islander Route 20 provides regional connectivity between Kahului, Wailuku, Maalaea and Lahaina. Within Wailuku, the Wailuku Loop Route 1 and Wailuku Reverse Loop Route 2 provide bus transportation for local transit.

HDOT currently provides the Bike Plan Hawaii Master Plan, which identifies existing and proposed bicycle routes that could potentially be implemented in the future. In the vicinity of the Project, marked bike lanes are currently provided along the 1.7 mile route along Kahekili Highway between Market Street and Waiehu Beach Road. Additionally, there is a 0.5 mile long bike lane along Waiale Road from the start of the roadway to Maui Correctional Center. Three signed shared roadways are also proposed by the Bike Plan Hawaii Master Plan in the immediate vicinity of the Project. The bicycle routes are proposed along South High Street from Honoapiilani Highway to West Main Street, West Main Street from South High Street to East Main Street and North Market Street from West Main Street to Kahekili Highway. All three routes are Priority Level II or mid-term planned projects.

5.3.1 Trip Generation

The Institute of Transportation Engineers (ITE) publishes a book based on empirical data compiled from a body of more than 4,250 trip generation studies submitted by public agencies, developers, consulting firms, and associations. This publication, titled Trip Generation Manual, 9th Edition, provides trip rates and/or formulae based on graphs that correlate vehicular trips with independent variables. The independent variables can range from Dwelling Units (DU) for single-family attached homes to Gross Floor Area (GFA) for commercial or office development. These trip rates/formulae and their associated directional distributions were used to estimate the increase in the number of vehicular trips generated by the proposed Project. The rates selected were based on the land use description.

The trip generation rates for the new parking facility were derived from the trips entering and exiting the existing Municipal Parking Lot based on the collected turning movement counts at North Market Street/Project Access Road, West Vineyard Street/Municipal Parking Lot Access and North Church Street/Project Access Road. See Tables 5.1 and 5.2 for Trip Generation formulae and projections for the Project.

5.3.2 Trip Distribution and Assignment

Trips generated by the Project were assigned throughout the study area generally based upon existing travel patterns. The traffic generated by the Project was added to the forecast Base Year 2021 traffic volumes to constitute the traffic volumes for Future Year 2021 traffic conditions. For trip distribution purposes, traffic generated by the existing Municipal Parking lot was completely removed. Project trips were then redistributed throughout the study network, with primary access occurring at the North Church Street driveway and secondary entrance only access via the Market Street driveway. The former West Vineyard Street Access was removed.

Limited entering/exiting vehicles at the Market Street driveway are account for existing vehicles generated by the First Hawaiian Bank parking lot, American Savings Bank Parking lot and delivery vehicles for the Maui Academy of Performing Arts (MAPA) building and the Main Street Promenade. Figure 5.1 illustrates the Project-generated trip distribution.

Table 5.1: Trip Generation Rates

Land Use (ITE Code)	Independent Variable	AM Peak Hour		PM Peak Hour	
		Trip Rate	% Enter	Trip Rate	% Enter
Parking Facility [1]	Parking Spaces	0.69	83%	0.97	34%
Recreational Community Center (495)	1000 SF GFA	2.05	66%	2.74	49%
Government Office Complex (733)	1000 SF GFA	2.21	89%	2.85	31%
Specialty Retail (826)	1000 SF GFA	6.84	48%	2.71	44%
Supermarket (850)	1000 SF GFA	3.40	62%	9.48	51%

Notes:
1. Rates derived from existing Municipal Parking Lot during AM and PM peak hours of traffic.

Table 5.2: Project-Generated Trips

Land Use (ITE Code)	Independent Variable	Size	AM Peak Hour			PM Peak Hour		
			Enter (vph)	Exit (vph)	Total (vph)	Enter (vph)	Exit (vph)	Total (vph)
Parking Facility [1]	Parking Lot	375 stalls	215	43	258	126	239	365
Recreational Community Center (495)	Community Reception & Classrooms	4,310 SF	12	6	18	12	12	24
	Roof Terrace	4,579 SF						
Government Office Complex (733)	County Hearing Room	3,934 SF	35	4	39	16	35	51
	MRA Management Office	1,476 SF						
	Real Property Tax Office	12,546 SF						
Specialty Retail (826)	Specialty Retail Space	1,652 SF	5	6	11	2	3	5
Supermarket (850)	Specialty Grocery Store	10,954 SF	23	14	37	53	51	104
MAPA Building & Main Street Promenade Delivery Vehicles [2]			*7*	*7*	*14*	*6*	*6*	*12*
First Hawaiian Bank & American Savings Bank Parking Lot Trips [3]			*8*	*6*	*14*	*8*	*8*	*16*
On-Street Parking Stalls on Main, Vineyard & Church Street Absorbed in WCH [4]		46 stalls	*27*	*5*	*32*	*16*	*30*	*46*
Total			**332**	**91**	**423**	**239**	**386**	**625**

Notes:

1. Project proposes a 428-stall parking structure, 53 of which are estimated to cover peak stall demand for the retail, grocery and some government space uses. Trips generated by these uses are assumed to use these 53 parking stalls. Traffic generated by the remaining 375 parking stalls was derived from the existing Municipal Parking Lot calculated trip rates.
2. These trips are not generated by the Project, but will be affected by the proposed changes to the Project's accesses, which these businesses currently use. Based on observations, no delivery vehicles were generated by the Maui Academy of Performing Arts (MAPA) building and the Main Street Promenade during the AM and PM peak hours of traffic. However, to remain conservative, 14(12) AM(PM) trips were added to account for food delivery, water delivery, trash pickup and other infrequent service vehicles that typically occur once every week or month.
3. These trips are not generated by the Project, but will be affected by the proposed changes to the Project's accesses, which these businesses currently use for access to the adjacent First Hawaiian Bank parking lot and American Savings Bank Parking lot.
4. Traffic from the proposed removal of 46 on-street parking stalls were rerouted and added to the Project access on Church Street. Rerouted trips were generated based on Municipal Parking Lot calculated trip rates and conservatively added in addition to the 375 parking stalls.

5.4 Future Year 2021 Analysis

By Future Year 2021, the Project is projected to generate a total of 423(625) net external trips during the AM(PM) peak hours of traffic.

5.4.1 Future Year 2021 Intersection Analysis

The majority of study intersections are forecast to operate similar to Base Year 2021. However, the following intersection movements are expected to continue operating at or worsen to LOS E/F during the AM and/or PM peak hours of traffic compared to Base Year 2021.

[3] North Church Street/East Main Street

Since primary Project access will be provided exclusively along North Church Street, traffic volumes are expected to increase significantly over Base Year 2021. Additionally, with the conversion of North Church Street to two-way operations, the southbound approach at this intersection will need to be restriped to provide a single shared left-turn/through/right-turn lane.

As described in Section 3.3.1, at the Church Street/Main Street intersection, a signal is currently warranted based on the 8-hour warrant in the MUTCD. With the Project and laneage modifications, both the 4-hour and 8-hour signal warrants will be met based on the projected Future Year 2021 volumes at the Church Street/Main Street intersection. Therefore, a traffic signal is recommended to be installed at this intersection and assumed to be constructed prior to completion of the WCH facility. The signal warrant is included in Appendix D.

Based on ongoing discussions with DOT Highways Planning Branch and DOT Maui District Office, the following mitigations are the current recommended mitigations at this intersection:

- Install a traffic signal.
- Restripe southbound approach to provide a shared left-turn/through/right-turn lane.
- Provide signal coordination along East Main Street from North Church Street to Central Avenue to maintain throughput progression along the roadway. Coordination may extend to the East Main Street/High Street intersection if found to be effective.
- Provide exclusive eastbound and westbound left-turn lanes along the Main Street approaches with protected left-turn phasing. Based on AASHTO guidance and Synchro SimTraffic simulations, the recommended eastbound left-turn lane should provide at least 100 feet of storage space and the westbound left-turn lane should provide at least 75 feet of storage space, exclusive of taper or deceleration length.

With the above recommended mitigation, all movements are anticipated to operate adequately at LOS D or better and under capacity during both peak hours. The following are some of the major benefits with two-way flow on Church Street and a new signal at North Church Street/East Main Street intersection:

- Better use of a relatively low volume and under-utilized Church Street that will effectively balance traffic circulation throughout the study area.
    - A signal will provide protected signal phasing for southbound approach vehicles, which will allow Church Street to be a viable option to service more vehicles onto Main Street. This may alleviate some of the southbound congestion on North

High Street and Central Avenue, which currently occurs in the AM and/or PM peak hours of traffic.

- Allowance of northbound flow (via eastbound left-turn and westbound right-turn traffic from Main Street) will also provide an alternative route to get to various residential, commercial and parking uses in the area, alleviating northbound traffic on North High Street and Market Street.

- New eastbound and westbound left-turn lanes along Main Street will remove stopped left-turn vehicles from the through lane, thereby providing more constant through traffic along Main Street and reduce stop-and-go flow.
- Proposed signal coordination as part of the Project will also promote throughput and reduce stop-and-go traffic flow along Main Street.

[8] West Vineyard Street/North Market Street

With Project traffic increases and reroutes, the southbound approach is expected to operate at LOS E during the AM peak hour of traffic, while the eastbound left-turn movement is expected to operate to LOS E during the PM peak hour of traffic. The intersection will continue to operate adequately at overall LOS D or better and all movements will continue to operate under capacity during both peak hours.

[10] West Vineyard Street/North Church Street

During the AM peak hour of traffic, the southbound shared left-turn/through/right-turn movement is expected to operate at LOS F. However this movement operates with a low southbound volume projected at only 15 vehicles services existing residences.

Figure 5.2 illustrates the Future Year 2021 forecast traffic volumes and LOS for the study intersection movements. Table 5.3 summarizes the Future Year 2021 LOS at the study intersections compared to Base Year 2021. LOS worksheets are provided in Appendix C.

5.4.2 Pedestrian and Parking Impacts

The Project is anticipated to improve pedestrian connectivity to all four major roadways surrounding the Project site and promote multi-modal initiatives in the immediate vicinity of the Project. The Project proposes to widen or provide new continuous sidewalks along North Church Street between East Main Street and West Vineyard Street and along West Vineyard Street between North High Street and North Market Street. West Vineyard Street will have segments with wider and continuous sidewalks and landscaped areas abutting the south side of the road from High Street to Market Street. A new designated midblock crosswalk will also help facilitate pedestrians crossing West Vineyard Street. Wider sidewalks and landscape areas will also reduce vehicle pavements widths and shorten pedestrian crossings. A proposed drop-off area/loading zone on West Vineyard Street also supports the Project's multi-modal initiatives by reducing single vehicle use. A wider designated pedestrian walkway is proposed within the Project site at the Project Access Road via North Market Street, and a pedestrian path will be maintained to provide connection between the Project site and East Main Street.

As part of the new Main Street/Church Street signal, new exclusive eastbound and westbound left-turn lanes will be provided at the intersection, resulting in more constant through traffic along

Main Street and reduce stop-and-go flow. With this widening, approximately 5 on-street parking stalls will be removed on Main Street.

As part of these pedestrian-oriented improvements, some on-street parking stalls will be removed along North Church Street between East Main Street and West Vineyard Street and along West Vineyard Street between North High Street and North Market Street:

- North Church Street - removal of 23 on-street parking stalls (23 existing stalls) resulting in no remaining parking stalls.
- West Vineyard Street - removal of 18 on-street parking stalls (21 existing stalls) resulting in 3 remaining parking stalls.
- Overall removal of 41 stalls from existing 44 on-street parking stalls

Traffic generated by these 46 removed on-street parking stalls was absorbed into the Project parking structure.

NORTH

NOT TO SCALE

MULIWAI DR.

W VINEYARD ST.

E VINEYARD ST.

N HIGH ST.

N CHURCH ST.

PROJECT ACCESS RD.

N MARKET ST.

CENTRAL AVE.

MAIN ST.

HONOAPIILANI HWY.

S CHURCH ST.

S MARKET ST.

NOTE:

1. THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. DO NOT USE FOR CONSTRUCTION.
2. NEGATIVE VOLUMES ARE A PRODUCT OF THE REMOVAL OF ON-STREET PARKING STALLS REROUTED TO THE PROJECT SITE.

LEGEND:

##(##) – AM(PM) PEAK HOUR OF TRAFFIC VOLUMES

(Y) – SIGNALIZED INTERSECTION Y

(X) – UNSIGNALIZED INTERSECTION X

WAILUKU CIVIC HUB

TIAR

AUSTIN, TSUTSUMI & ASSOCIATES, INC.

ENGINEERS, SURVEYORS • HONOLULU, HAWAII

FIGURE 5.1

PROJECT-GENERATED TRAFFIC

NORTH

NOT TO SCALE

MULIWAI DR.

W VINEYARD ST.

E VINEYARD ST.

N HIGH ST.

N CHURCH ST.

PROJECT ACCESS RD.

N MARKET ST.

CENTRAL AVE.

MAIN ST.

HONOAPIILANI HWY.

S CHURCH ST.

S MARKET ST.

NOTE:
THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY. DO NOT USE FOR CONSTRUCTION.

LEGEND:

##(##) – AM(PM) PEAK HOUR OF TRAFFIC VOLUMES

X(X) – AM(PM) LOS

(Y) X/X – SIGNALIZED INTERSECTION Y, OVERALL AM/PM LOS

(X) – UNSIGNALIZED INTERSECTION X

WAILUKU CIVIC HUB
TIAR

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
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FIGURE 5.2

FUTURE YEAR 2021 WITH MITIGATION TRAFFIC VOLUMES, LANE CONFIGURATION AND MOVEMENT LOS

Table 5.3: Existing, Base Year 2021, and Future Year 2021 Level of Service Summary Cont'd

Intersection	Existing Conditions						Base Year 2021						Future Year 2021					
	AM			PM			AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
1: E Main St & Central Ave																		
EB LT	9.7	0.21	A	10.0	0.21	B	10.5	0.23	B	10.9	0.23	B	11.4	0.26	B	11.4	0.30	B
EB TH	7.1	0.40	A	7.9	0.43	A	7.5	0.42	A	8.4	0.45	A	1.1	0.42	A	1.6	0.51	A
WB TH	15.3	0.79	B	15.8	0.77	B	16.2	0.80	B	16.7	0.78	B	22.3	0.78	C	22.1	0.76	C
WB RT	10.1	0.20	B	10.8	0.19	B	10.5	0.21	B	11.3	0.21	B	11.3	0.19	B	11.8	0.19	B
SB LT	25.6	0.86	C	21.7	0.85	C	29.7	0.88	C	25.2	0.87	C	39.6	0.91	D	39.8	0.91	D
SB RT	12.6	0.05	B	12.7	0.13	B	13.2	0.05	B	13.5	0.13	B	17.5	0.06	B	17.6	0.08	B
Overall	15.5	-	B	14.8	-	B	17.1	-	B	16.3	-	B	20.2	-	C	19.3	-	B
2: N Market St & E Main St																		
NB LT/TH	13.7	0.44	B	13.6	0.40	B	14.2	0.47	B	14.0	0.42	B	29.7	0.54	C	28.4	0.51	C
NB RT	11.8	0.01	B	12.0	0.03	B	12.1	0.01	B	12.3	0.05	B	25.9	0.01	C	25.0	0.03	C
EB LT	5.3	0.18	A	5.7	0.25	A	5.4	0.19	A	5.9	0.26	A	3.1	0.15	A	3.6	0.22	A
EB TH	3.6	0.35	A	4.1	0.40	A	3.6	0.36	A	4.2	0.42	A	3.6	0.32	A	4.8	0.45	A
WB TH	9.3	0.66	A	10.0	0.64	A	9.5	0.67	A	10.3	0.65	B	1.0	0.51	A	1.0	0.48	A
WB RT	6.4	0.08	A	7.2	0.10	A	6.5	0.08	A	7.3	0.11	A	0.1	0.08	A	0.2	0.12	A
Overall	7.4	-	A	7.6	-	A	7.6	-	A	7.9	-	A	5.0	-	A	5.3	-	A
3: N Church St & E Main St																		
EB LT	-	-	-	-	-	-	-	-	-	-	-	-	43.6	0.79	D	53.5	0.78	D
EB TH/RT	-	-	-	-	-	-	-	-	-	-	-	-	8.1	0.39	A	11.1	0.46	A
WB LT	-	-	-	-	-	-	-	-	-	-	-	-	42.6	0.61	D	43.0	0.53	D
WB LT/TH	8.4	0.04	A	8.40	0.02	A	8.4	0.04	A	8.40	0.03	A	-	-	-	-	-	-
WB TH/RT	-	-	-	-	-	-	-	-	-	-	-	-	11.6	0.53	A	14.2	0.55	A
SB LT	19.2	0.10	C	22.10	0.28	C	20.7	0.14	C	24.30	0.32	C	-	-	-	-	-	-
SB TH/RT	13.9	0.33	B	12.30	0.20	B	14.3	0.34	B	12.60	0.21	B	-	-	-	-	-	-
SB LT/TH/RT	-	-	-	-	-	-	-	-	-	-	-	-	36.4	0.80	D	36.5	0.86	D
Overall	3.2	-	-	3.2	-	-	3.3	-	-	3.4	-	-	18.7	-	B	21.9	-	C
4: N High St & E Main St																		
NB LT	9.9	0.05	A	11.4	0.09	B	9.9	0.06	A	11.6	0.10	B	9.9	0.06	A	12.0	0.10	B
NB TH	11.8	0.47	B	14.0	0.58	B	11.8	0.47	B	14.4	0.60	B	11.3	0.38	B	14.1	0.52	B
NB RT	10.5	0.21	B	11.7	0.21	B	10.5	0.22	B	12.1	0.25	B	11.7	0.43	B	13.5	0.43	B
EB LT	11.6	0.04	B	13.5	0.03	B	11.9	0.05	B	14.5	0.04	B	12.0	0.05	B	15.2	0.04	B
EB TH/RT	13.1	0.40	A	14.5	0.26	A	13.6	0.42	A	15.6	0.29	A	13.7	0.43	A	16.4	0.31	A
WB LT	8.4	0.49	A	8.3	0.51	A	9.2	0.53	A	9.0	0.53	A	9.5	0.54	A	9.4	0.56	A
WB TH/RT	5.3	0.10	A	5.3	0.13	A	5.6	0.10	A	5.7	0.13	A	5.7	0.10	A	5.9	0.13	A
SB LT/TH/RT	12.5	0.54	B	14.3	0.58	B	12.8	0.57	B	14.8	0.61	B	12.9	0.58	B	15.6	0.65	B
Overall	10.8	-	B	11.5	-	B	11.2	-	B	12.1	-	B	11.3	-	B	12.6	-	B
5: N Market St & Project Access Rd																		
NB LT/TH	7.4	0.03	A	7.4	0.02	A	7.5	0.03	A	7.4	0.02	A	7.5	0.04	A	7.4	0.04	A
EB LT	11.7	0.01	B	12.3	0.04	B	11.9	0.01	B	12.7	0.06	B	12.4	0.02	B	13.2	0.04	B
Overall	1.1	-	-	1.0	-	-	1.3	-	-	1.1	-	-	1.7	-	-	1.3	-	-

Table 5.3: Existing, Base Year 2021, and Future Year 2021 Level of Service Summary Cont'd

Intersection	Existing Conditions						Base Year 2021						Future Year 2021					
	AM			PM			AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
6: N Church St & Project Access Rd																		
WB LT	10.4	0.01	B	9.7	0.06	A	10.6	0.01	B	9.7	0.06	A	-	-	-	-	-	-
WB LT/RT	-	-	-	-	-	-	-	-	-	-	-	-	14.6	0.20	B	21.0	0.65	C
SB LT/TH	7.2	0.01	A	7.2	0.00	A	7.2	0.01	A	7.2	0.00	A	7.9	0.10	A	7.8	0.07	A
Overall	0.4	-	-	2.5	-	-	0.5	-	-	2.4	-	-	3.4	-	-	11.2	-	-
7: Central Ave & W Vineyard St																		
NB LT/TH/RT	8.9	0.12	A	8.4	0.11	A	9.0	0.13	A	8.5	0.12	A	9.1	0.12	A	8.5	0.11	A
EB LT/TH/RT	18.5	0.36	C	17.9	0.51	C	20.2	0.40	C	20.4	0.57	C	22.3	0.46	C	26.6	0.68	D
WB LT/TH/RT	28.0	0.16	D	22.9	0.10	C	30.3	0.24	D	27.5	0.17	D	31.4	0.24	D	28.0	0.17	D
SB LT/TH/RT	7.7	0.00	A	7.7	0.00	A	7.7	0.00	A	7.7	0.00	A	7.7	0.00	A	7.7	0.00	A
Overall	4.5	-	-	6.5	-	-	5.2	-	-	7.5	-	-	5.6	-	-	9.5	-	-
8: N Market St & W Vineyard St																		
NB LT/TH/RT	15.1	0.47	C	27.3	0.74	D	17.0	0.53	C	36.1	0.83	E	17.5	0.52	C	35.3	0.81	E
EB LT	16.9	0.46	C	25.7	0.67	D	18.8	0.52	C	31.1	0.74	D	20.5	0.55	C	43.5	0.85	E
EB TH	10.6	0.09	B	12.8	0.26	B	11.0	0.10	B	13.6	0.28	B	11.3	0.11	B	14.2	0.31	B
WB TH/RT	13.6	0.35	B	15.0	0.38	B	14.8	0.39	B	16.7	0.42	C	15.4	0.40	C	17.6	0.44	C
SB LT/RT	23.0	0.74	C	19.0	0.60	C	29.0	0.81	D	23.3	0.67	C	36.5	0.88	E	28.5	0.75	D
Overall	18.2	-	C	21.9	-	C	21.5	-	C	27.1	-	D	25.3	-	D	31.3	-	D
9: Municipal Parking Lot Access & W Vineyard St																		
NB LT/RT	13.6	0.04	B	12.3	0.13	B	14.1	0.04	B	12.7	0.14	B	-	-	-	-	-	-
WB LT/TH	8.0	0.04	A	8.2	0.03	A	8.0	0.04	A	8.3	0.03	A	-	-	-	-	-	-
Overall	0.6	-	-	1.3	-	-	0.6	-	-	1.3	-	-	-	-	-	-	-	-
10: N Church St & W Vineyard St																		
NB LT/TH/RT	-	-	-	-	-	-	-	-	-	-	-	-	26.3	0.31	D	30.4	0.62	D
EB LT/TH/RT	8.1	0.01	A	7.9	0.00	A	8.2	0.01	A	8.0	0.00	A	8.1	0.01	A	7.9	0.00	A
WB LT/TH/RT	8.5	0.18	A	8.5	0.10	A	8.6	0.18	A	8.6	0.11	A	8.9	0.25	A	8.8	0.16	A
SB LT/TH/RT	28.1	0.08	D	18.2	0.05	C	31.7	0.11	D	16.1	0.06	C	50.0	0.17	F	27.0	0.12	D
Overall	2.5	-	-	1.5	-	-	2.5	-	-	1.6	-	-	5.0	-	-	7.7	-	-
11: N High St/Muliwai Dr & W Vineyard St																		
NB LT/TH/RT	19.7	0.56	C	11.8	0.38	B	22.9	0.62	C	12.6	0.43	B	23.9	0.59	C	12.8	0.40	B
EB LT/TH/RT	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A
WB LT/TH/RT	8.4	0.23	A	7.9	0.16	A	8.5	0.25	A	7.9	0.17	A	8.5	0.26	A	8.0	0.19	A
SB LT/TH/RT	22.5	0.04	C	20.5	0.01	C	27.1	0.09	D	21.4	0.05	C	27.7	0.09	D	22.7	0.05	C
Overall	11.8	-	-	8.4	-	-	13.3	-	-	9.0	-	-	12.7	-	-	8.7	-	-

6. CONCLUSIONS

The Project proposes to construct a new multi-level parking structure, a mixed-use facility and an outdoor events pavilion. The proposed facility will accommodate a variety of community spaces, government offices and retail, including the following:

- 4,310 SF Community Reception/Classrooms
- 4,579 SF Roof Terrace
- 3,934 SF County Hearing Room
- 1,476 SF County MRA Management Offices
- 1,652 SF Retail
- 12,546 SF Real Property Tax Office
- 10,954 SF Specialty Grocery
- 428-stall parking structure; net increase of 115 new stalls from existing 214 stalls in Wailuku Municipal Parking Lot, 53 stalls programmed for the peak demands for above land uses & 46 stalls absorbed into the parking structure, with the removal of on-street parking stalls on Church Street, Vineyard Street and Main Street as part of the Project's pedestrian-oriented infrastructure improvements.

As part of the Project, the following changes are planned for the roadways and infrastructure in the Project vicinity:

- Removal of the existing parking lot access on West Vineyard Street.
- Conversion of North Church Street to a two-way, two-lane roadway between Main Street and West Vineyard Street.
    - Signalize and provide exclusive eastbound and westbound left-turn lanes at the Main Street/North Church Street intersection. Will require removal of approximately 5 on-street parking stalls on Main Street.
- Relocate primary entrance/exit for the parking garage to the existing driveway via Church Street.
- Provide secondary entrance only access into the parking garage at the existing driveway via Market Street, with limited entrance/exit for auxiliary access to surrounding businesses.
    - Limit entrance/exit for patrons or service vehicles accessing the adjacent First Hawaiian Bank parking lot, American Savings Bank Parking lot and delivery vehicles for the Maui Academy of Performing Arts (MAPA) building and the Main Street Promenade.
- Infrastructure improvements are proposed as part of the Project and include construction of new and/or widened sidewalks and planting street trees along the following corridors:
    - North Church Street between Main Street and West Vineyard Street.
    - West Vineyard Street between North High Street and North Market Street.

- As part of these pedestrian-oriented improvements, some on-street parking stalls will be removed along the above corridors:
  - North Church Street - removal of 23 on-street parking stalls (23 existing stalls) resulting in no remaining parking stalls between West Vineyard Street and East Main Street. However, 3 parking stalls will be provided for loading and delivery vehicles only.
  - West Vineyard Street - removal of 18 on-street parking stalls (21 existing stalls) resulting in 3 remaining parking stalls between North High Street and North Market Street.
- Overall removal of 41 stalls from existing 44 on-street parking stalls on North Church Street and West Vineyard Street.

At full build-out, the Project is projected to generate a total of 423(625) net external trips during the AM(PM) peak hours of traffic.

6.1 Existing Conditions

The Project is located in downtown Wailuku in Central Maui. All movements at the study intersections operated adequately at LOS D or better and under-capacity conditions during the peak hours of traffic. Delay to vehicles was observed to be minimal.

Based on observations, vehicle delay was observed to be minimal; variable queues were observed temporarily during the AM and PM peak hours, generally for 15-20 minute peaks.

At the intersection of North Church Street/East Main Street a signal is currently not warranted for existing 2017 conditions based on the 4-hour warrant but is warranted based on the 8-hour warrant. Since a signal is not planned to be constructed by HDOT at this time, the intersection was analyzed as an unsignalized intersection.

Pedestrian activity in the Project area was observed to be moderate with the highest pedestrian volumes generally occurring during the AM peak hour of traffic. The majority of roadway segments operated adequately at LOS C or better. However, several segments operated at LOS F due to a lack of consistent sidewalks. Based on observations, parking in the Project area is generally 75% occupied throughout the day with the majority of vehicles parking during the AM peak hour and leaving during the PM peak hour. The Municipal Parking Lot and on-street parking in the Project vicinity provide approximately 329 stalls.

6.2 Base Year 2021

By Base Year 2021 without the Project, the majority of study intersections are forecast to operate similarly to existing conditions with increases in movement delay of 1-5 seconds. The northbound approach of the West Vineyard Street/North Market Street intersection is expected to worsen to LOS E during the PM peak hour of traffic compared to the existing conditions due to an increase in movements to and from the Waiehu-Waihee region. However, because all movements will continue to operate at under capacity conditions, no mitigation is proposed.

6.3 Future Year 2021

By Future Year 2021, the Project is projected to generate a total of 423(625) net external trips during the AM(PM) peak hours of traffic. Access to the Project will be provided at the North

Church Street/Project Access Road and North Market Street/Project Access Road intersections and egress will be provided at the North Church Street/Project Access Road intersection only. It should be noted that limited egress will be allowed at the North Market Street/Project Access Road intersection. However, only patrons of First Hawaiian Bank, as well as delivery vehicles for both the Maui Academy of Performing Arts (MAPA) and the Main Street Promenade will be allowed to exit via this roadway.

With a signal at the Main Street/Church Street intersection, all movements will operate at LOS D or better. The following are some of the major benefits with two-way flow on Church Street and a new signal at North Church Street/East Main Street intersection:

- Better use of a relatively low volume and under-utilized Church Street that will effectively balance traffic circulation throughout the study area.
    - A signal will provide protected signal phasing for southbound approach vehicles, which will allow Church Street to be a viable option to service more vehicles onto Main Street. This may alleviate some of the southbound congestion on North High Street and Central Avenue, which currently occurs in the AM and/or PM peak hours of traffic.
    - Allowance of northbound flow (via eastbound left-turn and westbound right-turn traffic from Main Street) will also provide an alternative route to get to various residential, commercial and parking uses in the area, alleviating northbound traffic on North High Street and Market Street.
- New eastbound and westbound left-turn lanes along Main Street will remove stopped left-turn vehicles from the through lane, thereby providing more constant through traffic along Main Street and reduce stop-and-go flow.
- Proposed signal coordination as part of the Project will also promote throughput and reduce stop-and-go traffic flow along Main Street.

The majority of all remaining study intersections are forecast to operate similar to Base Year 2021. However, a couple movements at the Market Street/Vineyard Street intersection will operate at LOS E but will operate overall at LOS D or better.

7. RECOMMENDATIONS

7.1 Future Year 2021

The following roadway improvements are planned to be constructed as part of the Project:

- Removal of the existing parking lot access on West Vineyard Street.
- Conversion of North Church Street to a two-way, two-lane roadway between Main Street and West Vineyard Street.
    - Signalize and provide exclusive eastbound and westbound left-turn lanes at the Main Street/North Church Street intersection. Will require removal of approximately 5 on-street parking stalls on Main Street.
- Relocate primary entrance/exit for the parking garage to the existing driveway via Church Street.

- Provide secondary entrance only access into the parking garage at the existing driveway via Market Street, with limited entrance/exit for auxiliary access to surrounding businesses.
    - Limit entrance/exit for patrons or service vehicles accessing the adjacent First Hawaiian Bank parking lot, American Savings Bank Parking lot and delivery vehicles for the Maui Academy of Performing Arts (MAPA) building and the Main Street Promenade.
- Infrastructure improvements are proposed as part of the Project and include construction of new and/or widened sidewalks and planting street trees along the following corridors:
    - North Church Street between Main Street and West Vineyard Street.
    - West Vineyard Street between North High Street and North Market Street.
    - As part of these pedestrian-oriented improvements, some on-street parking stalls will be removed along the above corridors:
        - North Church Street - removal of 23 on-street parking stalls (23 existing stalls) resulting in no remaining parking stalls between West Vineyard Street and East Main Street. However, 3 parking stalls will be provided for loading and delivery vehicles only.
        - West Vineyard Street - removal of 18 on-street parking stalls (21 existing stalls) resulting in 3 remaining parking stalls between North High Street and North Market Street.
        - Overall removal of 41 stalls from existing 44 on-street parking stalls on North Church Street and West Vineyard Street.

North Church Street/East Main Street

- Install a traffic signal.
- Restripe southbound approach to provide a shared left-turn/through/right-turn lane.
- Provide signal coordination along East Main Street from North Church Street to Central Avenue to maintain throughput progression along the roadway. Coordination may extend to the East Main Street/High Street intersection if found to be effective.
- Provide an exclusive eastbound left-turn lane with at least 100 feet of storage space and an exclusive westbound left-turn lane with at least 75 feet of storage space exclusive of taper or deceleration length. Provide protected left-turn phasing for both movements.

8. REFERENCES

1. Federal Highway Administration, Manual on Uniform Traffic Control Devices, 2009.
2. Fehr & Peers, LOS Plus 1.0, 2012.
3. Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012.
4. Transportation Research Board, Highway Capacity Manual, 2010.
5. Transportation Research Board, Highway Capacity Manual, 6th Edition, 2016.

A P P E N D I C E S

APPENDIX A

TRAFFIC COUNT DATA

Austin Tsutsumi & Associates

501 Sumner Street, Suite 521
Honolulu, HI 96817-5031
Phone: 533-3646 Fax: 526-1267

File Name : AM_Central Ave - Main St
Site Code : 00000000
Start Date : 9/27/2017
Page No : 1

Groups Printed- Class 1

	CENTRAL AVE SOUTHBOUND				MAIN ST WESTBOUND				CENTRAL AVE NORTHBOUND				MAIN ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	80	0	10	0	0	7	2	0	0	0	0	0	3	2	0	0	104
06:45	95	0	8	0	0	107	41	0	0	0	0	0	9	67	0	0	327
Total	175	0	18	0	0	114	43	0	0	0	0	0	12	69	0	0	431
07:00	98	0	24	1	0	136	60	0	0	0	0	0	10	78	0	2	409
07:15	123	0	23	1	0	123	74	0	0	0	0	0	17	74	0	2	437
07:30	127	0	12	3	0	137	72	0	0	0	0	0	18	95	0	1	465
07:45	81	0	18	1	0	144	113	0	0	0	0	0	20	122	0	0	499
Total	429	0	77	6	0	540	319	0	0	0	0	0	65	369	0	5	1810
08:00	23	0	18	0	0	132	71	0	0	0	0	0	12	73	0	0	329
Grand Total	627	0	113	6	0	786	433	0	0	0	0	0	89	511	0	5	2570
Apprch %	84	0	15.1	0.8	0	64.5	35.5	0	0	0	0	0	14.7	84.5	0	0.8	
Total %	24.4	0	4.4	0.2	0	30.6	16.8	0	0	0	0	0	3.5	19.9	0	0.2	

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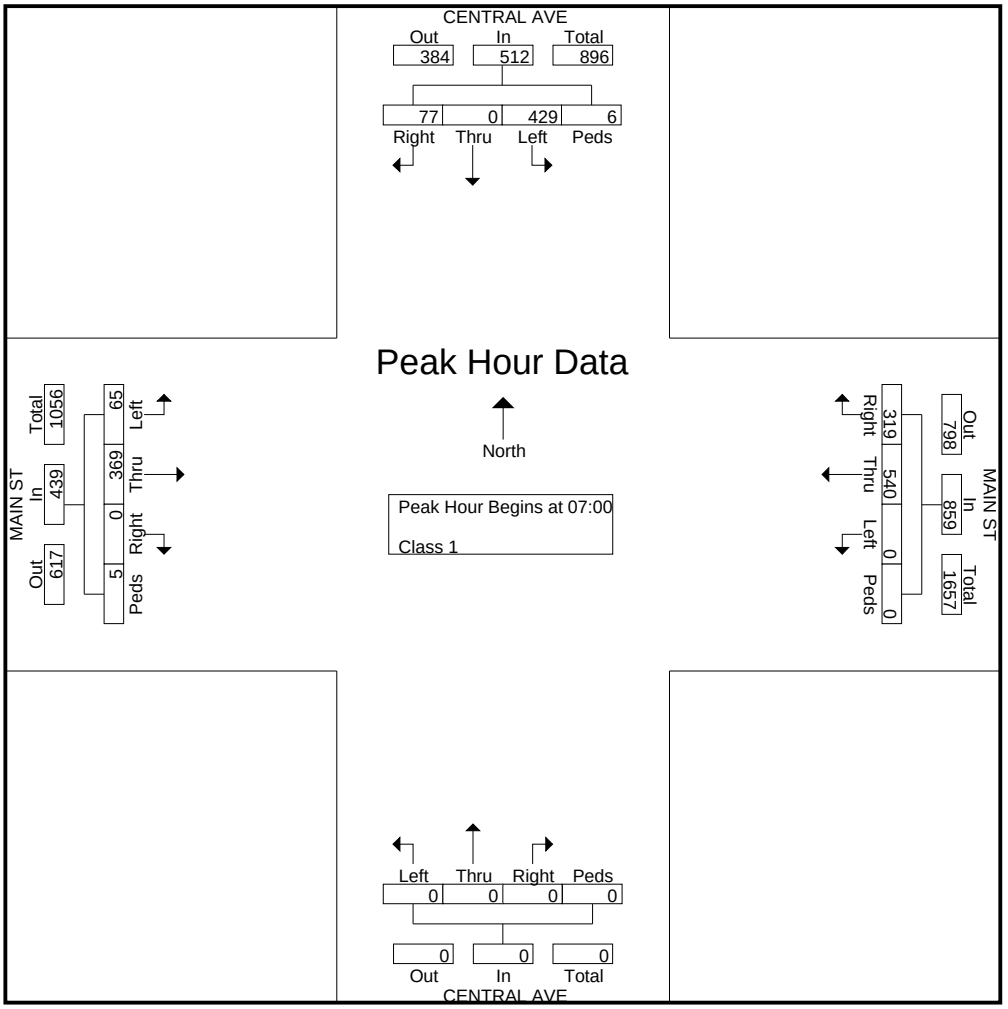
File Name : AM_Central Ave - Main St
Site Code : 00000000
Start Date : 9/27/2017
Page No : 2

	CENTRAL AVE SOUTHBOUND					MAIN ST WESTBOUND					CENTRAL AVE NORTHBOUND					MAIN ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:00 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	98	0	**24**	1	123	0	136	60	0	196	0	0	0	0	0	10	78	0	**2**	90	409
07:15	123	0	23	1	**147**	0	123	74	0	197	0	0	0	0	0	17	74	0	2	93	437
07:30	**127**	0	12	**3**	142	0	137	72	0	209	0	0	0	0	0	18	95	0	1	114	465
07:45	81	0	18	1	100	0	**144**	**113**	0	**257**	0	0	0	0	0	**20**	**122**	0	0	**142**	**499**
Total Volume	429	0	77	6	512	0	540	319	0	859	0	0	0	0	0	65	369	0	5	439	1810
% App. Total	83.8	0	15	1.2		0	62.9	37.1	0		0	0	0	0		14.8	84.1	0	1.1		
PHF	.844	.000	.802	.500	.871	.000	.938	.706	.000	.836	.000	.000	.000	.000	.000	.813	.756	.000	.625	.773	.907



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File Name : AM_Market St - Main St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	MARKET ST Southbound				MAIN ST Westbound				MARKET ST Northbound				MAIN ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	4	19	101	0	7	3	28	1	3	1	49	13	6	235
07:15 AM	0	0	0	3	22	135	0	8	7	24	4	1	0	81	22	2	309
07:30 AM	0	0	0	4	25	102	0	4	5	35	11	4	0	113	28	5	336
07:45 AM	0	0	0	2	37	107	0	6	7	13	6	10	0	114	23	9	334
Total	0	0	0	13	103	445	0	25	22	100	22	18	1	357	86	22	1214
Grand Total	0	0	0	13	103	445	0	25	22	100	22	18	1	357	86	22	1214
Apprch %	0	0	0	100	18	77.7	0	4.4	13.6	61.7	13.6	11.1	0.2	76.6	18.5	4.7	
Total %	0	0	0	1.1	8.5	36.7	0	2.1	1.8	8.2	1.8	1.5	0.1	29.4	7.1	1.8	
Unshifted	0	0	0	13	103	445	0	25	22	100	22	18	1	357	86	22	1214
% Unshifted	0	0	0	100	100	100	0	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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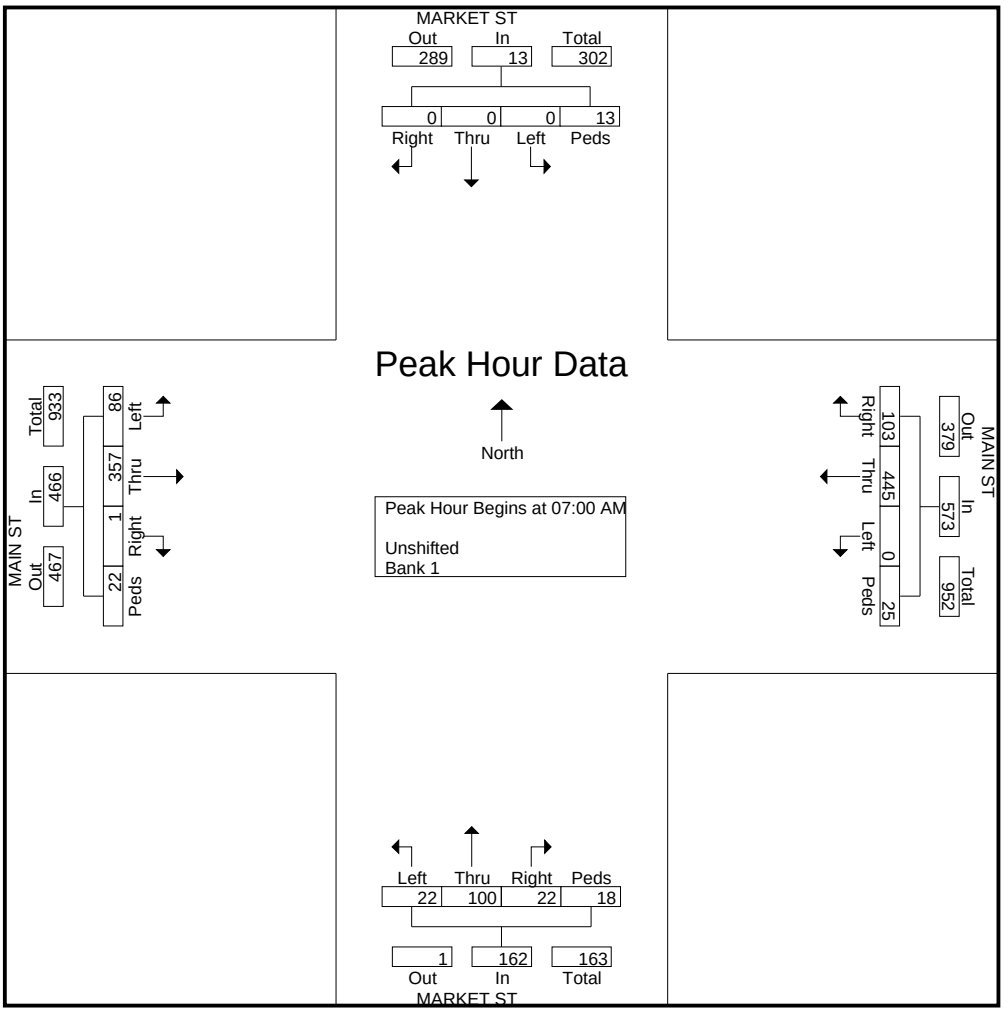
File Name : AM_Market St - Main St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 2

	MARKET ST Southbound					MAIN ST Westbound					MARKET ST Northbound					MAIN ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	**4**	**4**	19	101	0	7	127	3	28	1	3	35	**1**	49	13	6	69	235
07:15 AM	0	0	0	3	3	22	**135**	0	**8**	**165**	**7**	24	4	1	36	0	81	22	2	105	309
07:30 AM	0	0	0	4	4	25	102	0	4	131	5	**35**	**11**	4	**55**	0	113	**28**	5	**146**	**336**
07:45 AM	0	0	0	2	2	**37**	107	0	6	150	7	13	6	**10**	36	0	**114**	23	**9**	146	334
Total Volume	0	0	0	13	13	103	445	0	25	573	22	100	22	18	162	1	357	86	22	466	1214
% App. Total	0	0	0	100		18	77.7	0	4.4		13.6	61.7	13.6	11.1		0.2	76.6	18.5	4.7		
PHF	.000	.000	.000	.813	.813	.696	.824	.000	.781	.868	.786	.714	.500	.450	.736	.250	.783	.768	.611	.798	.903



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File Name : AM_Church St - Main St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	CHURCH ST Southbound				MAIN ST Westbound				CHURCH ST Northbound				MAIN ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	11	24	3	4	0	90	10	0	0	0	0	3	15	62	0	2	224
07:15 AM	14	32	6	1	0	119	10	0	0	0	0	5	14	79	0	2	282
07:30 AM	25	37	8	8	0	112	8	1	0	0	0	11	10	105	0	6	331
07:45 AM	19	16	10	5	1	92	9	0	0	0	0	9	10	95	0	1	267
Total	69	109	27	18	1	413	37	1	0	0	0	28	49	341	0	11	1104
Grand Total	69	109	27	18	1	413	37	1	0	0	0	28	49	341	0	11	1104
Apprch %	30.9	48.9	12.1	8.1	0.2	91.4	8.2	0.2	0	0	0	100	12.2	85	0	2.7	
Total %	6.2	9.9	2.4	1.6	0.1	37.4	3.4	0.1	0	0	0	2.5	4.4	30.9	0	1	
Unshifted	69	109	27	18	1	413	37	1	0	0	0	28	49	341	0	11	1104
% Unshifted	100	100	100	100	100	100	100	100	0	0	0	100	100	100	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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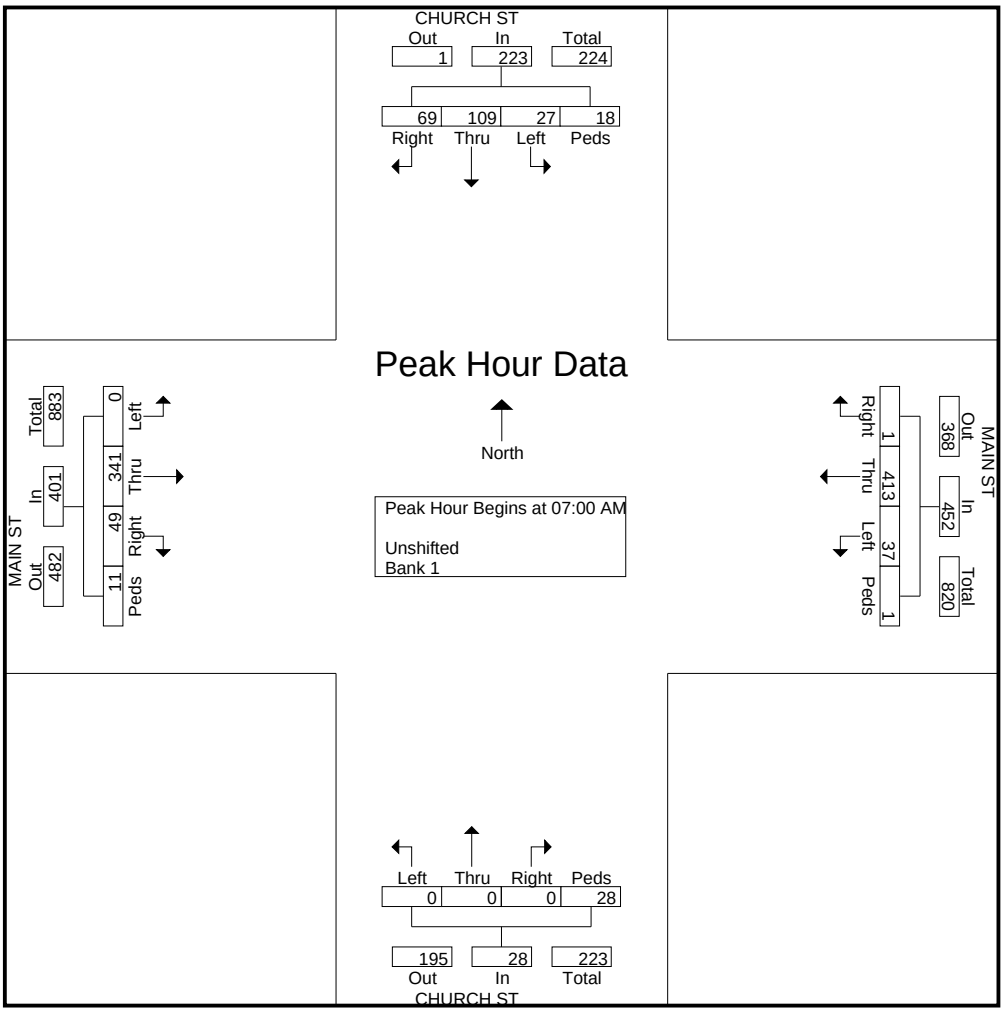
File Name : AM_Church St - Main St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 2

	CHURCH ST Southbound					MAIN ST Westbound					CHURCH ST Northbound					MAIN ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	11	24	3	4	42	0	90	**10**	0	100	0	0	0	3	3	**15**	62	0	2	79	224
07:15 AM	14	32	6	1	53	0	**119**	10	0	**129**	0	0	0	5	5	14	79	0	2	95	282
07:30 AM	**25**	**37**	8	**8**	**78**	0	112	8	**1**	121	0	0	0	**11**	**11**	10	**105**	0	**6**	**121**	**331**
07:45 AM	19	16	**10**	5	50	**1**	92	9	0	102	0	0	0	9	9	10	95	0	1	106	267
Total Volume	69	109	27	18	223	1	413	37	1	452	0	0	0	28	28	49	341	0	11	401	1104
% App. Total	30.9	48.9	12.1	8.1		0.2	91.4	8.2	0.2		0	0	0	100		12.2	85	0	2.7		
PHF	.690	.736	.675	.563	.715	.250	.868	.925	.250	.876	.000	.000	.000	.636	.636	.817	.812	.000	.458	.829	.834



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File Name : AM_N High St - E Main St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	HIGH ST Southbound				MAIN ST Westbound				HIGH ST Northbound				MAIN ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	1	71	4	1	19	11	71	1	66	36	7	0	9	9	1	1	308
07:15 AM	1	80	6	4	9	17	86	3	78	60	6	3	17	26	3	6	405
07:30 AM	2	72	8	6	8	12	77	9	100	65	3	3	17	58	8	0	448
07:45 AM	3	66	4	6	17	14	57	8	96	82	7	5	7	39	7	1	419
Total	7	289	22	17	53	54	291	21	340	243	23	11	50	132	19	8	1580
Grand Total	7	289	22	17	53	54	291	21	340	243	23	11	50	132	19	8	1580
Apprch %	2.1	86.3	6.6	5.1	12.6	12.9	69.5	5	55.1	39.4	3.7	1.8	23.9	63.2	9.1	3.8	
Total %	0.4	18.3	1.4	1.1	3.4	3.4	18.4	1.3	21.5	15.4	1.5	0.7	3.2	8.4	1.2	0.5	
Unshifted	7	289	22	17	53	54	291	21	340	243	23	11	50	132	19	8	1580
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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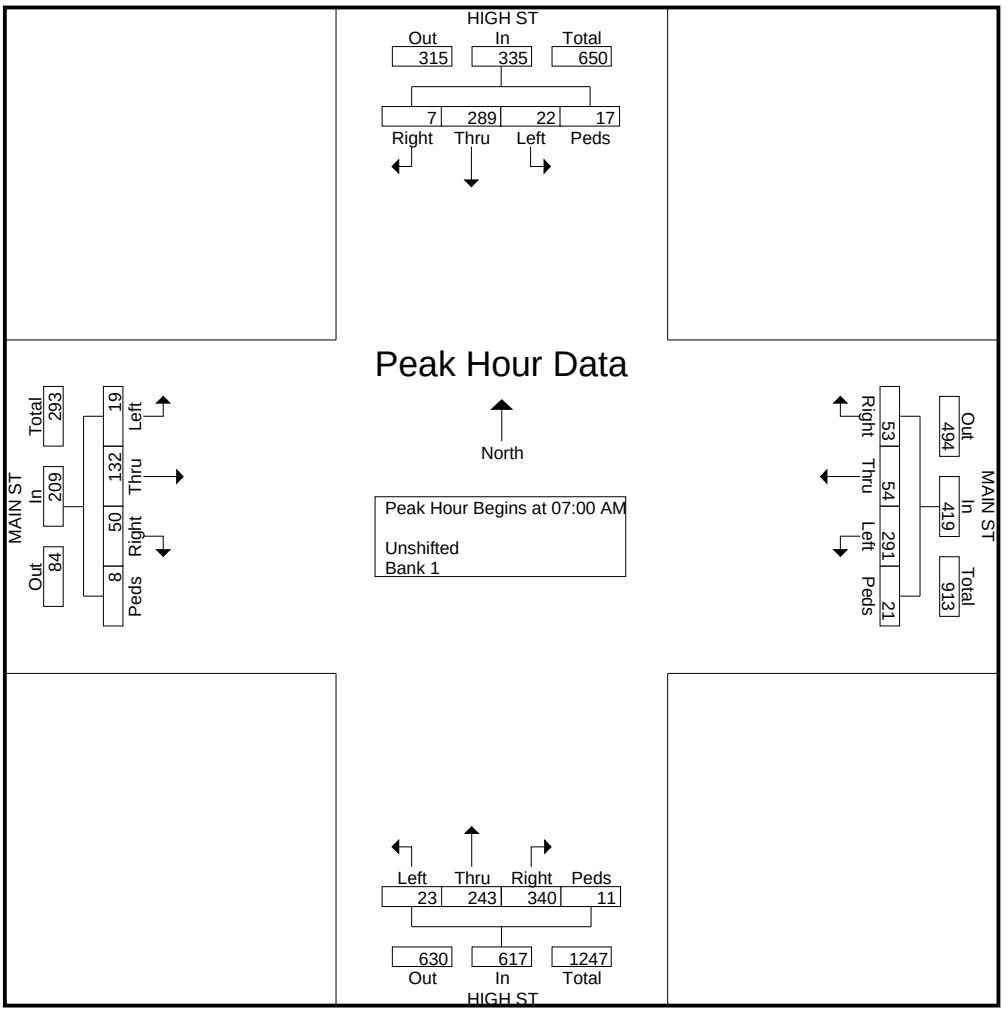
File Name : AM_N High St - E Main St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 2

	HIGH ST Southbound					MAIN ST Westbound					HIGH ST Northbound					MAIN ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	1	71	4	1	77	**19**	11	71	1	102	66	36	**7**	0	109	9	9	1	1	20	308
07:15 AM	1	**80**	6	4	**91**	9	**17**	**86**	3	**115**	78	60	6	3	147	**17**	26	3	**6**	52	405
07:30 AM	2	72	**8**	**6**	88	8	12	77	**9**	106	**100**	65	3	3	171	17	**58**	**8**	0	**83**	**448**
07:45 AM	**3**	66	4	6	79	17	14	57	8	96	96	**82**	7	**5**	**190**	7	39	7	1	54	419
Total Volume	7	289	22	17	335	53	54	291	21	419	340	243	23	11	617	50	132	19	8	209	1580
% App. Total	2.1	86.3	6.6	5.1		12.6	12.9	69.5	5		55.1	39.4	3.7	1.8		23.9	63.2	9.1	3.8		
PHF	.583	.903	.688	.708	.920	.697	.794	.846	.583	.911	.850	.741	.821	.550	.812	.735	.569	.594	.333	.630	.882



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File Name : AM_Market St - Pili St
Site Code : 00000000
Start Date : 2/4/2017
Page No : 1

Groups Printed- Unshifted

	MARKET ST Southbound				PILI ST Westbound				MARKET ST Northbound				PILI ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	57	8	3	0	0	1	8	77
07:15 AM	0	0	0	0	0	0	0	0	0	54	6	8	0	0	0	15	83
07:30 AM	0	0	0	0	0	0	0	0	0	81	13	5	0	0	2	6	107
07:45 AM	0	0	0	0	0	0	0	0	0	63	14	5	0	0	1	9	92
Total	0	0	0	0	0	0	0	0	0	255	41	21	0	0	4	38	359
Grand Total	0	0	0	0	0	0	0	0	0	255	41	21	0	0	4	38	359
Apprch %	0	0	0	0	0	0	0	0	0	80.4	12.9	6.6	0	0	9.5	90.5	
Total %	0	0	0	0	0	0	0	0	0	71	11.4	5.8	0	0	1.1	10.6	

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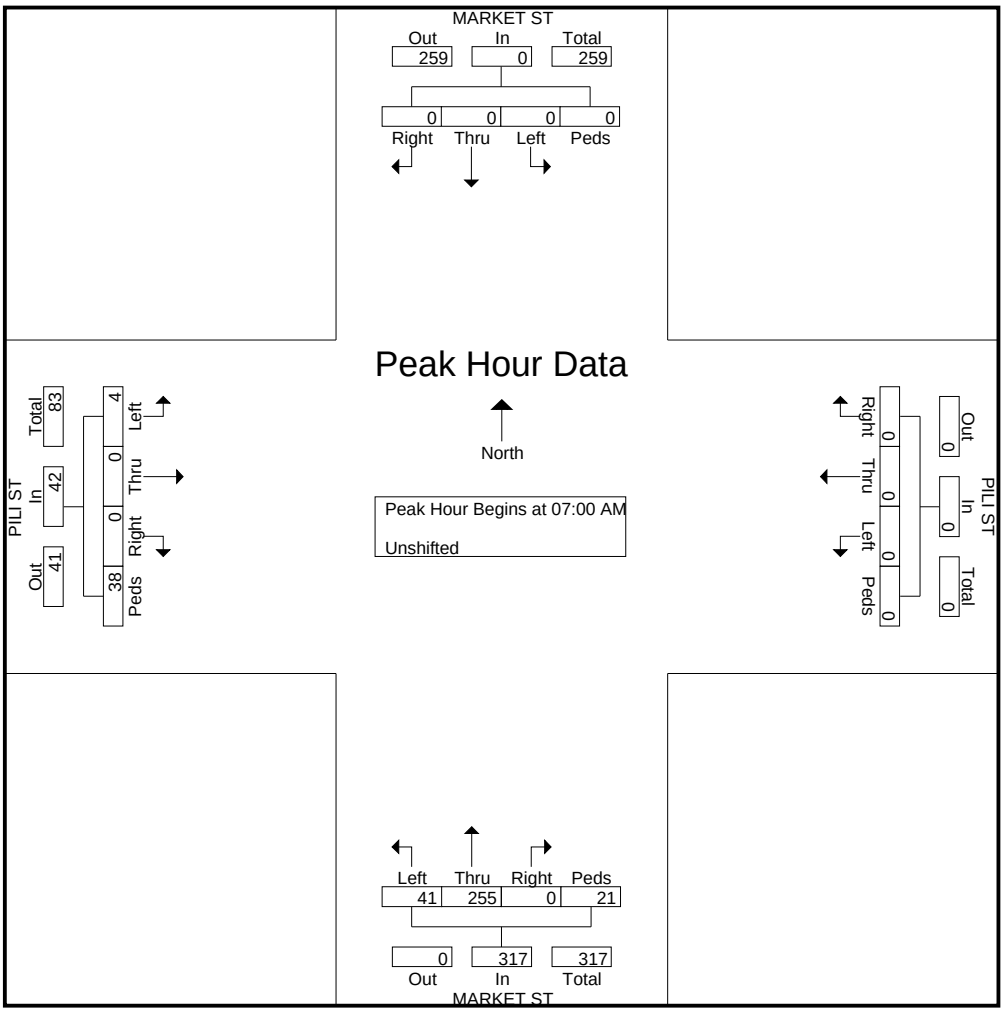
File Name : AM_Market St - Pili St
Site Code : 00000000
Start Date : 2/4/2017
Page No : 2

	MARKET ST Southbound					PILI ST Westbound					MARKET ST Northbound					PILI ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	57	8	3	68	0	0	1	8	9	77
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	54	6	**8**	68	0	0	0	**15**	**15**	83
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	**81**	13	5	**99**	0	0	**2**	6	8	**107**
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	63	**14**	5	82	0	0	1	9	10	92
Total Volume	0	0	0	0	0	0	0	0	0	0	0	255	41	21	317	0	0	4	38	42	359
% App. Total	0	0	0	0		0	0	0	0		0	80.4	12.9	6.6		0	0	9.5	90.5		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.787	.732	.656	.801	.000	.000	.500	.633	.700	.839



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File Name : AM_Church St - Pili St
Site Code : 00000000
Start Date : 2/4/2017
Page No : 1

Groups Printed- Unshifted

	CHURCH ST Southbound				PILI ST Westbound				CHURCH ST Northbound				PILI ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	52	1	1	0	0	0	2	0	0	0	12	0	0	0	0	68
07:15 AM	1	73	0	2	0	0	1	0	0	0	0	7	1	0	0	0	85
07:30 AM	0	69	4	2	0	0	2	0	1	0	0	11	0	0	0	0	89
07:45 AM	2	38	2	2	0	0	2	2	0	0	0	11	0	0	0	0	59
Total	3	232	7	7	0	0	5	4	1	0	0	41	1	0	0	0	301
Grand Total	3	232	7	7	0	0	5	4	1	0	0	41	1	0	0	0	301
Apprch %	1.2	93.2	2.8	2.8	0	0	55.6	44.4	2.4	0	0	97.6	100	0	0	0	
Total %	1	77.1	2.3	2.3	0	0	1.7	1.3	0.3	0	0	13.6	0.3	0	0	0	

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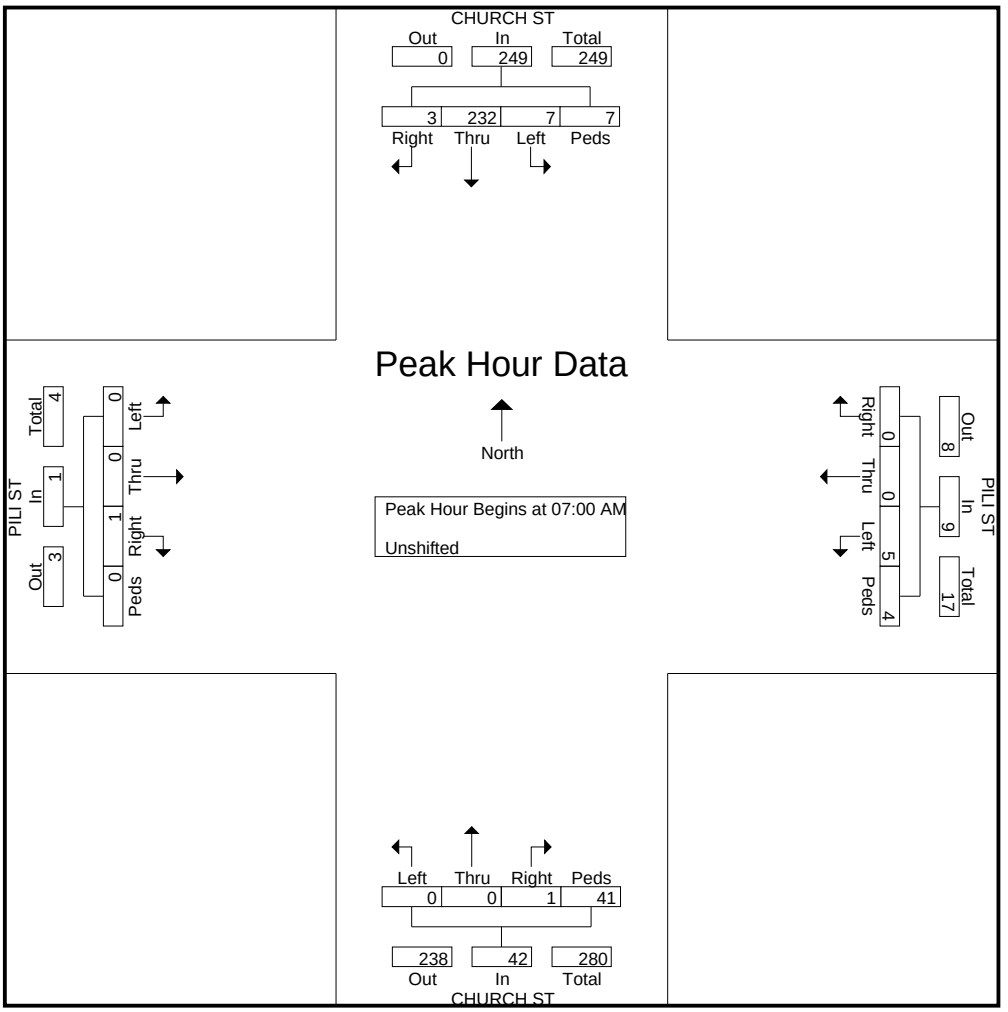
File Name : AM_Church St - Pili St
Site Code : 00000000
Start Date : 2/4/2017
Page No : 2

	CHURCH ST Southbound					PILI ST Westbound					CHURCH ST Northbound					PILI ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	52	1	1	54	0	0	0	**2**	2	0	0	0	**12**	**12**	0	0	0	0	0	68
07:15 AM	1	**73**	0	**2**	**76**	0	0	1	0	1	0	0	0	7	7	**1**	0	0	0	**1**	85
07:30 AM	0	69	**4**	2	75	0	0	**2**	0	2	**1**	0	0	11	12	0	0	0	0	0	**89**
07:45 AM	**2**	38	2	2	44	0	0	2	2	**4**	0	0	0	11	11	0	0	0	0	0	59
Total Volume	3	232	7	7	249	0	0	5	4	9	1	0	0	41	42	1	0	0	0	1	301
% App. Total	1.2	93.2	2.8	2.8		0	0	55.6	44.4		2.4	0	0	97.6		100	0	0	0		
PHF	.375	.795	.438	.875	.819	.000	.000	.625	.500	.563	.250	.000	.000	.854	.875	.250	.000	.000	.000	.250	.846



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File Name : AM_Central Ave - Vineyard St
Site Code : 00000000
Start Date : 9/27/2017
Page No : 1

Groups Printed- Class 1

	CENTRAL AVE SOUTHBOUND				VINEYARD ST WESTBOUND				CENTRAL AVE NORTHBOUND				VINEYARD ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	70	9	0	2	1	0	0	15	31	5	0	2	1	26	0	162
Total	0	70	9	0	2	1	0	0	15	31	5	0	2	1	26	0	162
07:00	1	92	17	0	4	2	0	0	20	44	3	0	1	3	24	0	211
07:15	0	109	29	0	2	2	0	0	24	51	3	0	6	0	17	0	243
07:30	0	107	39	0	3	7	1	0	29	37	5	0	3	5	28	0	264
07:45	1	73	19	0	3	4	0	0	40	53	7	0	10	5	37	0	252
Total	2	381	104	0	12	15	1	0	113	185	18	0	20	13	106	0	970
08:00	1	49	12	0	1	3	0	0	23	33	5	0	1	3	15	0	146
Grand Total	3	500	125	0	15	19	1	0	151	249	28	0	23	17	147	0	1278
Apprch %	0.5	79.6	19.9	0	42.9	54.3	2.9	0	35.3	58.2	6.5	0	12.3	9.1	78.6	0	
Total %	0.2	39.1	9.8	0	1.2	1.5	0.1	0	11.8	19.5	2.2	0	1.8	1.3	11.5	0	

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File Name : AM_Central Ave - Vineyard St
Site Code : 00000000
Start Date : 9/27/2017
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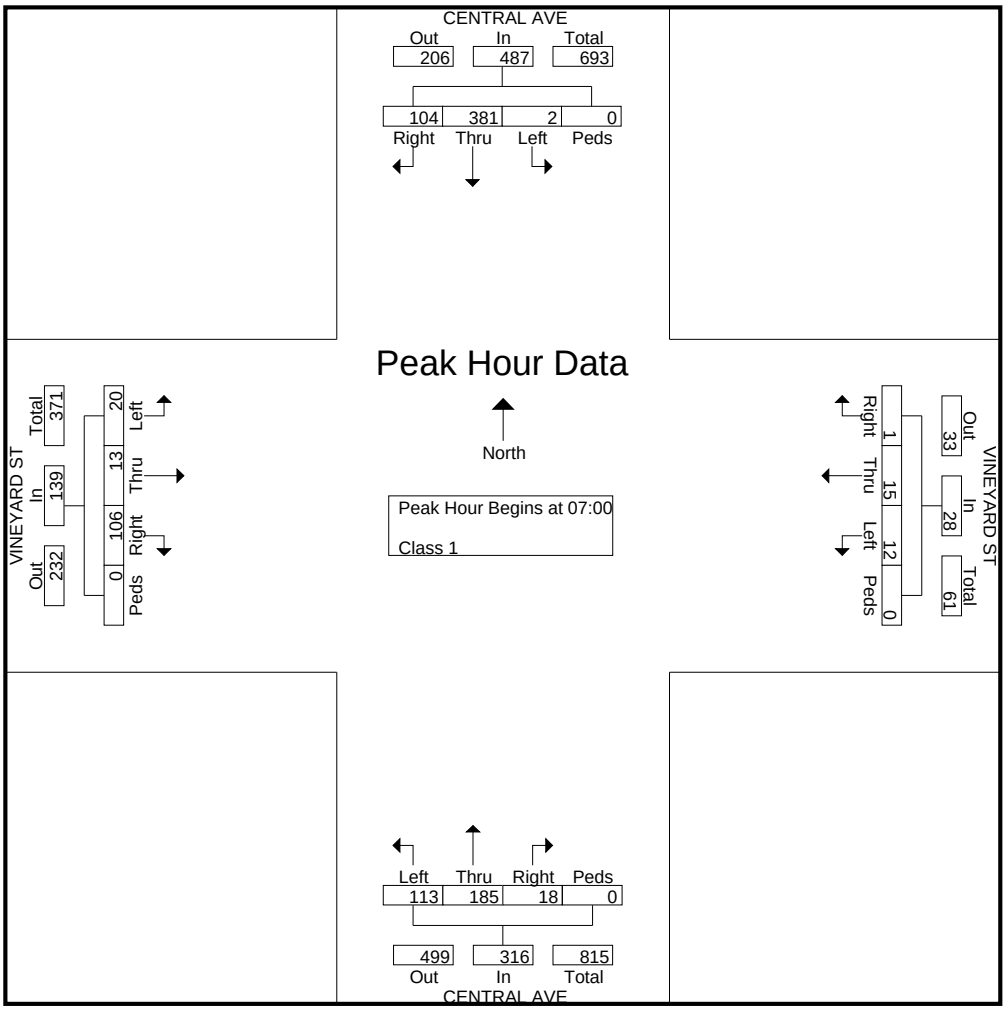
	CENTRAL AVE SOUTHBOUND					VINEYARD ST WESTBOUND					CENTRAL AVE NORTHBOUND					VINEYARD ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:00 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	**1**	92	17	0	110	**4**	2	0	0	6	20	44	3	0	67	1	3	24	0	28	211
07:15	0	**109**	29	0	138	2	2	0	0	4	24	51	3	0	78	6	0	17	0	23	243
07:30	0	107	**39**	0	**146**	3	**7**	**1**	0	**11**	29	37	5	0	71	3	**5**	28	0	36	**264**
07:45	1	73	19	0	93	3	4	0	0	7	**40**	**53**	**7**	0	**100**	**10**	5	**37**	0	**52**	252
Total Volume	2	381	104	0	487	12	15	1	0	28	113	185	18	0	316	20	13	106	0	139	970
% App. Total	0.4	78.2	21.4	0		42.9	53.6	3.6	0		35.8	58.5	5.7	0		14.4	9.4	76.3	0		
PHF	.500	.874	.667	.000	.834	.750	.536	.250	.000	.636	.706	.873	.643	.000	.790	.500	.650	.716	.000	.668	.919



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File Name : AM_Market St - Vineyard St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	MARKET ST Southbound				VINEYARD ST Westbound				MARKET ST Northbound				VINEYARD ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	96	0	10	2	7	21	0	0	5	44	4	0	0	8	35	15	247
07:15 AM	112	0	9	0	7	30	0	0	6	45	7	1	0	11	49	14	291
07:30 AM	97	0	15	0	11	49	0	0	12	50	6	1	0	8	41	9	299
07:45 AM	84	1	17	0	14	31	0	4	8	54	4	1	1	15	75	12	321
Total	389	1	51	2	39	131	0	4	31	193	21	3	1	42	200	50	1158
Grand Total	389	1	51	2	39	131	0	4	31	193	21	3	1	42	200	50	1158
Apprch %	87.8	0.2	11.5	0.5	22.4	75.3	0	2.3	12.5	77.8	8.5	1.2	0.3	14.3	68.3	17.1	
Total %	33.6	0.1	4.4	0.2	3.4	11.3	0	0.3	2.7	16.7	1.8	0.3	0.1	3.6	17.3	4.3	
Unshifted	389	1	51	2	39	131	0	4	31	193	21	3	1	42	200	50	1158
% Unshifted	100	100	100	100	100	100	0	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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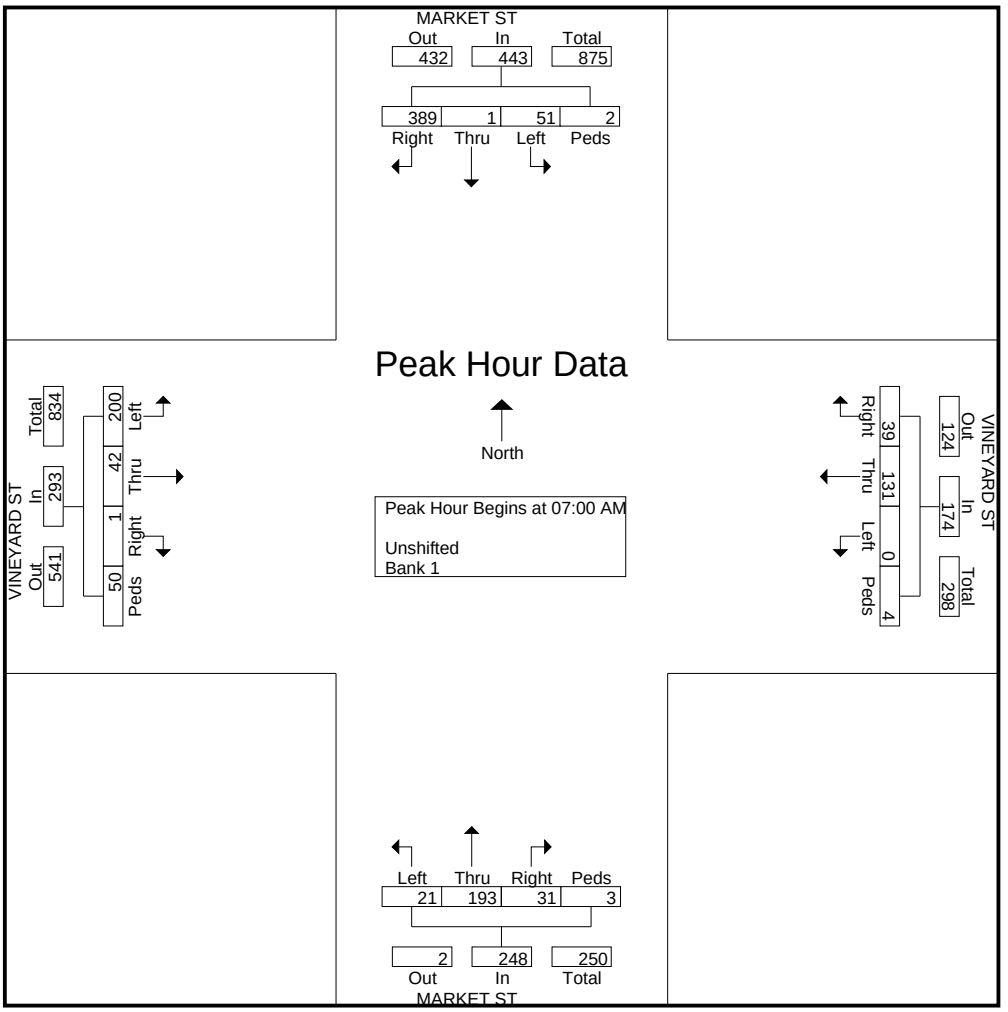
File Name : AM_Market St - Vineyard St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 2

	MARKET ST Southbound					VINEYARD ST Westbound					MARKET ST Northbound					VINEYARD ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	96	0	10	**2**	108	7	21	0	0	28	5	44	4	0	53	0	8	35	**15**	58	247
07:15 AM	**112**	0	9	0	**121**	7	30	0	0	37	6	45	**7**	**1**	59	0	11	49	14	74	291
07:30 AM	97	0	15	0	112	11	**49**	0	0	**60**	**12**	50	6	1	**69**	0	8	41	9	58	299
07:45 AM	84	**1**	**17**	0	102	**14**	31	0	**4**	49	8	**54**	4	1	67	**1**	**15**	**75**	12	**103**	**321**
Total Volume	389	1	51	2	443	39	131	0	4	174	31	193	21	3	248	1	42	200	50	293	1158
% App. Total	87.8	0.2	11.5	0.5		22.4	75.3	0	2.3		12.5	77.8	8.5	1.2		0.3	14.3	68.3	17.1		
PHF	.868	.250	.750	.250	.915	.696	.668	.000	.250	.725	.646	.894	.750	.750	.899	.250	.700	.667	.833	.711	.902



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File Name : AM_Municipal Parking Lot Dw
Site Code : 00000000
Start Date : 2/4/2017
Page No : 1

Groups Printed- Unshifted

	PARKING DWY Southbound				VINEYARD ST Westbound				PARKING DWY Northbound				VINEYARD ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	161	6	2	3	0	0	0	9	41	0	1	223
07:15 AM	0	0	0	0	0	166	10	0	0	0	2	1	7	59	0	2	247
07:30 AM	0	0	0	0	0	167	17	4	5	0	2	1	2	59	0	2	259
07:45 AM	0	0	0	0	0	105	14	7	2	0	1	1	7	78	0	0	215
Total	0	0	0	0	0	599	47	13	10	0	5	3	25	237	0	5	944
Grand Total	0	0	0	0	0	599	47	13	10	0	5	3	25	237	0	5	944
Apprch %	0	0	0	0	0	90.9	7.1	2	55.6	0	27.8	16.7	9.4	88.8	0	1.9	
Total %	0	0	0	0	0	63.5	5	1.4	1.1	0	0.5	0.3	2.6	25.1	0	0.5	

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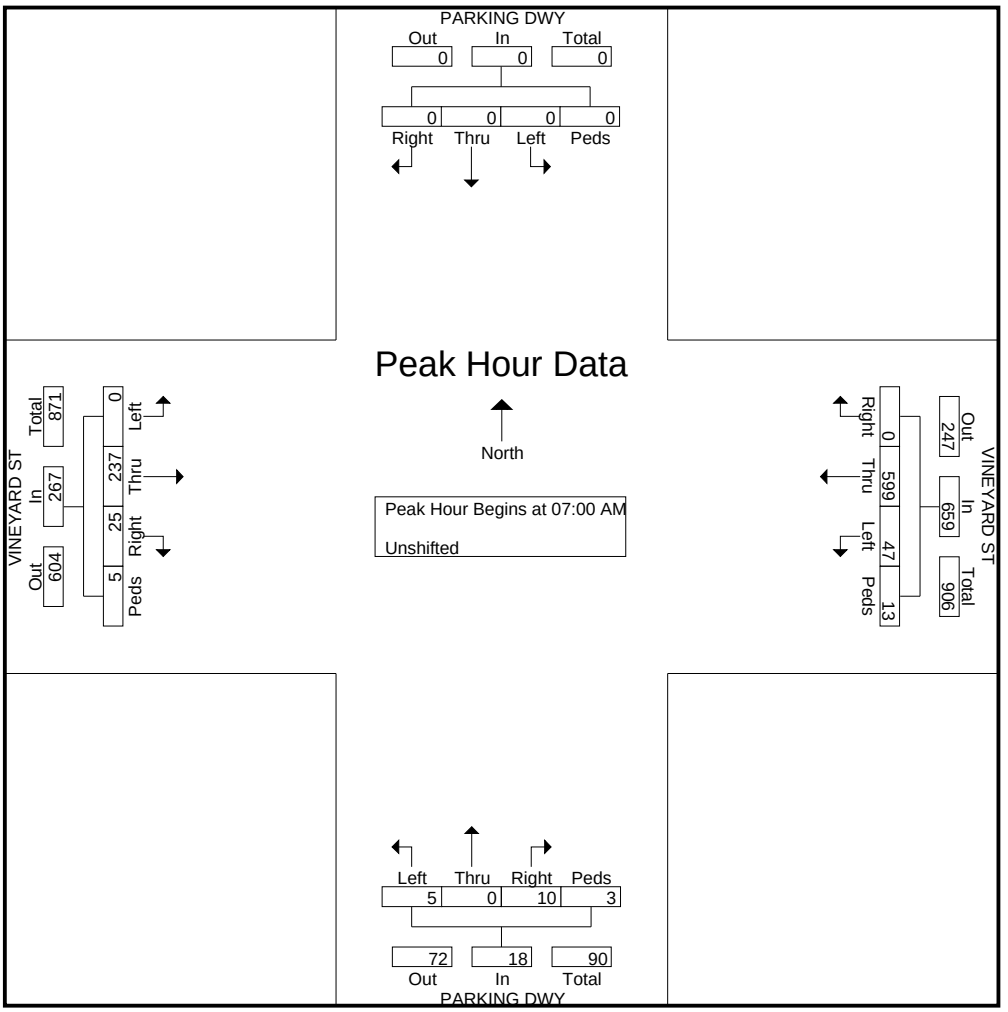
File Name : AM_Municipal Parking Lot Dw
Site Code : 00000000
Start Date : 2/4/2017
Page No : 2

	PARKING DWY Southbound					VINEYARD ST Westbound					PARKING DWY Northbound					VINEYARD ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	161	6	2	169	3	0	0	0	3	**9**	41	0	1	51	223
07:15 AM	0	0	0	0	0	0	166	10	0	176	0	0	**2**	**1**	3	7	59	0	**2**	68	247
07:30 AM	0	0	0	0	0	0	**167**	**17**	4	**188**	**5**	0	2	1	**8**	2	59	0	2	63	**259**
07:45 AM	0	0	0	0	0	0	105	14	**7**	126	2	0	1	1	4	7	**78**	0	0	**85**	215
Total Volume	0	0	0	0	0	0	599	47	13	659	10	0	5	3	18	25	237	0	5	267	944
% App. Total	0	0	0	0		0	90.9	7.1	2		55.6	0	27.8	16.7		9.4	88.8	0	1.9		
PHF	.000	.000	.000	.000	.000	.000	.897	.691	.464	.876	.500	.000	.625	.750	.563	.694	.760	.000	.625	.785	.911



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File Name : AM_Church St - Vineyard St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	CHURCH ST Southbound				VINEYARD ST Westbound				CHURCH ST Northbound				VINEYARD ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	1	93	47	2	0	0	0	0	0	46	3	0	192
07:15 AM	0	3	1	0	2	101	52	1	0	0	0	3	7	64	1	3	238
07:30 AM	0	3	1	0	5	89	66	0	0	0	0	2	12	63	1	0	242
07:45 AM	0	4	0	2	1	65	36	2	0	0	0	0	7	91	1	2	211
Total	0	10	2	2	9	348	201	5	0	0	0	5	26	264	6	5	883
Grand Total	0	10	2	2	9	348	201	5	0	0	0	5	26	264	6	5	883
Apprch %	0	71.4	14.3	14.3	1.6	61.8	35.7	0.9	0	0	0	100	8.6	87.7	2	1.7	
Total %	0	1.1	0.2	0.2	1	39.4	22.8	0.6	0	0	0	0.6	2.9	29.9	0.7	0.6	
Unshifted	0	10	2	2	9	348	201	5	0	0	0	5	26	264	6	5	883
% Unshifted	0	100	100	100	100	100	100	100	0	0	0	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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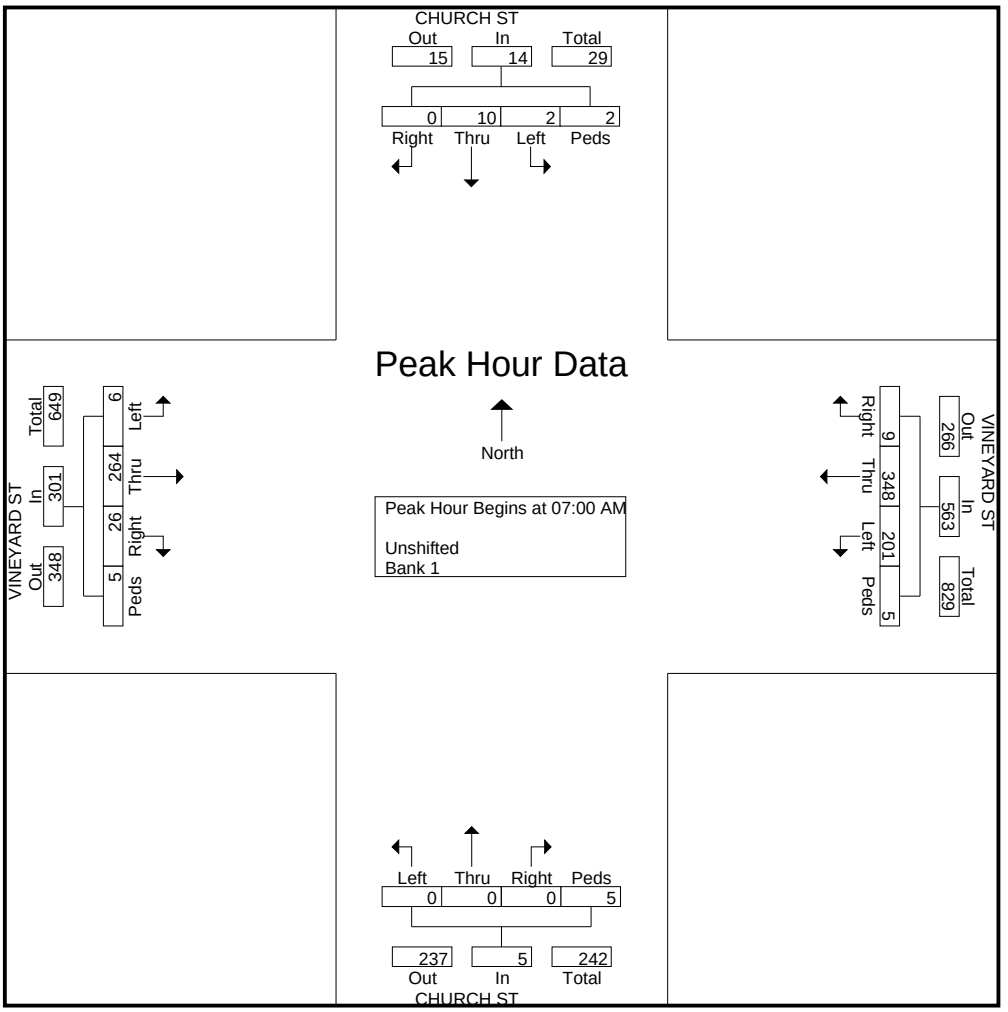
File Name : AM_Church St - Vineyard St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 2

	CHURCH ST Southbound					VINEYARD ST Westbound					CHURCH ST Northbound					VINEYARD ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	1	93	47	**2**	143	0	0	0	0	0	0	46	**3**	0	49	192
07:15 AM	0	3	**1**	0	4	2	**101**	52	1	156	0	0	0	**3**	**3**	7	64	1	**3**	75	238
07:30 AM	0	3	1	0	4	**5**	89	**66**	0	**160**	0	0	0	2	2	**12**	63	1	0	76	**242**
07:45 AM	0	**4**	0	**2**	**6**	1	65	36	2	104	0	0	0	0	0	7	**91**	1	2	**101**	211
Total Volume	0	10	2	2	14	9	348	201	5	563	0	0	0	5	5	26	264	6	5	301	883
% App. Total	0	71.4	14.3	14.3		1.6	61.8	35.7	0.9		0	0	0	100		8.6	87.7	2	1.7		
PHF	.000	.625	.500	.250	.583	.450	.861	.761	.625	.880	.000	.000	.000	.417	.417	.542	.725	.500	.417	.745	.912



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File Name : AM_High St - Vineyard St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	HIGH ST Southbound				VINEYARD ST Westbound				HIGH ST Northbound				VINEYARD ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	2	0	7	0	10	80	3	44	0	15	18	2	3	0	14	198
07:15 AM	0	3	0	1	0	15	83	0	57	0	11	14	3	13	0	11	211
07:30 AM	0	2	1	0	1	11	73	2	48	0	14	13	4	9	0	8	186
07:45 AM	0	0	0	4	1	14	58	1	75	0	12	15	4	14	0	8	206
Total	0	7	1	12	2	50	294	6	224	0	52	60	13	39	0	41	801
Grand Total	0	7	1	12	2	50	294	6	224	0	52	60	13	39	0	41	801
Apprch %	0	35	5	60	0.6	14.2	83.5	1.7	66.7	0	15.5	17.9	14	41.9	0	44.1	
Total %	0	0.9	0.1	1.5	0.2	6.2	36.7	0.7	28	0	6.5	7.5	1.6	4.9	0	5.1	
Unshifted	0	7	1	12	2	50	294	6	224	0	52	60	13	39	0	41	801
% Unshifted	0	100	100	100	100	100	100	100	100	0	100	100	100	100	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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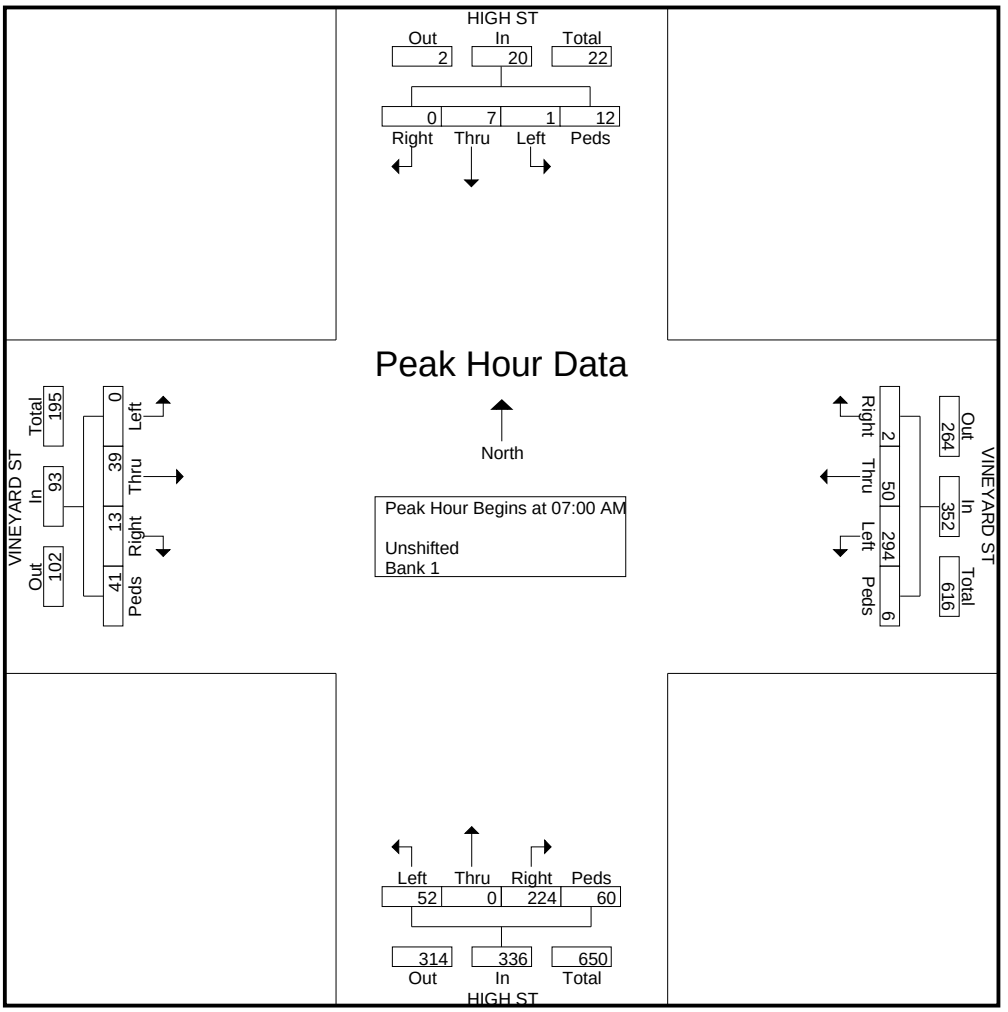
File Name : AM_High St - Vineyard St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 2

	HIGH ST Southbound					VINEYARD ST Westbound					HIGH ST Northbound					VINEYARD ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	2	0	**7**	**9**	0	10	80	**3**	93	44	0	**15**	**18**	77	2	3	0	**14**	19	198
07:15 AM	0	**3**	0	1	4	0	**15**	**83**	0	**98**	57	0	11	14	82	3	13	0	11	**27**	**211**
07:30 AM	0	2	**1**	0	3	**1**	11	73	2	87	48	0	14	13	75	**4**	9	0	8	21	186
07:45 AM	0	0	0	4	4	1	14	58	1	74	**75**	0	12	15	**102**	4	**14**	0	8	26	206
Total Volume	0	7	1	12	20	2	50	294	6	352	224	0	52	60	336	13	39	0	41	93	801
% App. Total	0	35	5	60		0.6	14.2	83.5	1.7		66.7	0	15.5	17.9		14	41.9	0	44.1		
PHF	.000	.583	.250	.429	.556	.500	.833	.886	.500	.898	.747	.000	.867	.833	.824	.813	.696	.000	.732	.861	.949



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File Name : PM_Central Ave - Main St
Site Code : 00000000
Start Date : 9/27/2017
Page No : 1

Groups Printed- Class 1

	CENTRAL AVE SOUTHBOUND				MAIN ST WESTBOUND				CENTRAL AVE NORTHBOUND				MAIN ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:15	21	0	4	0	0	25	8	0	0	0	0	0	1	14	0	0	73
15:30	92	0	26	0	0	155	70	1	0	0	0	0	14	84	0	0	442
15:45	98	0	34	2	0	131	82	0	0	0	0	0	12	86	0	8	453
Total	211	0	64	2	0	311	160	1	0	0	0	0	27	184	0	8	968
16:00	111	0	27	3	0	122	64	0	0	0	0	0	16	86	0	5	434
16:15	118	0	26	0	0	135	75	0	0	0	0	0	21	92	0	7	474
16:30	122	0	23	4	0	124	93	0	0	0	0	0	18	125	0	1	510
16:45	116	0	10	0	0	135	57	0	0	0	0	0	10	124	0	0	452
Total	467	0	86	7	0	516	289	0	0	0	0	0	65	427	0	13	1870
17:00	129	0	17	0	0	125	78	0	0	0	0	0	12	103	0	0	464
Grand Total	807	0	167	9	0	952	527	1	0	0	0	0	104	714	0	21	3302
Apprch %	82.1	0	17	0.9	0	64.3	35.6	0.1	0	0	0	0	12.4	85.1	0	2.5	
Total %	24.4	0	5.1	0.3	0	28.8	16	0	0	0	0	0	3.1	21.6	0	0.6	

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File Name : PM_Central Ave - Main St
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Start Date : 9/27/2017
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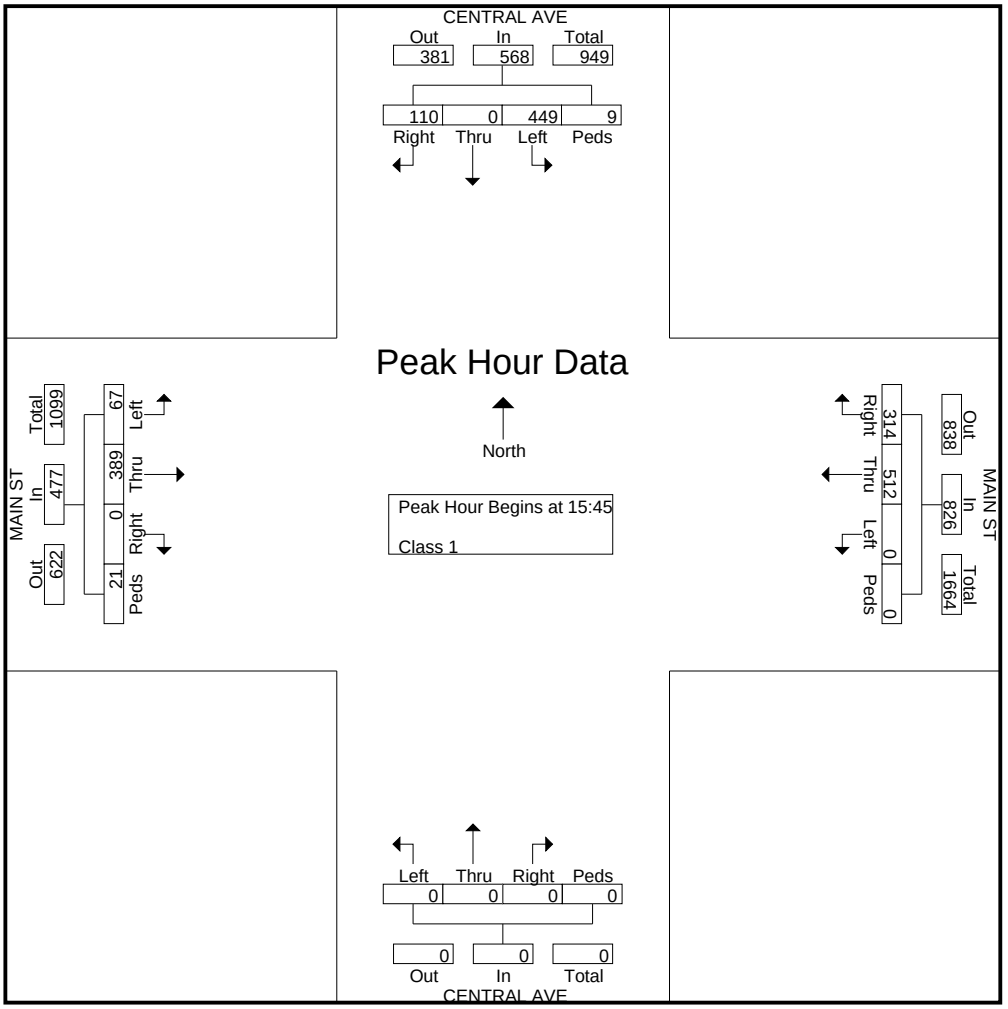
	CENTRAL AVE SOUTHBOUND					MAIN ST WESTBOUND					CENTRAL AVE NORTHBOUND					MAIN ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 15:45 to 16:30 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 15:45																					
15:45	98	0	**34**	2	134	0	131	82	0	213	0	0	0	0	0	12	86	0	**8**	106	453
16:00	111	0	27	3	141	0	122	64	0	186	0	0	0	0	0	16	86	0	5	107	434
16:15	118	0	26	0	144	0	**135**	75	0	210	0	0	0	0	0	**21**	92	0	7	120	474
16:30	**122**	0	23	**4**	**149**	0	124	**93**	0	**217**	0	0	0	0	0	18	**125**	0	1	**144**	**510**
Total Volume	449	0	110	9	568	0	512	314	0	826	0	0	0	0	0	67	389	0	21	477	1871
% App. Total	79	0	19.4	1.6		0	62	38	0		0	0	0	0		14	81.6	0	4.4		
PHF	.920	.000	.809	.563	.953	.000	.948	.844	.000	.952	.000	.000	.000	.000	.000	.798	.778	.000	.656	.828	.917



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Honolulu, HI 96817-5031
Phone: (808) 533-3646 Fax: (808)-526-1267

File Name : PM_Market St - Main St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	MARKET ST Southbound				MAIN ST Westbound				MARKET ST Northbound				MAIN ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:45 PM	0	0	0	7	42	99	0	6	9	22	1	2	0	89	24	8	309
Total	0	0	0	7	42	99	0	6	9	22	1	2	0	89	24	8	309
04:00 PM	0	0	0	2	30	97	0	9	8	20	6	2	0	96	28	4	302
04:15 PM	0	0	0	3	38	118	3	4	13	29	6	1	0	116	33	4	368
04:30 PM	0	0	0	7	43	98	0	2	24	24	15	1	0	112	41	19	386
Grand Total	0	0	0	19	153	412	3	21	54	95	28	6	0	413	126	35	1365
Apprch %	0	0	0	100	26	69.9	0.5	3.6	29.5	51.9	15.3	3.3	0	72	22	6.1	
Total %	0	0	0	1.4	11.2	30.2	0.2	1.5	4	7	2.1	0.4	0	30.3	9.2	2.6	
Unshifted	0	0	0	19	153	412	3	21	54	95	28	6	0	413	126	35	1365
% Unshifted	0	0	0	100	100	100	100	100	100	100	100	100	0	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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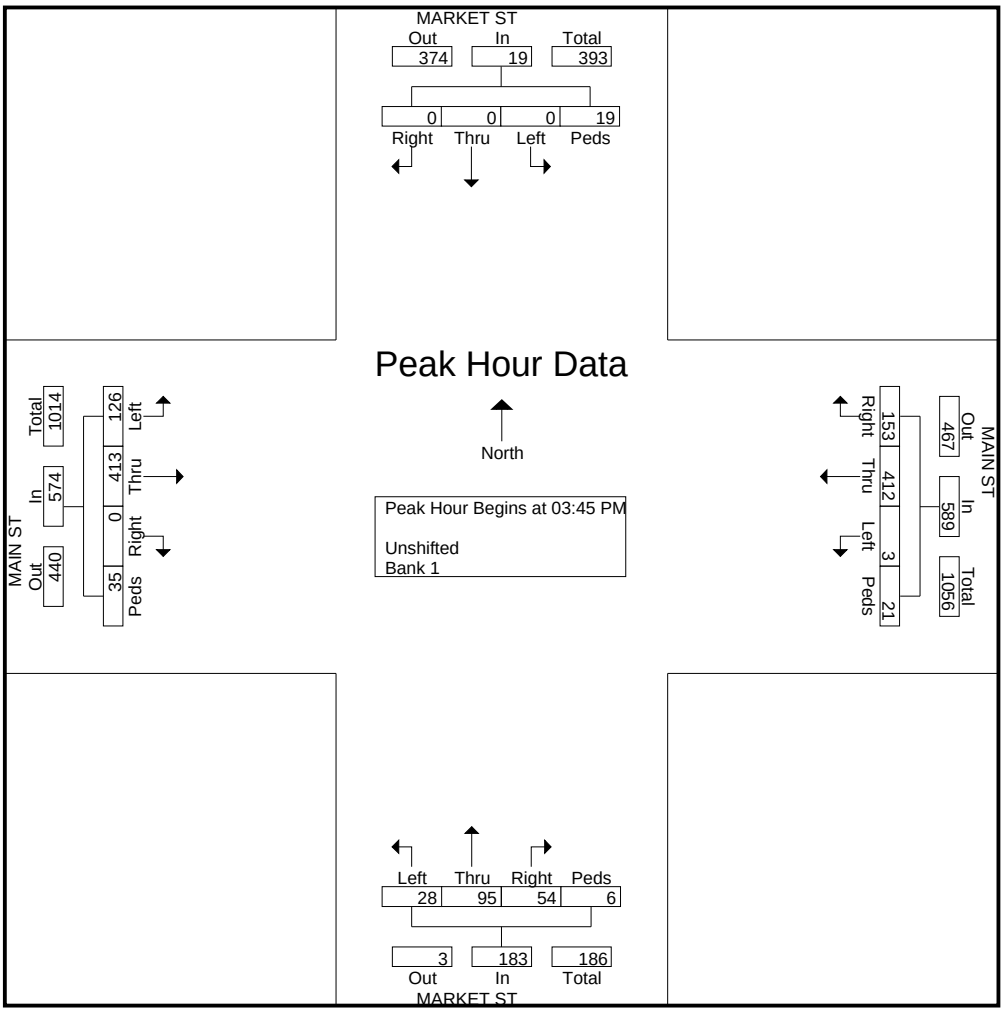
File Name : PM_Market St - Main St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 2

	MARKET ST Southbound					MAIN ST Westbound					MARKET ST Northbound					MAIN ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	**7**	**7**	42	99	0	6	147	9	22	1	**2**	34	0	89	24	8	121	309
04:00 PM	0	0	0	2	2	30	97	0	**9**	136	8	20	6	2	36	0	96	28	4	128	302
04:15 PM	0	0	0	3	3	38	**118**	**3**	4	**163**	13	**29**	6	1	49	0	**116**	33	4	153	368
04:30 PM	0	0	0	7	7	**43**	98	0	2	143	**24**	24	**15**	1	**64**	0	112	**41**	**19**	**172**	**386**
Total Volume	0	0	0	19	19	153	412	3	21	589	54	95	28	6	183	0	413	126	35	574	1365
% App. Total	0	0	0	100		26	69.9	0.5	3.6		29.5	51.9	15.3	3.3		0	72	22	6.1		
PHF	.000	.000	.000	.679	.679	.890	.873	.250	.583	.903	.563	.819	.467	.750	.715	.000	.890	.768	.461	.834	.884



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File Name : PM_Church St - Main St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	CHURCH ST Southbound				MAIN ST Westbound				CHURCH ST Northbound				MAIN ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:45 PM	8	18	15	1	0	99	7	3	0	0	0	6	8	86	0	2	253
Total	8	18	15	1	0	99	7	3	0	0	0	6	8	86	0	2	253
04:00 PM	24	12	21	5	1	89	5	2	0	0	0	2	3	88	0	2	254
04:15 PM	13	12	21	5	1	95	9	1	0	0	0	9	9	99	0	3	277
04:30 PM	14	12	17	6	0	111	2	4	0	0	0	2	10	113	0	2	293
Grand Total	59	54	74	17	2	394	23	10	0	0	0	19	30	386	0	9	1077
Apprch %	28.9	26.5	36.3	8.3	0.5	91.8	5.4	2.3	0	0	0	100	7.1	90.8	0	2.1	
Total %	5.5	5	6.9	1.6	0.2	36.6	2.1	0.9	0	0	0	1.8	2.8	35.8	0	0.8	
Unshifted	59	54	74	17	2	394	23	10	0	0	0	19	30	386	0	9	1077
% Unshifted	100	100	100	100	100	100	100	100	0	0	0	100	100	100	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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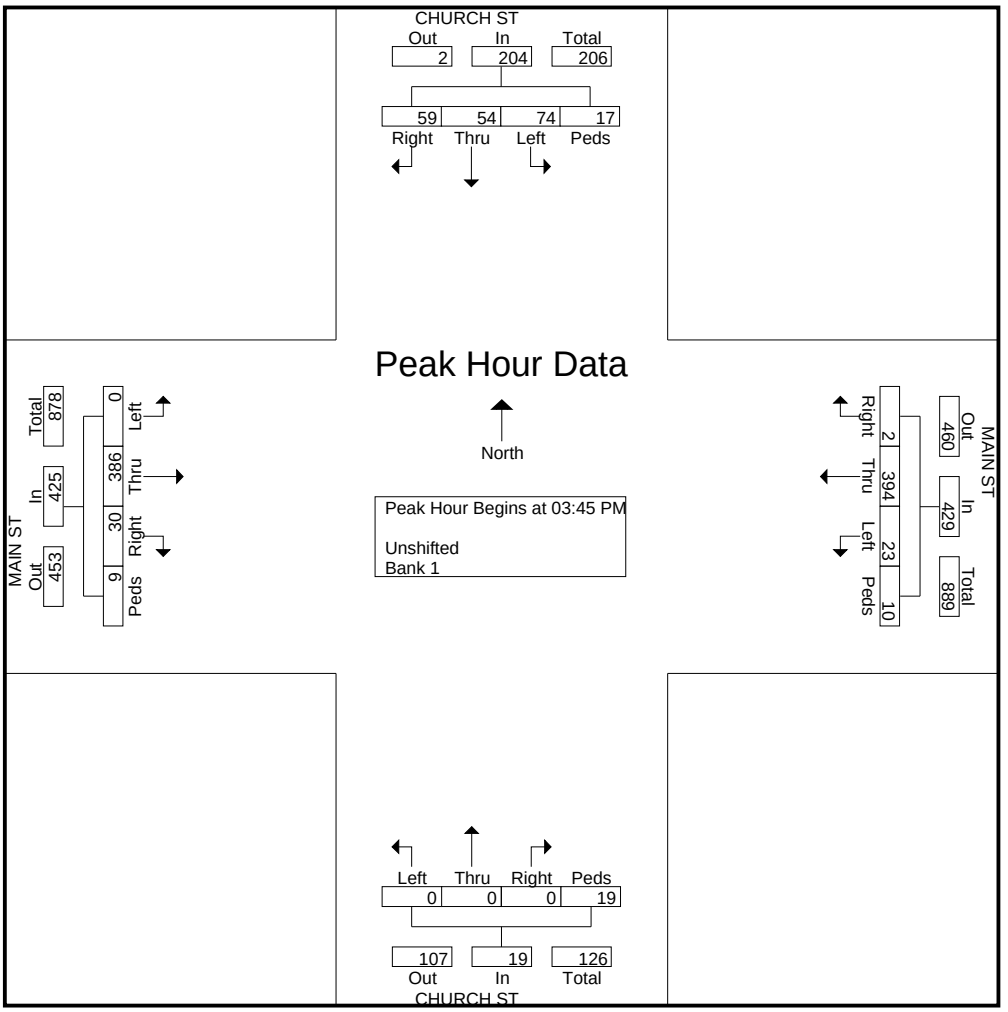
File Name : PM_Church St - Main St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 2

	CHURCH ST Southbound					MAIN ST Westbound					CHURCH ST Northbound					MAIN ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	8	**18**	15	1	42	0	99	7	3	109	0	0	0	6	6	8	86	0	2	96	253
04:00 PM	**24**	12	**21**	5	**62**	**1**	89	5	2	97	0	0	0	2	2	3	88	0	2	93	254
04:15 PM	13	12	21	5	51	1	95	**9**	1	106	0	0	0	**9**	**9**	9	99	0	**3**	111	277
04:30 PM	14	12	17	**6**	49	0	**111**	2	**4**	**117**	0	0	0	2	2	**10**	**113**	0	2	**125**	**293**
Total Volume	59	54	74	17	204	2	394	23	10	429	0	0	0	19	19	30	386	0	9	425	1077
% App. Total	28.9	26.5	36.3	8.3		0.5	91.8	5.4	2.3		0	0	0	100		7.1	90.8	0	2.1		
PHF	.615	.750	.881	.708	.823	.500	.887	.639	.625	.917	.000	.000	.000	.528	.528	.750	.854	.000	.750	.850	.919



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File Name : PM_N High St - E Main St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	HIGH ST Southbound				MAIN ST Westbound				HIGH ST Northbound				MAIN ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:45 PM	4	46	9	1	13	23	79	0	62	57	14	5	17	20	2	3	355
Total	4	46	9	1	13	23	79	0	62	57	14	5	17	20	2	3	355
04:00 PM	4	93	7	2	7	21	83	5	65	81	8	3	10	12	4	3	408
04:15 PM	2	60	13	2	5	34	80	2	73	71	6	4	16	14	1	2	385
04:30 PM	3	57	8	0	9	21	114	4	67	83	8	7	11	26	6	1	425
Grand Total	13	256	37	5	34	99	356	11	267	292	36	19	54	72	13	9	1573
Apprch %	4.2	82.3	11.9	1.6	6.8	19.8	71.2	2.2	43.5	47.6	5.9	3.1	36.5	48.6	8.8	6.1	
Total %	0.8	16.3	2.4	0.3	2.2	6.3	22.6	0.7	17	18.6	2.3	1.2	3.4	4.6	0.8	0.6	
Unshifted	13	256	37	5	34	99	356	11	267	292	36	19	54	72	13	9	1573
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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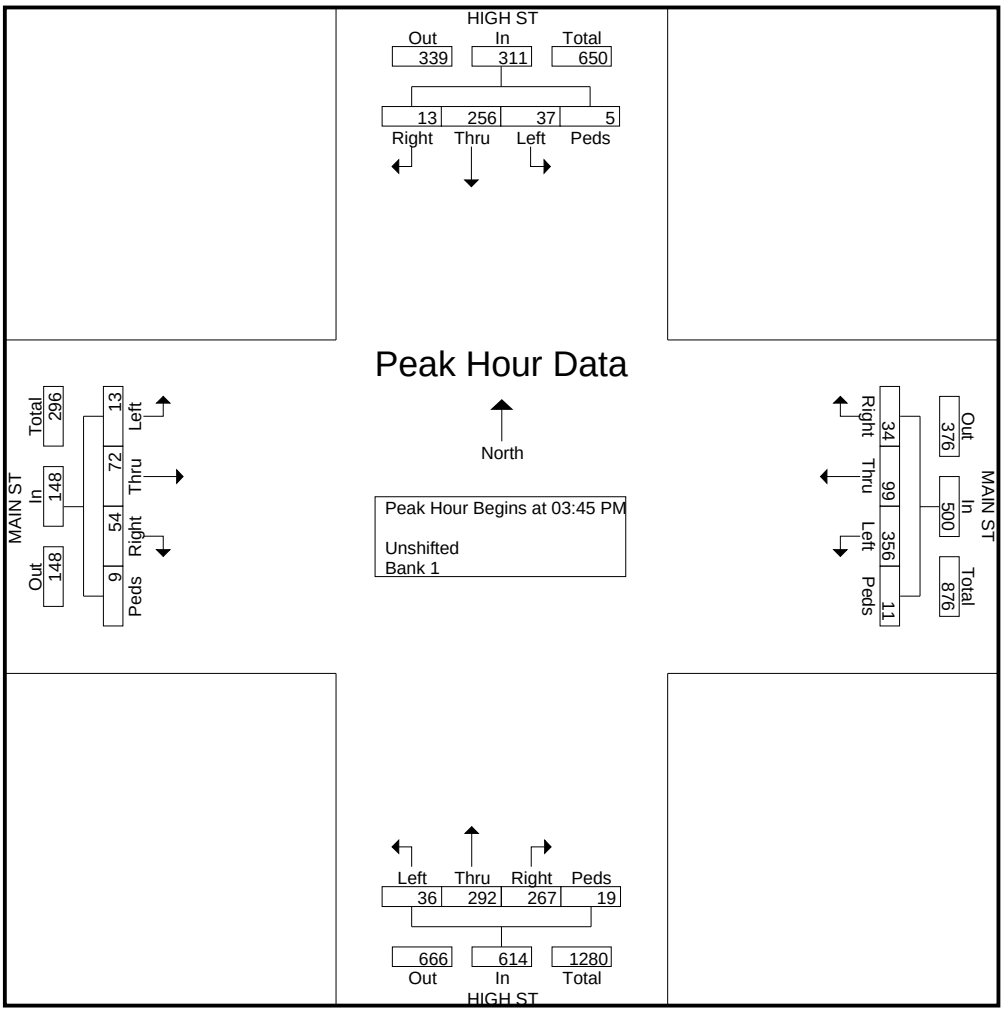
File Name : PM_N High St - E Main St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 2

	HIGH ST Southbound					MAIN ST Westbound					HIGH ST Northbound					MAIN ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	**4**	46	9	1	60	**13**	23	79	0	115	62	57	**14**	5	138	**17**	20	2	**3**	42	355
04:00 PM	4	**93**	7	**2**	**106**	7	21	83	**5**	116	65	81	8	3	157	10	12	4	3	29	408
04:15 PM	2	60	**13**	2	77	5	**34**	80	2	121	**73**	71	6	4	154	16	14	1	2	33	385
04:30 PM	3	57	8	0	68	9	21	**114**	4	**148**	67	**83**	8	**7**	**165**	11	**26**	**6**	1	**44**	**425**
Total Volume	13	256	37	5	311	34	99	356	11	500	267	292	36	19	614	54	72	13	9	148	1573
% App. Total	4.2	82.3	11.9	1.6		6.8	19.8	71.2	2.2		43.5	47.6	5.9	3.1		36.5	48.6	8.8	6.1		
PHF	.813	.688	.712	.625	.733	.654	.728	.781	.550	.845	.914	.880	.643	.679	.930	.794	.692	.542	.750	.841	.925



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File Name : PM_Market St - Pili St
Site Code : 00000000
Start Date : 2/4/2017
Page No : 1

Groups Printed- Unshifted

	MARKET ST Southbound				PILI ST Westbound				MARKET ST Northbound				PILI ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:45 PM	0	0	0	0	0	0	0	0	0	82	8	5	0	0	5	2	102
Total	0	0	0	0	0	0	0	0	0	82	8	5	0	0	5	2	102
04:00 PM	0	0	0	0	0	0	0	0	0	88	6	6	0	0	5	8	113
04:15 PM	0	0	0	0	0	0	0	0	0	92	3	2	0	0	6	6	109
04:30 PM	0	0	0	0	0	0	0	0	0	105	4	12	0	0	5	11	137
Grand Total	0	0	0	0	0	0	0	0	0	367	21	25	0	0	21	27	461
Apprch %	0	0	0	0	0	0	0	0	0	88.9	5.1	6.1	0	0	43.8	56.2	
Total %	0	0	0	0	0	0	0	0	0	79.6	4.6	5.4	0	0	4.6	5.9	

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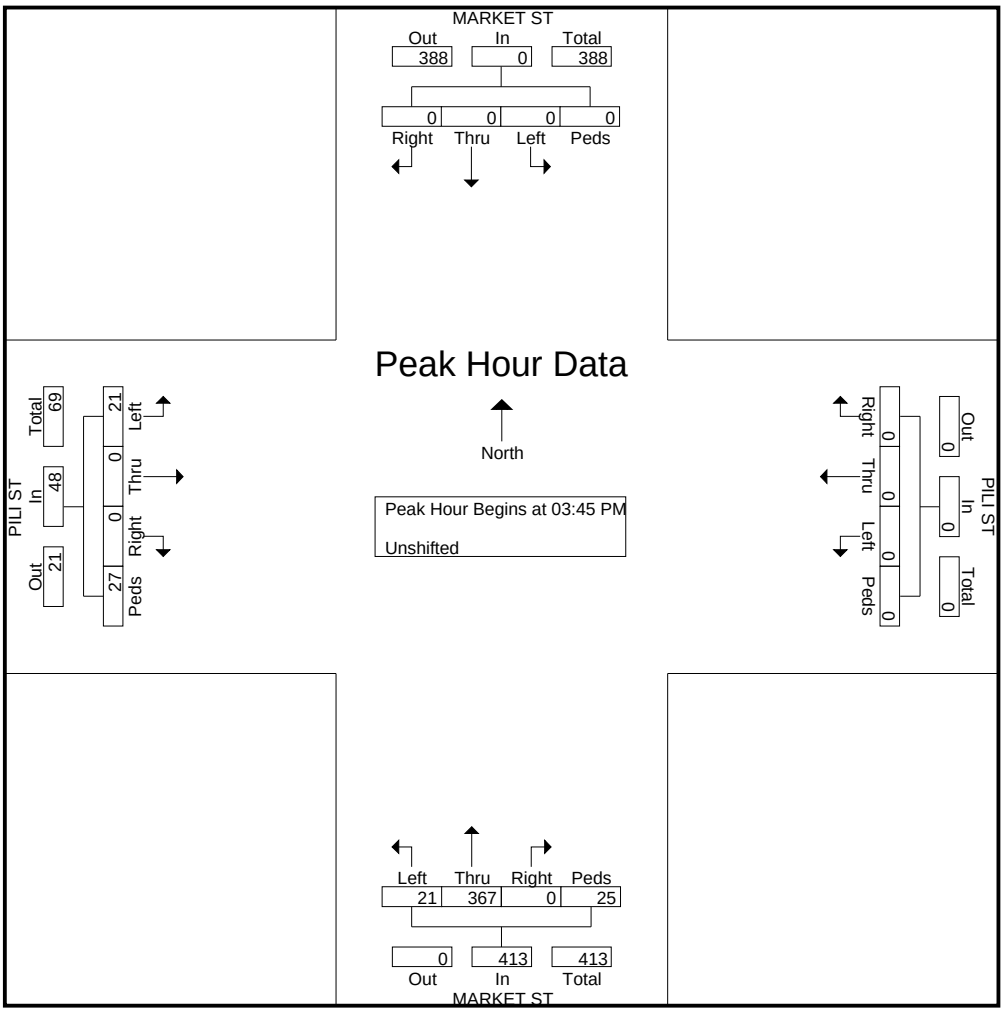
File Name : PM_Market St - Pili St
Site Code : 00000000
Start Date : 2/4/2017
Page No : 2

	MARKET ST Southbound					PILI ST Westbound					MARKET ST Northbound					PILI ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	82	**8**	5	95	0	0	5	2	7	102
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	88	6	6	100	0	0	5	8	13	113
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	92	3	2	97	0	0	**6**	6	12	109
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	**105**	4	**12**	**121**	0	0	5	**11**	**16**	**137**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	367	21	25	413	0	0	21	27	48	461
% App. Total	0	0	0	0		0	0	0	0		0	88.9	5.1	6.1		0	0	43.8	56.2		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.874	.656	.521	.853	.000	.000	.875	.614	.750	.841



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File Name : PM_Church St - Pili St
Site Code : 00000000
Start Date : 2/4/2017
Page No : 1

Groups Printed- Unshifted

	CHURCH ST Southbound				PILI ST Westbound				CHURCH ST Northbound				PILI ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:45 PM	0	36	2	1	0	0	9	0	0	0	0	1	0	0	0	0	49
Total	0	36	2	1	0	0	9	0	0	0	0	1	0	0	0	0	49
04:00 PM	0	35	0	1	0	0	13	1	0	0	0	2	0	0	0	0	52
04:15 PM	0	31	0	0	0	0	9	3	2	0	0	2	0	0	0	0	47
04:30 PM	0	38	1	0	0	0	14	0	1	0	0	3	0	0	0	0	57
Grand Total	0	140	3	2	0	0	45	4	3	0	0	8	0	0	0	0	205
Apprch %	0	96.6	2.1	1.4	0	0	91.8	8.2	27.3	0	0	72.7	0	0	0	0	
Total %	0	68.3	1.5	1	0	0	22	2	1.5	0	0	3.9	0	0	0	0	

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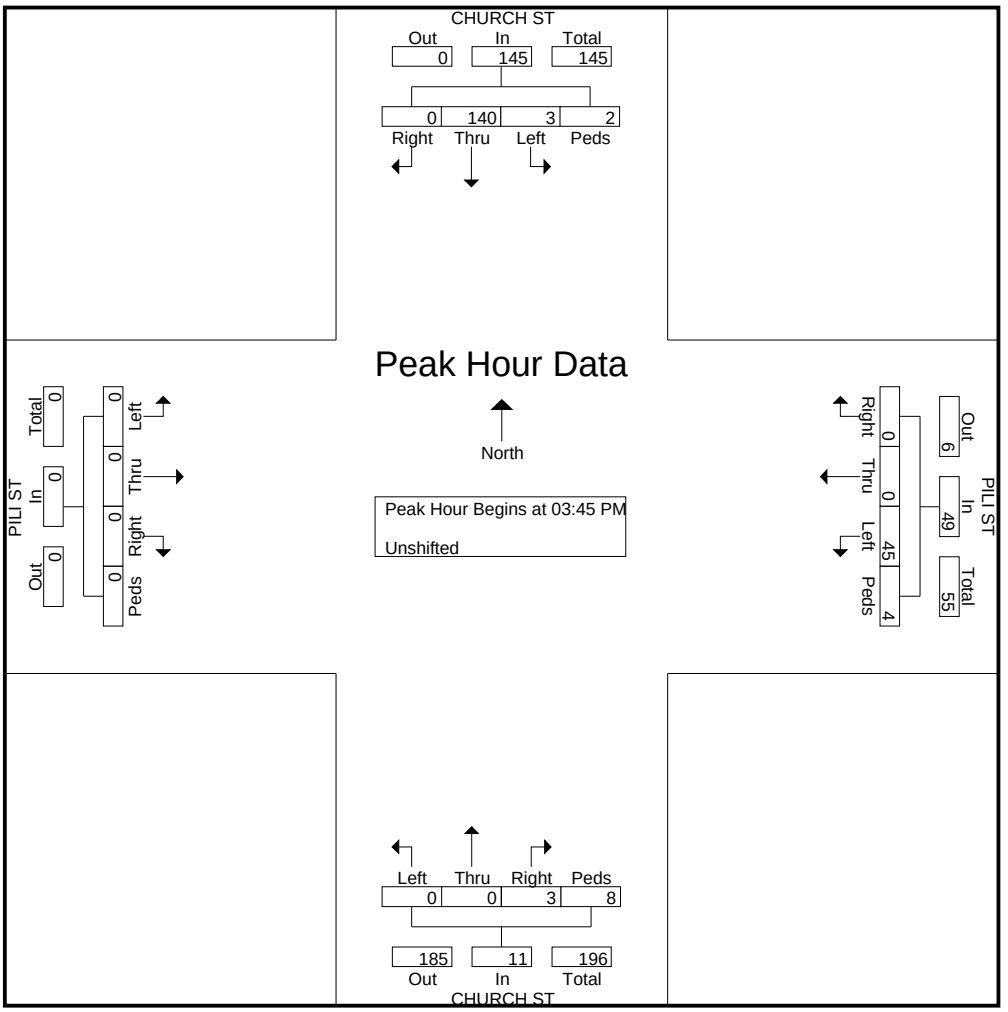
File Name : PM_Church St - Pili St
Site Code : 00000000
Start Date : 2/4/2017
Page No : 2

	CHURCH ST Southbound					PILI ST Westbound					CHURCH ST Northbound					PILI ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	36	**2**	**1**	**39**	0	0	9	0	9	0	0	0	1	1	0	0	0	0	0	49
04:00 PM	0	35	0	1	36	0	0	13	1	**14**	0	0	0	2	2	0	0	0	0	0	52
04:15 PM	0	31	0	0	31	0	0	9	**3**	12	**2**	0	0	2	**4**	0	0	0	0	0	47
04:30 PM	0	**38**	1	0	39	0	0	**14**	0	14	1	0	0	**3**	4	0	0	0	0	0	**57**
Total Volume	0	140	3	2	145	0	0	45	4	49	3	0	0	8	11	0	0	0	0	0	205
% App. Total	0	96.6	2.1	1.4		0	0	91.8	8.2		27.3	0	0	72.7		0	0	0	0		
PHF	.000	.921	.375	.500	.929	.000	.000	.804	.333	.875	.375	.000	.000	.667	.688	.000	.000	.000	.000	.000	.899



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File Name : PM_Central Ave - Vineyard St
Site Code : 00000000
Start Date : 9/27/2017
Page No : 1

Groups Printed- Class 1

	CENTRAL AVE SOUTHBOUND				VINEYARD ST WESTBOUND				CENTRAL AVE NORTHBOUND				VINEYARD ST EASTBOUND				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
15:45	0	57	25	0	0	3	1	0	26	56	4	0	3	2	51	0	228
Total	0	57	25	0	0	3	1	0	26	56	4	0	3	2	51	0	228
16:00	4	80	17	0	3	4	0	0	19	43	6	1	4	7	43	0	231
16:15	0	75	12	0	3	3	2	0	34	53	5	0	7	3	59	0	256
16:30	1	58	14	0	0	1	1	0	39	45	6	1	6	7	74	0	253
Grand Total	5	270	68	0	6	11	4	0	118	197	21	2	20	19	227	0	968
Apprch %	1.5	78.7	19.8	0	28.6	52.4	19	0	34.9	58.3	6.2	0.6	7.5	7.1	85.3	0	
Total %	0.5	27.9	7	0	0.6	1.1	0.4	0	12.2	20.4	2.2	0.2	2.1	2	23.5	0	

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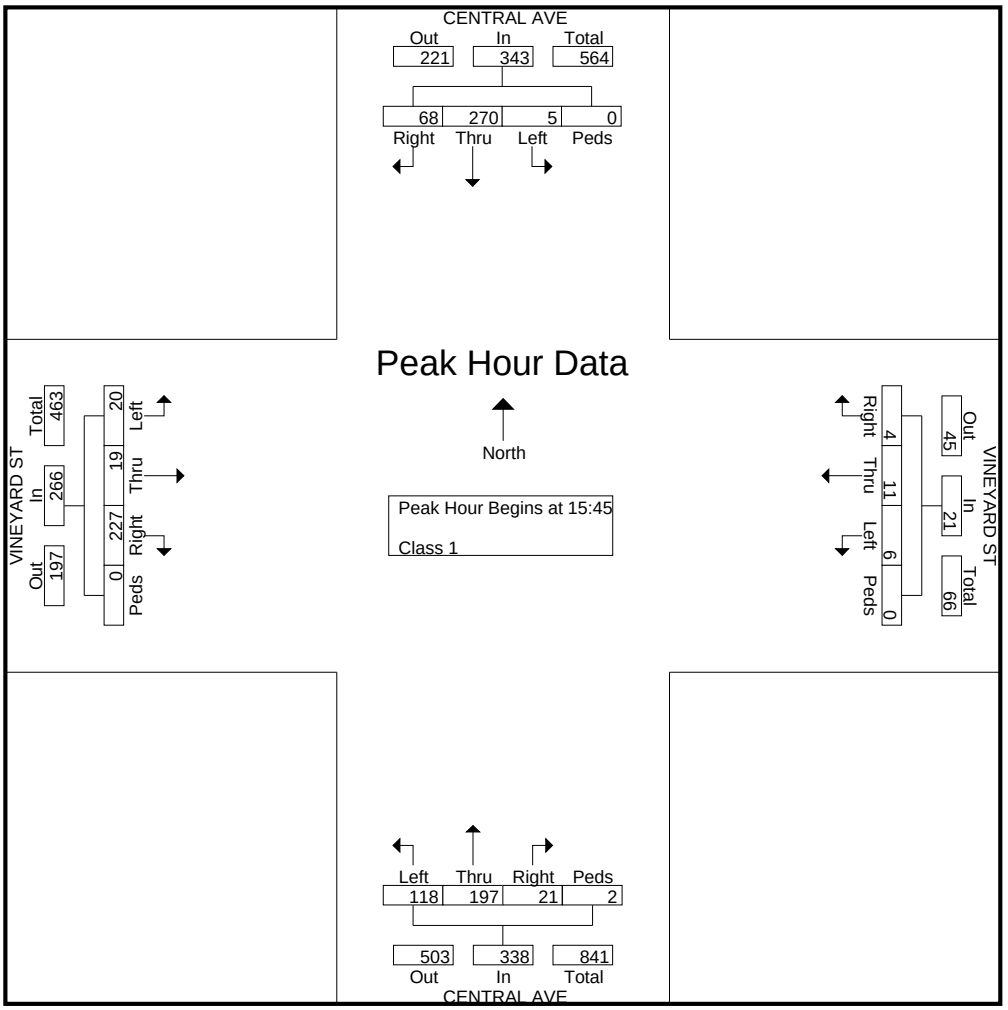
File Name : PM_Central Ave - Vineyard St
Site Code : 00000000
Start Date : 9/27/2017
Page No : 2

	CENTRAL AVE SOUTHBOUND					VINEYARD ST WESTBOUND					CENTRAL AVE NORTHBOUND					VINEYARD ST EASTBOUND					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 15:45 to 16:30 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 15:45																					
15:45	0	57	**25**	0	82	0	3	1	0	4	26	**56**	4	0	86	3	2	51	0	56	228
16:00	**4**	**80**	17	0	**101**	**3**	**4**	0	0	7	19	43	**6**	**1**	69	4	**7**	43	0	54	231
16:15	0	75	12	0	87	3	3	**2**	0	**8**	34	53	5	0	**92**	**7**	3	59	0	69	**256**
16:30	1	58	14	0	73	0	1	1	0	2	**39**	45	6	1	91	6	7	**74**	0	**87**	253
Total Volume	5	270	68	0	343	6	11	4	0	21	118	197	21	2	338	20	19	227	0	266	968
% App. Total	1.5	78.7	19.8	0		28.6	52.4	19	0		34.9	58.3	6.2	0.6		7.5	7.1	85.3	0		
PHF	.313	.844	.680	.000	.849	.500	.688	.500	.000	.656	.756	.879	.875	.500	.918	.714	.679	.767	.000	.764	.945



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File Name : PM_Market St - Vineyard St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	MARKET ST Southbound				VINEYARD ST Westbound				MARKET ST Northbound				VINEYARD ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:45 PM	61	0	6	3	17	28	0	1	12	59	15	1	1	32	57	1	294
Total	61	0	6	3	17	28	0	1	12	59	15	1	1	32	57	1	294
04:00 PM	66	1	13	6	10	27	0	4	18	64	5	2	0	24	73	7	320
04:15 PM	64	0	11	1	11	28	0	1	13	71	10	0	0	24	68	4	306
04:30 PM	63	0	14	3	22	23	0	1	10	79	7	0	0	36	83	14	355
Grand Total	254	1	44	13	60	106	0	7	53	273	37	3	1	116	281	26	1275
Apprch %	81.4	0.3	14.1	4.2	34.7	61.3	0	4	14.5	74.6	10.1	0.8	0.2	27.4	66.3	6.1	
Total %	19.9	0.1	3.5	1	4.7	8.3	0	0.5	4.2	21.4	2.9	0.2	0.1	9.1	22	2	
Unshifted	254	1	44	13	60	106	0	7	53	273	37	3	1	116	281	26	1275
% Unshifted	100	100	100	100	100	100	0	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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File Name : PM_Market St - Vineyard St
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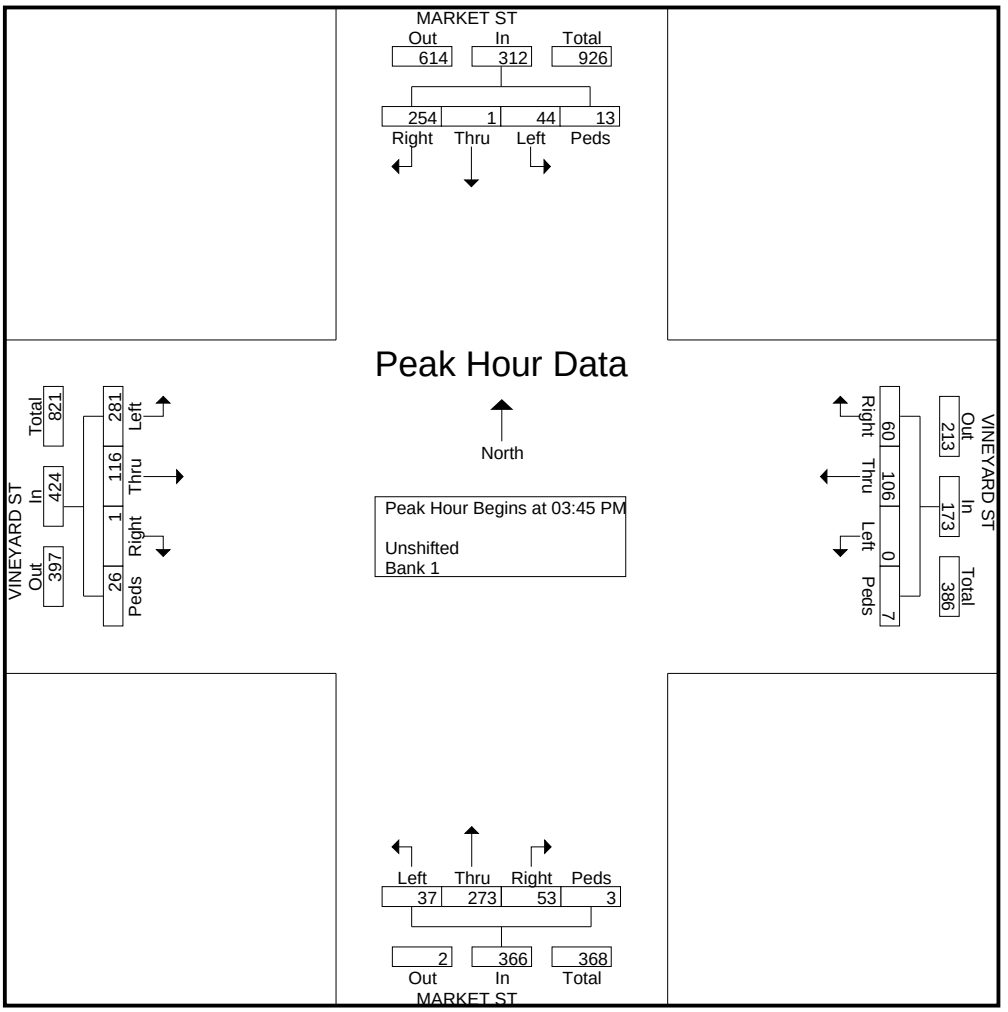
	MARKET ST Southbound					VINEYARD ST Westbound					MARKET ST Northbound					VINEYARD ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	61	0	6	3	70	17	**28**	0	1	**46**	12	59	**15**	1	87	**1**	32	57	1	91	294
04:00 PM	**66**	**1**	13	**6**	**86**	10	27	0	**4**	41	**18**	64	5	**2**	89	0	24	73	7	104	320
04:15 PM	64	0	11	1	76	11	28	0	1	40	13	71	10	0	94	0	24	68	4	96	306
04:30 PM	63	0	**14**	3	80	**22**	23	0	1	46	10	**79**	7	0	**96**	0	**36**	**83**	**14**	**133**	**355**
Total Volume	254	1	44	13	312	60	106	0	7	173	53	273	37	3	366	1	116	281	26	424	1275
% App. Total	81.4	0.3	14.1	4.2		34.7	61.3	0	4		14.5	74.6	10.1	0.8		0.2	27.4	66.3	6.1		
PHF	.962	.250	.786	.542	.907	.682	.946	.000	.438	.940	.736	.864	.617	.375	.953	.250	.806	.846	.464	.797	.898



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File Name : PM_Municipal Parking Lot Dw
Site Code : 00000000
Start Date : 2/4/2017
Page No : 1

Groups Printed- Unshifted

	PARKING DWY Southbound				VINEYARD ST Westbound				PARKING DWY Northbound				VINEYARD ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:45 PM	0	0	0	0	0	106	8	0	9	0	3	0	6	75	0	0	207
Total	0	0	0	0	0	106	8	0	9	0	3	0	6	75	0	0	207
04:00 PM	0	0	0	0	0	94	8	0	16	0	1	2	2	83	0	0	206
04:15 PM	0	0	0	0	0	92	10	0	13	0	1	2	2	81	0	0	201
04:30 PM	0	0	0	0	0	92	7	0	20	0	4	1	3	107	0	0	234
Grand Total	0	0	0	0	0	384	33	0	58	0	9	5	13	346	0	0	848
Apprch %	0	0	0	0	0	92.1	7.9	0	80.6	0	12.5	6.9	3.6	96.4	0	0	
Total %	0	0	0	0	0	45.3	3.9	0	6.8	0	1.1	0.6	1.5	40.8	0	0	

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Site Code : 00000000
Start Date : 2/4/2017
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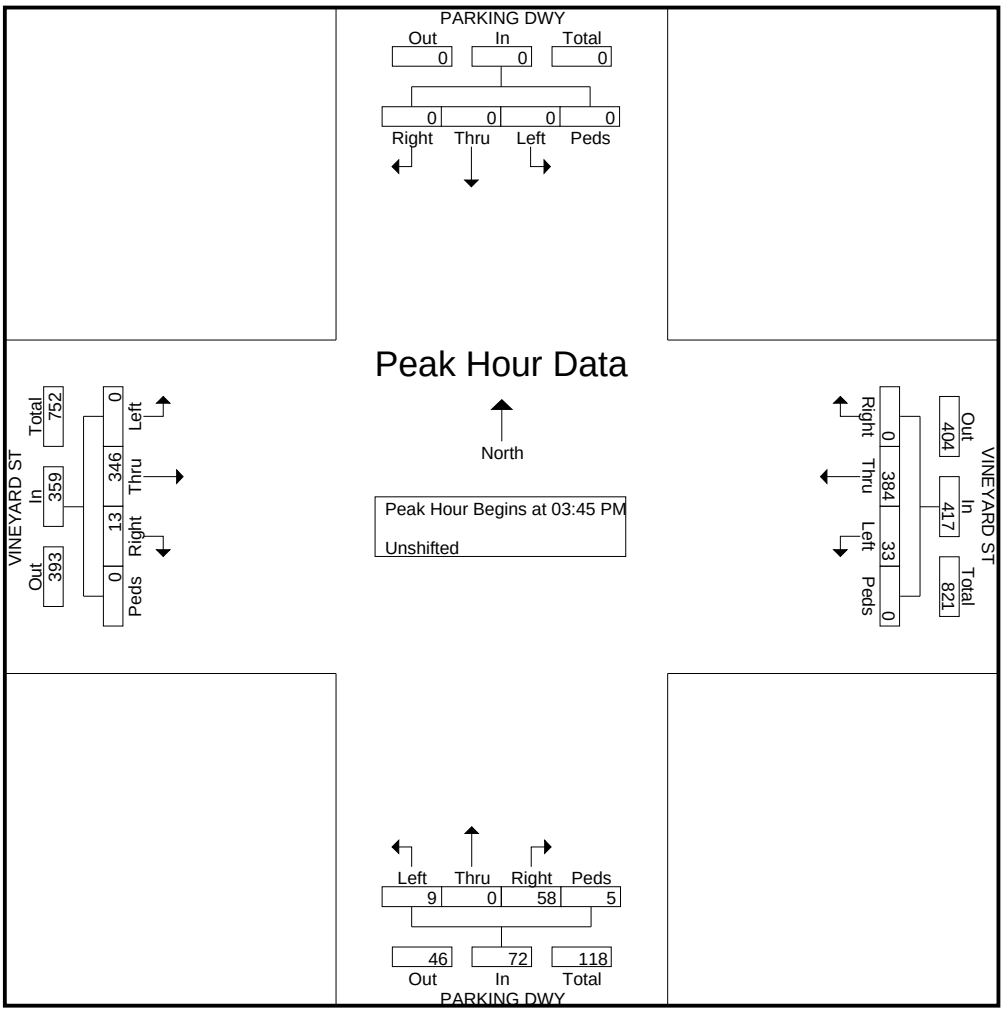
	PARKING DWY Southbound					VINEYARD ST Westbound					PARKING DWY Northbound					VINEYARD ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	0	0	0	**106**	8	0	**114**	9	0	3	0	12	**6**	75	0	0	81	207
04:00 PM	0	0	0	0	0	0	94	8	0	102	16	0	1	**2**	19	2	83	0	0	85	206
04:15 PM	0	0	0	0	0	0	92	**10**	0	102	13	0	1	2	16	2	81	0	0	83	201
04:30 PM	0	0	0	0	0	0	92	7	0	99	**20**	0	**4**	1	**25**	3	**107**	0	0	**110**	**234**
Total Volume	0	0	0	0	0	0	384	33	0	417	58	0	9	5	72	13	346	0	0	359	848
% App. Total	0	0	0	0		0	92.1	7.9	0		80.6	0	12.5	6.9		3.6	96.4	0	0		
PHF	.000	.000	.000	.000	.000	.000	.906	.825	.000	.914	.725	.000	.563	.625	.720	.542	.808	.000	.000	.816	.906



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File Name : PM_Chruch St - Vineyard St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	CHURCH ST Southbound				VINEYARD ST Westbound				CHURCH ST Northbound				VINEYARD ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:45 PM	0	1	1	0	5	71	28	2	0	0	0	0	6	77	2	1	194
Total	0	1	1	0	5	71	28	2	0	0	0	0	6	77	2	1	194
04:00 PM	0	1	0	0	1	65	26	1	0	0	0	1	10	86	0	0	191
04:15 PM	0	0	3	1	1	60	32	2	0	0	0	4	6	82	1	1	193
04:30 PM	1	4	1	0	2	72	21	0	0	0	0	1	7	111	0	1	221
Grand Total	1	6	5	1	9	268	107	5	0	0	0	6	29	356	3	3	799
Apprch %	7.7	46.2	38.5	7.7	2.3	68.9	27.5	1.3	0	0	0	100	7.4	91	0.8	0.8	
Total %	0.1	0.8	0.6	0.1	1.1	33.5	13.4	0.6	0	0	0	0.8	3.6	44.6	0.4	0.4	
Unshifted	1	6	5	1	9	268	107	5	0	0	0	6	29	356	3	3	799
% Unshifted	100	100	100	100	100	100	100	100	0	0	0	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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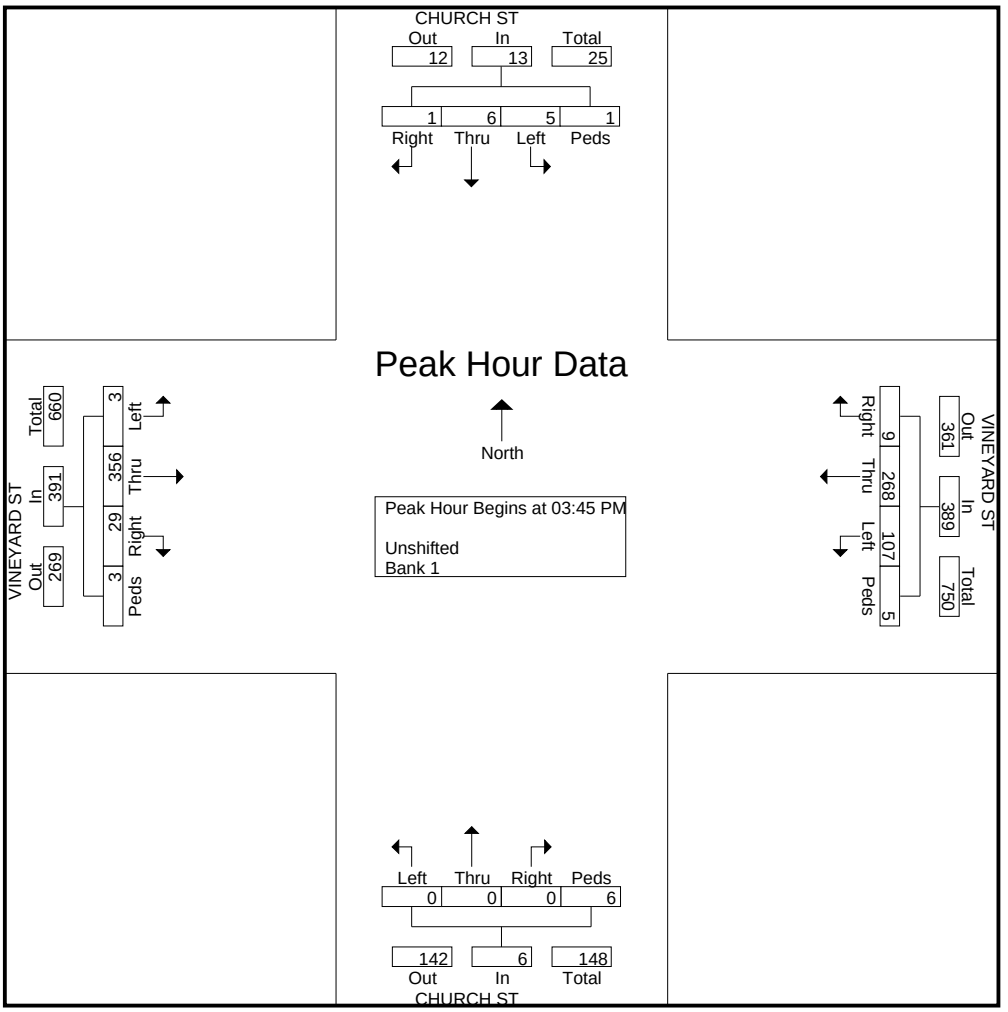
File Name : PM_Chruch St - Vineyard St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 2

	CHURCH ST Southbound					VINEYARD ST Westbound					CHURCH ST Northbound					VINEYARD ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	1	1	0	2	**5**	71	28	**2**	**106**	0	0	0	0	0	6	77	**2**	**1**	86	194
04:00 PM	0	1	0	0	1	1	65	26	1	93	0	0	0	1	1	**10**	86	0	0	96	191
04:15 PM	0	0	**3**	**1**	4	1	60	**32**	2	95	0	0	0	**4**	**4**	6	82	1	1	90	193
04:30 PM	**1**	**4**	1	0	**6**	2	**72**	21	0	95	0	0	0	1	1	7	**111**	0	1	**119**	**221**
Total Volume	1	6	5	1	13	9	268	107	5	389	0	0	0	6	6	29	356	3	3	391	799
% App. Total	7.7	46.2	38.5	7.7		2.3	68.9	27.5	1.3		0	0	0	100		7.4	91	0.8	0.8		
PHF	.250	.375	.417	.250	.542	.450	.931	.836	.625	.917	.000	.000	.000	.375	.375	.725	.802	.375	.750	.821	.904



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File Name : PM_High St - Vineyard St
Site Code : 00000000
Start Date : 2/2/2017
Page No : 1

Groups Printed- Unshifted - Bank 1

	HIGH ST Southbound				VINEYARD ST Westbound				HIGH ST Northbound				VINEYARD ST Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:45 PM	0	0	0	1	1	9	49	0	57	0	3	4	5	4	0	1	134
Total	0	0	0	1	1	9	49	0	57	0	3	4	5	4	0	1	134
04:00 PM	0	1	1	4	1	6	67	1	70	0	4	3	9	14	0	7	188
04:15 PM	0	0	0	1	0	11	50	1	52	2	5	1	3	10	0	2	138
04:30 PM	0	0	1	3	0	13	57	0	89	2	9	3	4	14	0	8	203
Grand Total	0	1	2	9	2	39	223	2	268	4	21	11	21	42	0	18	663
Apprch %	0	8.3	16.7	75	0.8	14.7	83.8	0.8	88.2	1.3	6.9	3.6	25.9	51.9	0	22.2	
Total %	0	0.2	0.3	1.4	0.3	5.9	33.6	0.3	40.4	0.6	3.2	1.7	3.2	6.3	0	2.7	
Unshifted	0	1	2	9	2	39	223	2	268	4	21	11	21	42	0	18	663
% Unshifted	0	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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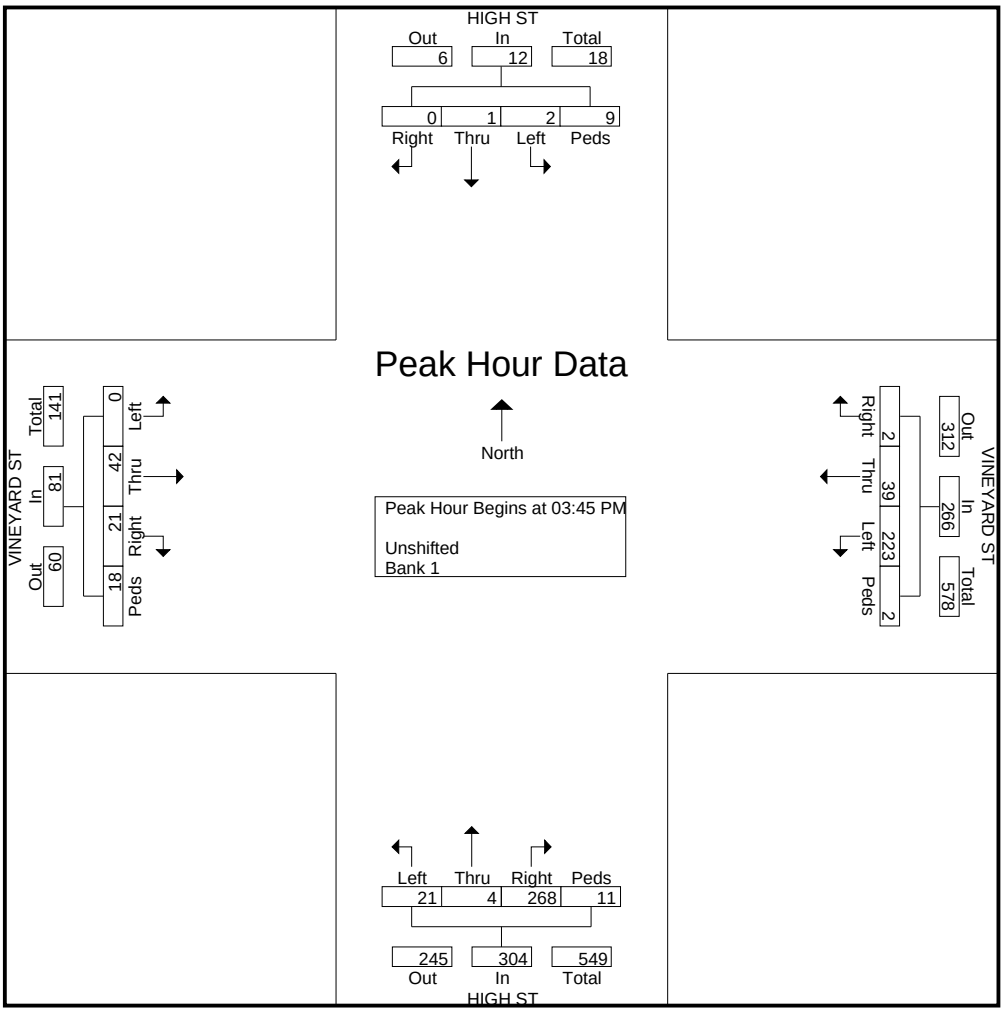
Page No : 2

	HIGH ST Southbound					VINEYARD ST Westbound					HIGH ST Northbound					VINEYARD ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:45 PM to 04:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	1	1	**1**	9	49	0	59	57	0	3	**4**	64	5	4	0	1	10	134
04:00 PM	0	**1**	**1**	**4**	**6**	1	6	**67**	**1**	**75**	70	0	4	3	77	**9**	**14**	0	7	**30**	188
04:15 PM	0	0	0	1	1	0	11	50	1	62	52	**2**	5	1	60	3	10	0	2	15	138
04:30 PM	0	0	1	3	4	0	**13**	57	0	70	**89**	2	**9**	3	**103**	4	14	0	**8**	26	**203**
Total Volume	0	1	2	9	12	2	39	223	2	266	268	4	21	11	304	21	42	0	18	81	663
% App. Total	0	8.3	16.7	75		0.8	14.7	83.8	0.8		88.2	1.3	6.9	3.6		25.9	51.9	0	22.2		
PHF	.000	.250	.500	.563	.500	.500	.750	.832	.500	.887	.753	.500	.583	.688	.738	.583	.750	.000	.563	.675	.817



APPENDIX B

LEVEL OF SERVICE CRITERIA

APPENDIX B – LEVEL OF SERVICE (LOS) CRITERIA

VEHICULAR LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS (HCM 6th EDITION)

Level of service for vehicles at signalized intersections is directly related to delay values and is assigned on that basis. Level of Service is a measure of the acceptability of delay values to motorists at a given intersection. The criteria are given in the table below.

Level-of Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec./veh.)
A	< 10.0
B	>10.0 and ≤ 20.0
C	>20.0 and ≤ 35.0
D	>35.0 and ≤ 55.0
E	>55.0 and ≤ 80.0
F	> 80.0

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

VEHICULAR LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 6th EDITION)

The level of service criteria for vehicles at unsignalized intersections is defined as the average control delay, in seconds per vehicle.

LOS delay threshold values are lower for two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections than those of signalized intersections. This is because more vehicles pass through signalized intersections, and therefore, drivers expect and tolerate greater delays. While the criteria for level of service for TWSC and AWSC intersections are the same, procedures to calculate the average total delay may differ.

Level of Service Criteria for Two-Way Stop-Controlled Intersections

Level of Service	Average Control Delay (sec/veh)
A	≤ 10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	> 50

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

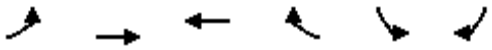
APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Existing AM Peak

HCM 6th Signalized Intersection Summary
1: E Main St & Central Ave

11/14/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	65	369	540	319	429	77
Future Volume (veh/h)	65	369	540	319	429	77
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	71	401	587	123	466	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	344	1010	747	628	539	480
Arrive On Green	0.06	0.54	0.40	0.40	0.30	0.30
Sat Flow, veh/h	1781	1870	1870	1573	1781	1585
Grp Volume(v), veh/h	71	401	587	123	466	22
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1573	1781	1585
Q Serve(g_s), s	1.1	6.4	14.0	2.6	12.6	0.5
Cycle Q Clear(g_c), s	1.1	6.4	14.0	2.6	12.6	0.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	344	1010	747	628	539	480
V/C Ratio(X)	0.21	0.40	0.79	0.20	0.86	0.05
Avail Cap(c_a), veh/h	794	2059	1323	1113	700	623
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.4	6.9	13.4	10.0	16.8	12.5
Incr Delay (d2), s/veh	0.3	0.3	1.9	0.2	8.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.9	5.2	0.8	5.7	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.7	7.1	15.3	10.1	25.6	12.6
LnGrp LOS	A	A	B	B	C	B
Approach Vol, veh/h		472	710		488	
Approach Delay, s/veh		7.5	14.4		25.0	
Approach LOS		A	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		31.5		19.4	7.2	24.3
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		56.0		20.0	16.0	36.0
Max Q Clear Time (g_c+I1), s		8.4		14.6	3.1	16.0
Green Ext Time (p_c), s		2.8		0.8	0.1	4.3

Intersection Summary		
HCM 6th Ctrl Delay		15.5
HCM 6th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	357	0	0	445	103	22	100	22	0	0	0
Future Volume (veh/h)	86	357	0	0	445	103	22	100	22	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	93	388	0	0	484	47	24	109	2			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	527	1121	0	0	736	613	54	246	236			
Arrive On Green	0.09	0.60	0.00	0.00	0.39	0.39	0.16	0.16	0.16			
Sat Flow, veh/h	1781	1870	0	0	1870	1559	334	1519	1462			
Grp Volume(v), veh/h	93	388	0	0	484	47	133	0	2			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1559	1854	0	1462			
Q Serve(g_s), s	0.8	3.5	0.0	0.0	7.1	0.6	2.2	0.0	0.0			
Cycle Q Clear(g_c), s	0.8	3.5	0.0	0.0	7.1	0.6	2.2	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.18		1.00			
Lane Grp Cap(c), veh/h	527	1121	0	0	736	613	300	0	236			
V/C Ratio(X)	0.18	0.35	0.00	0.00	0.66	0.08	0.44	0.00	0.01			
Avail Cap(c_a), veh/h	1224	3128	0	0	2011	1676	1107	0	874			
HCM Platoon Ratio	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	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	5.1	3.4	0.0	0.0	8.3	6.3	12.7	0.0	11.8			
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.0	1.0	0.1	1.0	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			
%ile BackOfQ(50%),veh/ln	0.2	0.5	0.0	0.0	2.0	0.1	0.8	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.3	3.6	0.0	0.0	9.3	6.4	13.7	0.0	11.8			
LnGrp LOS	A	A	A	A	A	A	B	A	B			
Approach Vol, veh/h		481			531			135				
Approach Delay, s/veh		3.9			9.1			13.7				
Approach LOS		A			A			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		24.1			6.9	17.2		9.4				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		56.0			16.0	36.0		20.0				
Max Q Clear Time (g_c+I1), s		5.5			2.8	9.1		4.2				
Green Ext Time (p_c), s		2.7			0.2	3.5		0.6				
Intersection Summary												
HCM 6th Ctrl Delay			7.4									
HCM 6th LOS			A									

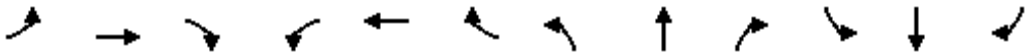
Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	341	49	37	413	0	0	0	0	27	109	69
Future Vol, veh/h	0	341	49	37	413	0	0	0	0	27	109	69
Conflicting Peds, #/hr	18	0	28	28	0	18	11	0	1	1	0	11
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	45	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	371	53	40	449	0	0	0	0	29	118	75

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	452	0	0			928	981	460
Stage 1	-	-	-	-	-	-			529	529	-
Stage 2	-	-	-	-	-	-			399	452	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1109	-	0			297	249	601
Stage 1	0	-	-	-	-	0			591	527	-
Stage 2	0	-	-	-	-	0			678	570	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1109	-	-			283	0	595
Mov Cap-2 Maneuver	-	-	-	-	-	-			283	0	-
Stage 1	-	-	-	-	-	-			563	0	-
Stage 2	-	-	-	-	-	-			678	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.7	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1109	-	283	595
HCM Lane V/C Ratio	-	-	0.036	-	0.104	0.325
HCM Control Delay (s)	-	-	8.4	0	19.2	13.9
HCM Lane LOS	-	-	A	A	C	B
HCM 95th %tile Q(veh)	-	-	0.1	-	0.3	1.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	132	50	291	54	53	23	243	340	22	289	7
Future Volume (veh/h)	19	132	50	291	54	53	23	243	340	22	289	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.96	0.98		0.98	0.98		0.97	0.98		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	143	29	316	59	26	25	264	96	24	314	7
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	489	361	73	647	606	267	504	563	461	116	517	11
Arrive On Green	0.24	0.24	0.24	0.15	0.50	0.50	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1271	1499	304	1781	1223	539	1041	1870	1530	58	1716	37
Grp Volume(v), veh/h	21	0	172	316	0	85	25	264	96	345	0	0
Grp Sat Flow(s),veh/h/ln	1271	0	1803	1781	0	1762	1041	1870	1530	1812	0	0
Q Serve(g_s), s	0.5	0.0	3.1	4.7	0.0	1.0	0.0	4.5	1.8	0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	3.1	4.7	0.0	1.0	0.6	4.5	1.8	6.2	0.0	0.0
Prop In Lane	1.00		0.17	1.00		0.31	1.00		1.00	0.07		0.02
Lane Grp Cap(c), veh/h	489	0	434	647	0	873	504	563	461	644	0	0
V/C Ratio(X)	0.04	0.00	0.40	0.49	0.00	0.10	0.05	0.47	0.21	0.54	0.00	0.00
Avail Cap(c_a), veh/h	1284	0	1560	647	0	1974	880	1238	1012	1277	0	0
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.5	0.0	12.5	7.8	0.0	5.3	9.8	11.2	10.2	11.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.6	0.0	0.0	0.0	0.6	0.2	0.7	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	0.1	0.0	1.1	1.3	0.0	0.2	0.1	1.6	0.5	2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.6	0.0	13.1	8.4	0.0	5.3	9.9	11.8	10.5	12.5	0.0	0.0
LnGrp LOS	B	A	B	A	A	A	A	B	B	B	A	A
Approach Vol, veh/h		193			401			385			345	
Approach Delay, s/veh		12.9			7.8			11.3			12.5	
Approach LOS		B			A			B			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.0	13.5		15.8		23.5		15.8				
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s	6.0	34.0		26.0		44.0		26.0				
Max Q Clear Time (g_c+I1), s	6.7	5.1		8.2		3.0		6.5				
Green Ext Time (p_c), s	0.0	1.1		2.0		0.5		1.9				

Intersection Summary			
HCM 6th Ctrl Delay		10.8	
HCM 6th LOS		B	

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	0	41	255	0	0
Future Vol, veh/h	4	0	41	255	0	0
Conflicting Peds, #/hr	0	21	38	0	0	38
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16965	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	45	277	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	405	-	38	0
Stage 1	38	-	-	-
Stage 2	367	-	-	-
Critical Hdwy	6.42	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3.518	-	2.218	-
Pot Cap-1 Maneuver	602	0	1572	-
Stage 1	-	0	-	-
Stage 2	701	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	540	-	1515	-
Mov Cap-2 Maneuver	540	-	-	-
Stage 1	-	-	-	-
Stage 2	676	-	-	-

Approach	EB	NB
HCM Control Delay, s	11.7	1
HCM LOS	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	1515	-	540
HCM Lane V/C Ratio	0.029	-	0.008
HCM Control Delay (s)	7.4	0	11.7
HCM Lane LOS	A	A	B
HCM 95th %tile Q(veh)	0.1	-	0

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	0	0	0	7	232
Future Vol, veh/h	5	0	0	0	7	232
Conflicting Peds, #/hr	41	7	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	0	0	8	252

Major/Minor	Minor1		Major2	
Conflicting Flow All	313	-	4	0
Stage 1	4	-	-	-
Stage 2	309	-	-	-
Critical Hdwy	6.42	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3.518	-	2.218	-
Pot Cap-1 Maneuver	680	0	1618	-
Stage 1	-	0	-	-
Stage 2	745	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	673	-	1612	-
Mov Cap-2 Maneuver	673	-	-	-
Stage 1	-	-	-	-
Stage 2	745	-	-	-

Approach	WB	SB
HCM Control Delay, s	10.4	0.2
HCM LOS	B	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	673	1612	-
HCM Lane V/C Ratio	0.008	0.005	-
HCM Control Delay (s)	10.4	7.2	0
HCM Lane LOS	B	A	A
HCM 95th %tile Q(veh)	0	0	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	20	13	106	12	15	1	113	185	18	2	381	104
Future Vol, veh/h	20	13	106	12	15	1	113	185	18	2	381	104
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	22	14	115	13	16	1	123	201	20	2	414	113

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	941	942	471	996	988	211	527	0	0	221	0	0
Stage 1	475	475	-	457	457	-	-	-	-	-	-	-
Stage 2	466	467	-	539	531	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	243	263	593	223	247	829	1040	-	-	1348	-	-
Stage 1	570	557	-	583	568	-	-	-	-	-	-	-
Stage 2	577	562	-	527	526	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	205	227	593	153	213	829	1040	-	-	1348	-	-
Mov Cap-2 Maneuver	205	227	-	153	213	-	-	-	-	-	-	-
Stage 1	493	556	-	504	491	-	-	-	-	-	-	-
Stage 2	482	486	-	413	525	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.5	28	3.2	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1040	-	-	417	187	1348	-	-
HCM Lane V/C Ratio	0.118	-	-	0.362	0.163	0.002	-	-
HCM Control Delay (s)	8.9	0	-	18.5	28	7.7	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	1.6	0.6	0	-	-

Intersection	
Intersection Delay, s/veh	18.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	200	42	0	0	131	39	21	193	31	51	0	389
Future Vol, veh/h	200	42	0	0	131	39	21	193	31	51	0	389
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	217	46	0	0	142	42	23	210	34	55	0	423
Number of Lanes	1	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	15.8	13.6	15.1	23
HCM LOS	C	B	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	9%	100%	0%	0%	12%
Vol Thru, %	79%	0%	100%	77%	0%
Vol Right, %	13%	0%	0%	23%	88%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	245	200	42	170	440
LT Vol	21	200	0	0	51
Through Vol	193	0	42	131	0
RT Vol	31	0	0	39	389
Lane Flow Rate	266	217	46	185	478
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.474	0.462	0.091	0.351	0.741
Departure Headway (Hd)	6.401	7.658	7.145	6.847	5.581
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	562	470	500	523	646
Service Time	4.461	5.422	4.909	4.919	3.631
HCM Lane V/C Ratio	0.473	0.462	0.092	0.354	0.74
HCM Control Delay	15.1	16.9	10.6	13.6	23
HCM Lane LOS	C	C	B	B	C
HCM 95th-tile Q	2.5	2.4	0.3	1.6	6.5

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	237	25	47	599	5	10
Future Vol, veh/h	237	25	47	599	5	10
Conflicting Peds, #/hr	0	3	3	0	5	13
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	258	27	51	651	5	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	288	0	1033	288
Stage 1	-	-	-	-	275	-
Stage 2	-	-	-	-	758	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1274	-	258	751
Stage 1	-	-	-	-	771	-
Stage 2	-	-	-	-	463	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1270	-	240	740
Mov Cap-2 Maneuver	-	-	-	-	240	-
Stage 1	-	-	-	-	720	-
Stage 2	-	-	-	-	461	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	13.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	437	-	-	1270	-
HCM Lane V/C Ratio	0.037	-	-	0.04	-
HCM Control Delay (s)	13.6	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	6	264	26	201	348	9	0	0	0	2	10	0
Future Vol, veh/h	6	264	26	201	348	9	0	0	0	2	10	0
Conflicting Peds, #/hr	5	0	2	2	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	7	287	28	218	378	10	0	0	0	2	11	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	393	0	0	317	0	0			1144	1155	393
Stage 1	-	-	-	-	-	-			824	824	-
Stage 2	-	-	-	-	-	-			320	331	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1166	-	-	1243	-	-			221	197	656
Stage 1	-	-	-	-	-	-			431	387	-
Stage 2	-	-	-	-	-	-			736	645	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	1160	-	-	1243	-	-			169	0	650
Mov Cap-2 Maneuver	-	-	-	-	-	-			169	0	-
Stage 1	-	-	-	-	-	-			331	0	-
Stage 2	-	-	-	-	-	-			732	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	3.1	28.1
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1160	-	-	1243	-	-	169
HCM Lane V/C Ratio	0.006	-	-	0.176	-	-	0.077
HCM Control Delay (s)	8.1	0	-	8.5	0	-	28.1
HCM Lane LOS	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0	-	-	0.6	-	-	0.2

Intersection	
Int Delay, s/veh	11.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	39	13	294	50	2	52	0	224	1	7	0
Future Vol, veh/h	0	39	13	294	50	2	52	0	224	1	7	0
Conflicting Peds, #/hr	0	0	60	60	0	0	41	0	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	42	14	320	54	2	57	0	243	1	8	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	56	0	0	116	0	0	849	805	115	872	811	96
Stage 1	-	-	-	-	-	-	109	109	-	695	695	-
Stage 2	-	-	-	-	-	-	740	696	-	177	116	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1549	-	-	1473	-	-	281	316	937	271	313	960
Stage 1	-	-	-	-	-	-	896	805	-	433	444	-
Stage 2	-	-	-	-	-	-	409	443	-	825	800	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1549	-	-	1389	-	-	203	227	878	159	225	923
Mov Cap-2 Maneuver	-	-	-	-	-	-	203	227	-	159	225	-
Stage 1	-	-	-	-	-	-	845	759	-	433	338	-
Stage 2	-	-	-	-	-	-	293	338	-	593	754	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.1	19.7	22.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	540	1549	-	-	1389	-	-	214
HCM Lane V/C Ratio	0.556	-	-	-	0.23	-	-	0.041
HCM Control Delay (s)	19.7	0	-	-	8.4	0	-	22.5
HCM Lane LOS	C	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	3.4	0	-	-	0.9	-	-	0.1

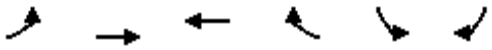
APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Existing PM Peak

HCM 6th Signalized Intersection Summary
1: E Main St & Central Ave

11/14/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	67	389	512	314	449	110
Future Volume (veh/h)	67	389	512	314	449	110
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	423	557	118	488	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	346	984	725	608	573	509
Arrive On Green	0.06	0.53	0.39	0.39	0.32	0.32
Sat Flow, veh/h	1781	1870	1870	1567	1781	1585
Grp Volume(v), veh/h	73	423	557	118	488	65
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1567	1781	1585
Q Serve(g_s), s	1.1	7.3	13.6	2.6	13.5	1.5
Cycle Q Clear(g_c), s	1.1	7.3	13.6	2.6	13.5	1.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	346	984	725	608	573	509
V/C Ratio(X)	0.21	0.43	0.77	0.19	0.85	0.13
Avail Cap(c_a), veh/h	642	4129	3560	2982	881	784
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.7	7.6	14.0	10.6	16.7	12.6
Incr Delay (d2), s/veh	0.3	0.3	1.7	0.2	5.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.3	5.1	0.8	5.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.0	7.9	15.8	10.8	21.7	12.7
LnGrp LOS	B	A	B	B	C	B
Approach Vol, veh/h		496	675		553	
Approach Delay, s/veh		8.2	14.9		20.7	
Approach LOS		A	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		31.7		20.9	7.3	24.4
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		116.0		26.0	12.0	100.0
Max Q Clear Time (g_c+I1), s		9.3		15.5	3.1	15.6
Green Ext Time (p_c), s		3.0		1.4	0.1	4.7

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	413	0	0	412	153	28	95	54	0	0	0
Future Volume (veh/h)	126	413	0	0	412	153	28	95	54	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		0.90			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	137	449	0	0	448	56	30	103	8			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	550	1112	0	0	705	582	75	258	257			
Arrive On Green	0.10	0.59	0.00	0.00	0.38	0.38	0.18	0.18	0.18			
Sat Flow, veh/h	1781	1870	0	0	1870	1545	417	1432	1431			
Grp Volume(v), veh/h	137	449	0	0	448	56	133	0	8			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1545	1850	0	1431			
Q Serve(g_s), s	1.4	4.5	0.0	0.0	7.0	0.8	2.3	0.0	0.2			
Cycle Q Clear(g_c), s	1.4	4.5	0.0	0.0	7.0	0.8	2.3	0.0	0.2			
Prop In Lane	1.00		0.00	0.00		1.00	0.23		1.00			
Lane Grp Cap(c), veh/h	550	1112	0	0	705	582	333	0	257			
V/C Ratio(X)	0.25	0.40	0.00	0.00	0.64	0.10	0.40	0.00	0.03			
Avail Cap(c_a), veh/h	967	6126	0	0	5281	4363	1358	0	1050			
HCM Platoon Ratio	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	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	5.4	3.8	0.0	0.0	9.0	7.1	12.8	0.0	12.0			
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.0	1.0	0.1	0.8	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			
%ile BackOfQ(50%),veh/ln	0.3	0.7	0.0	0.0	2.1	0.2	0.8	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.7	4.1	0.0	0.0	10.0	7.2	13.6	0.0	12.0			
LnGrp LOS	A	A	A	A	A	A	B	A	B			
Approach Vol, veh/h		586			504			141				
Approach Delay, s/veh		4.4			9.7			13.5				
Approach LOS		A			A			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		25.0			7.7	17.3		10.4				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		116.0			12.0	100.0		26.0				
Max Q Clear Time (g_c+I1), s		6.5			3.4	9.0		4.3				
Green Ext Time (p_c), s		3.2			0.2	3.4		0.7				
Intersection Summary												
HCM 6th Ctrl Delay			7.6									
HCM 6th LOS			A									

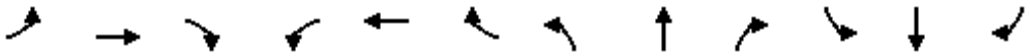
Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	386	30	23	394	0	0	0	0	74	54	59
Future Vol, veh/h	0	386	30	23	394	0	0	0	0	74	54	59
Conflicting Peds, #/hr	17	0	19	19	0	17	9	0	10	10	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	45	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	420	33	25	428	0	0	0	0	80	59	64

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	472	0	0			925	950	437
Stage 1	-	-	-	-	-	-			478	478	-
Stage 2	-	-	-	-	-	-			447	472	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1090	-	0			299	260	620
Stage 1	0	-	-	-	-	0			624	556	-
Stage 2	0	-	-	-	-	0			644	559	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1090	-	-			290	0	615
Mov Cap-2 Maneuver	-	-	-	-	-	-			290	0	-
Stage 1	-	-	-	-	-	-			605	0	-
Stage 2	-	-	-	-	-	-			644	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.5	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1090	-	290	615
HCM Lane V/C Ratio	-	-	0.023	-	0.277	0.2
HCM Control Delay (s)	-	-	8.4	0	22.1	12.3
HCM Lane LOS	-	-	A	A	C	B
HCM 95th %tile Q(veh)	-	-	0.1	-	1.1	0.7



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	72	54	356	99	34	36	292	267	37	256	13
Future Volume (veh/h)	13	72	54	356	99	34	36	292	267	37	256	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.96	0.97		0.98	0.99		0.98	0.99		0.98
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	78	22	387	108	16	39	317	95	40	278	13
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	426	294	83	763	829	123	450	546	454	123	426	19
Arrive On Green	0.21	0.21	0.21	0.22	0.52	0.52	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1219	1387	391	1781	1588	235	1079	1870	1555	102	1461	64
Grp Volume(v), veh/h	14	0	100	387	0	124	39	317	95	331	0	0
Grp Sat Flow(s),veh/h/ln	1219	0	1778	1781	0	1823	1079	1870	1555	1627	0	0
Q Serve(g_s), s	0.4	0.0	2.0	6.3	0.0	1.5	0.0	6.2	2.0	1.7	0.0	0.0
Cycle Q Clear(g_c), s	0.4	0.0	2.0	6.3	0.0	1.5	1.4	6.2	2.0	7.9	0.0	0.0
Prop In Lane	1.00		0.22	1.00		0.13	1.00		1.00	0.12		0.04
Lane Grp Cap(c), veh/h	426	0	378	763	0	952	450	546	454	568	0	0
V/C Ratio(X)	0.03	0.00	0.26	0.51	0.00	0.13	0.09	0.58	0.21	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1074	0	1322	1618	0	2796	787	1130	940	1090	0	0
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.5	0.0	14.1	7.8	0.0	5.3	11.3	13.0	11.5	13.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.4	0.5	0.0	0.1	0.1	1.0	0.2	0.9	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	0.1	0.0	0.7	1.8	0.0	0.4	0.2	2.3	0.6	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.5	0.0	14.5	8.3	0.0	5.3	11.4	14.0	11.7	14.3	0.0	0.0
LnGrp LOS	B	A	B	A	A	A	B	B	B	B	A	A
Approach Vol, veh/h		114			511			451			331	
Approach Delay, s/veh		14.4			7.6			13.3			14.3	
Approach LOS		B			A			B			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	13.3	13.1		16.6		26.5		16.6				
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s	30.0	32.0		26.0		66.0		26.0				
Max Q Clear Time (g_c+I1), s	8.3	4.0		9.9		3.5		8.2				
Green Ext Time (p_c), s	1.2	0.6		1.8		0.8		2.2				

Intersection Summary			
HCM 6th Ctrl Delay		11.5	
HCM 6th LOS		B	

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	0	21	367	0	0
Future Vol, veh/h	21	0	21	367	0	0
Conflicting Peds, #/hr	0	25	25	0	0	27
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16965	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	0	23	399	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	470	-	25	0
Stage 1	25	-	-	-
Stage 2	445	-	-	-
Critical Hdwy	6.42	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3.518	-	2.218	-
Pot Cap-1 Maneuver	552	0	1589	-
Stage 1	-	0	-	-
Stage 2	646	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	516	-	1551	-
Mov Cap-2 Maneuver	516	-	-	-
Stage 1	-	-	-	-
Stage 2	630	-	-	-

Approach	EB	NB
HCM Control Delay, s	12.3	0.4
HCM LOS	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	1551	-	516
HCM Lane V/C Ratio	0.015	-	0.044
HCM Control Delay (s)	7.4	0	12.3
HCM Lane LOS	A	A	B
HCM 95th %tile Q(veh)	0	-	0.1

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	45	0	0	0	3	140
Future Vol, veh/h	45	0	0	0	3	140
Conflicting Peds, #/hr	2	8	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	0	0	0	3	152

Major/Minor	Minor1		Major2	
Conflicting Flow All	164	-	4	0
Stage 1	4	-	-	-
Stage 2	160	-	-	-
Critical Hdwy	6.42	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3.518	-	2.218	-
Pot Cap-1 Maneuver	827	0	1618	-
Stage 1	-	0	-	-
Stage 2	869	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	822	-	1612	-
Mov Cap-2 Maneuver	822	-	-	-
Stage 1	-	-	-	-
Stage 2	869	-	-	-

Approach	WB	SB
HCM Control Delay, s	9.7	0.2
HCM LOS	A	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	822	1612	-
HCM Lane V/C Ratio	0.06	0.002	-
HCM Control Delay (s)	9.7	7.2	0
HCM Lane LOS	A	A	A
HCM 95th %tile Q(veh)	0.2	0	-

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	20	19	227	6	11	4	118	197	21	5	270	68
Future Vol, veh/h	20	19	227	6	11	4	118	197	21	5	270	68
Conflicting Peds, #/hr	0	0	2	2	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	22	21	247	7	12	4	128	214	23	5	293	74

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	830	833	332	958	859	226	367	0	0	237	0	0
Stage 1	340	340	-	482	482	-	-	-	-	-	-	-
Stage 2	490	493	-	476	377	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	289	304	710	237	294	813	1192	-	-	1330	-	-
Stage 1	675	639	-	565	553	-	-	-	-	-	-	-
Stage 2	560	547	-	570	616	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	250	265	709	131	256	813	1192	-	-	1330	-	-
Mov Cap-2 Maneuver	250	265	-	131	256	-	-	-	-	-	-	-
Stage 1	591	636	-	495	484	-	-	-	-	-	-	-
Stage 2	476	479	-	357	613	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.9	22.9	2.9	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1192	-	-	564	224	1330	-	-
HCM Lane V/C Ratio	0.108	-	-	0.513	0.102	0.004	-	-
HCM Control Delay (s)	8.4	0	-	17.9	22.9	7.7	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	2.9	0.3	0	-	-

Intersection	
Intersection Delay, s/veh	21.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	281	116	0	0	106	60	37	273	53	44	0	254
Future Vol, veh/h	281	116	0	0	106	60	37	273	53	44	0	254
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	305	126	0	0	115	65	40	297	58	48	0	276
Number of Lanes	1	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	21.9	15	27.3	19
HCM LOS	C	B	D	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	10%	100%	0%	0%	15%
Vol Thru, %	75%	0%	100%	64%	0%
Vol Right, %	15%	0%	0%	36%	85%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	363	281	116	166	298
LT Vol	37	281	0	0	44
Through Vol	273	0	116	106	0
RT Vol	53	0	0	60	254
Lane Flow Rate	395	305	126	180	324
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.746	0.674	0.26	0.376	0.596
Departure Headway (Hd)	6.811	7.948	7.434	7.495	6.625
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	533	455	484	480	544
Service Time	4.843	5.687	5.173	5.556	4.658
HCM Lane V/C Ratio	0.741	0.67	0.26	0.375	0.596
HCM Control Delay	27.3	25.7	12.8	15	19
HCM Lane LOS	D	D	B	B	C
HCM 95th-tile Q	6.4	4.9	1	1.7	3.9

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	346	13	33	384	9	58
Future Vol, veh/h	346	13	33	384	9	58
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	376	14	36	417	10	63

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	395	0	877	388
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	489	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1164	-	319	660
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	616	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1158	-	305	657
Mov Cap-2 Maneuver	-	-	-	-	305	-
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	616	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	569	-	-	1158	-
HCM Lane V/C Ratio	0.128	-	-	0.031	-
HCM Control Delay (s)	12.3	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	3	356	29	107	268	9	0	0	0	5	6	1
Future Vol, veh/h	3	356	29	107	268	9	0	0	0	5	6	1
Conflicting Peds, #/hr	1	0	6	6	0	1	3	0	5	5	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	3	387	32	116	291	10	0	0	0	5	7	1

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	302	0	0	425	0	0			943	960	300
Stage 1	-	-	-	-	-	-			529	529	-
Stage 2	-	-	-	-	-	-			414	431	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1259	-	-	1134	-	-			291	257	740
Stage 1	-	-	-	-	-	-			591	527	-
Stage 2	-	-	-	-	-	-			667	583	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	1258	-	-	1134	-	-			254	0	737
Mov Cap-2 Maneuver	-	-	-	-	-	-			254	0	-
Stage 1	-	-	-	-	-	-			516	0	-
Stage 2	-	-	-	-	-	-			666	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	2.4	18.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1258	-	-	1134	-	-	285
HCM Lane V/C Ratio	0.003	-	-	0.103	-	-	0.046
HCM Control Delay (s)	7.9	0	-	8.5	0	-	18.2
HCM Lane LOS	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	-	-	0.3	-	-	0.1

Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	42	21	223	39	2	21	4	268	2	1	0
Future Vol, veh/h	0	42	21	223	39	2	21	4	268	2	1	0
Conflicting Peds, #/hr	0	0	11	11	0	0	18	0	2	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	46	23	242	42	2	23	4	291	2	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	44	0	0	80	0	0	615	597	71	734	607	61
Stage 1	-	-	-	-	-	-	69	69	-	527	527	-
Stage 2	-	-	-	-	-	-	546	528	-	207	80	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1564	-	-	1518	-	-	403	416	991	336	411	1004
Stage 1	-	-	-	-	-	-	941	837	-	535	528	-
Stage 2	-	-	-	-	-	-	522	528	-	795	828	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1564	-	-	1502	-	-	341	344	979	204	340	987
Mov Cap-2 Maneuver	-	-	-	-	-	-	341	344	-	204	340	-
Stage 1	-	-	-	-	-	-	932	829	-	535	441	-
Stage 2	-	-	-	-	-	-	427	441	-	554	820	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	6.6	11.8	20.5
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	844	1564	-	-	1502	-	-	235
HCM Lane V/C Ratio	0.377	-	-	-	0.161	-	-	0.014
HCM Control Delay (s)	11.8	0	-	-	7.9	0	-	20.5
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	1.8	0	-	-	0.6	-	-	0

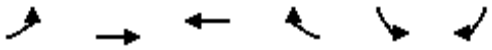
APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Base Year 2021 AM Peak

HCM 6th Signalized Intersection Summary
1: E Main St & Central Ave

06/20/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	390	565	330	445	80
Future Volume (veh/h)	70	390	565	330	445	80
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	424	614	133	484	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	329	1019	763	642	549	488
Arrive On Green	0.06	0.54	0.41	0.41	0.31	0.31
Sat Flow, veh/h	1781	1870	1870	1573	1781	1585
Grp Volume(v), veh/h	76	424	614	133	484	22
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1573	1781	1585
Q Serve(g_s), s	1.2	7.2	15.7	3.0	14.0	0.5
Cycle Q Clear(g_c), s	1.2	7.2	15.7	3.0	14.0	0.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	329	1019	763	642	549	488
V/C Ratio(X)	0.23	0.42	0.80	0.21	0.88	0.05
Avail Cap(c_a), veh/h	742	1929	1240	1043	656	584
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.1	7.3	14.2	10.4	17.9	13.2
Incr Delay (d2), s/veh	0.4	0.3	2.0	0.2	11.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.3	6.0	0.9	6.8	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.5	7.5	16.2	10.5	29.7	13.2
LnGrp LOS	B	A	B	B	C	B
Approach Vol, veh/h		500	747		506	
Approach Delay, s/veh		8.0	15.2		29.0	
Approach LOS		A	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		33.6		20.7	7.4	26.2
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		56.0		20.0	16.0	36.0
Max Q Clear Time (g_c+I1), s		9.2		16.0	3.2	17.7
Green Ext Time (p_c), s		3.0		0.7	0.1	4.5

Intersection Summary	
HCM 6th Ctrl Delay	17.1
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	380	0	0	465	110	25	105	25	0	0	0
Future Volume (veh/h)	90	380	0	0	465	110	25	105	25	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	98	413	0	0	505	53	27	114	3			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	518	1133	0	0	751	626	58	244	238			
Arrive On Green	0.09	0.61	0.00	0.00	0.40	0.40	0.16	0.16	0.16			
Sat Flow, veh/h	1781	1870	0	0	1870	1559	355	1498	1463			
Grp Volume(v), veh/h	98	413	0	0	505	53	141	0	3			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1559	1853	0	1463			
Q Serve(g_s), s	0.9	3.9	0.0	0.0	7.6	0.7	2.4	0.0	0.1			
Cycle Q Clear(g_c), s	0.9	3.9	0.0	0.0	7.6	0.7	2.4	0.0	0.1			
Prop In Lane	1.00		0.00	0.00		1.00	0.19		1.00			
Lane Grp Cap(c), veh/h	518	1133	0	0	751	626	301	0	238			
V/C Ratio(X)	0.19	0.36	0.00	0.00	0.67	0.08	0.47	0.00	0.01			
Avail Cap(c_a), veh/h	1187	3035	0	0	1951	1627	1074	0	848			
HCM Platoon Ratio	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	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	5.3	3.4	0.0	0.0	8.5	6.4	13.1	0.0	12.1			
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.0	1.1	0.1	1.1	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			
%ile BackOfQ(50%),veh/ln	0.2	0.5	0.0	0.0	2.2	0.2	0.9	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.4	3.6	0.0	0.0	9.5	6.5	14.2	0.0	12.1			
LnGrp LOS	A	A	A	A	A	A	B	A	B			
Approach Vol, veh/h		511			558			144				
Approach Delay, s/veh		4.0			9.2			14.2				
Approach LOS		A			A			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		24.9			7.0	17.8		9.6				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		56.0			16.0	36.0		20.0				
Max Q Clear Time (g_c+I1), s		5.9			2.9	9.6		4.4				
Green Ext Time (p_c), s		2.9			0.2	3.6		0.6				
Intersection Summary												
HCM 6th Ctrl Delay			7.6									
HCM 6th LOS			A									

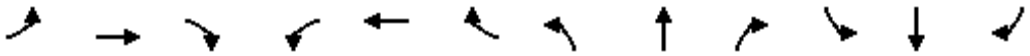
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	355	50	40	430	0	0	0	0	35	110	70
Future Vol, veh/h	0	355	50	40	430	0	0	0	0	35	110	70
Conflicting Peds, #/hr	18	0	28	28	0	18	11	0	1	1	0	11
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	45	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	386	54	43	467	0	0	0	0	38	120	76

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	468	0	0			967	1021	478
Stage 1	-	-	-	-	-	-			553	553	-
Stage 2	-	-	-	-	-	-			414	468	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1094	-	0			282	236	587
Stage 1	0	-	-	-	-	0			576	514	-
Stage 2	0	-	-	-	-	0			667	561	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1094	-	-			267	0	581
Mov Cap-2 Maneuver	-	-	-	-	-	-			267	0	-
Stage 1	-	-	-	-	-	-			545	0	-
Stage 2	-	-	-	-	-	-			667	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.7	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1094	-	267	581
HCM Lane V/C Ratio	-	-	0.04	-	0.142	0.337
HCM Control Delay (s)	-	-	8.4	0	20.7	14.3
HCM Lane LOS	-	-	A	A	C	B
HCM 95th %tile Q(veh)	-	-	0.1	-	0.5	1.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	140	50	305	60	55	25	255	355	25	315	10
Future Volume (veh/h)	20	140	50	305	60	55	25	255	355	25	315	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.97	0.98		0.98	0.99		0.97	0.98		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	152	31	332	65	21	27	277	106	27	342	10
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	486	364	74	626	659	213	486	588	482	114	533	15
Arrive On Green	0.24	0.24	0.24	0.15	0.49	0.49	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1271	1497	305	1781	1348	435	1014	1870	1532	61	1696	48
Grp Volume(v), veh/h	22	0	183	332	0	86	27	277	106	379	0	0
Grp Sat Flow(s),veh/h/ln	1271	0	1802	1781	0	1783	1014	1870	1532	1805	0	0
Q Serve(g_s), s	0.5	0.0	3.5	5.2	0.0	1.1	0.0	4.8	2.1	0.7	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	3.5	5.2	0.0	1.1	0.8	4.8	2.1	7.2	0.0	0.0
Prop In Lane	1.00		0.17	1.00		0.24	1.00		1.00	0.07		0.03
Lane Grp Cap(c), veh/h	486	0	438	626	0	872	486	588	482	662	0	0
V/C Ratio(X)	0.05	0.00	0.42	0.53	0.00	0.10	0.06	0.47	0.22	0.57	0.00	0.00
Avail Cap(c_a), veh/h	1239	0	1507	626	0	1929	815	1196	979	1230	0	0
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.9	0.0	13.0	8.4	0.0	5.6	9.8	11.2	10.3	12.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.9	0.0	0.0	0.0	0.6	0.2	0.8	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	0.1	0.0	1.2	1.5	0.0	0.3	0.1	1.7	0.6	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.9	0.0	13.6	9.2	0.0	5.6	9.9	11.8	10.5	12.8	0.0	0.0
LnGrp LOS	B	A	B	A	A	A	A	B	B	B	A	A
Approach Vol, veh/h		205			418			410			379	
Approach Delay, s/veh		13.4			8.5			11.3			12.8	
Approach LOS		B			A			B			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.0	13.9		16.8		23.9		16.8				
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s	6.0	34.0		26.0		44.0		26.0				
Max Q Clear Time (g_c+I1), s	7.2	5.5		9.2		3.1		6.8				
Green Ext Time (p_c), s	0.0	1.1		2.2		0.5		2.0				

Intersection Summary			
HCM 6th Ctrl Delay		11.2	
HCM 6th LOS		B	

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	0	45	265	0	0
Future Vol, veh/h	5	0	45	265	0	0
Conflicting Peds, #/hr	0	21	38	0	0	38
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16965	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	49	288	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	424	-	38	0
Stage 1	38	-	-	-
Stage 2	386	-	-	-
Critical Hdwy	6.42	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3.518	-	2.218	-
Pot Cap-1 Maneuver	587	0	1572	-
Stage 1	-	0	-	-
Stage 2	687	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	524	-	1515	-
Mov Cap-2 Maneuver	524	-	-	-
Stage 1	-	-	-	-
Stage 2	662	-	-	-

Approach	EB	NB
HCM Control Delay, s	11.9	1.1
HCM LOS	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	1515	-	524
HCM Lane V/C Ratio	0.032	-	0.01
HCM Control Delay (s)	7.5	0	11.9
HCM Lane LOS	A	A	B
HCM 95th %tile Q(veh)	0.1	-	0

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	0	0	0	10	245
Future Vol, veh/h	5	0	0	0	10	245
Conflicting Peds, #/hr	41	7	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	0	0	11	266

Major/Minor	Minor1		Major2	
Conflicting Flow All	333	-	4	0
Stage 1	4	-	-	-
Stage 2	329	-	-	-
Critical Hdwy	6.42	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3.518	-	2.218	-
Pot Cap-1 Maneuver	662	0	1618	-
Stage 1	-	0	-	-
Stage 2	729	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	654	-	1612	-
Mov Cap-2 Maneuver	654	-	-	-
Stage 1	-	-	-	-
Stage 2	729	-	-	-

Approach	WB	SB
HCM Control Delay, s	10.6	0.3
HCM LOS	B	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	654	1612	-
HCM Lane V/C Ratio	0.008	0.007	-
HCM Control Delay (s)	10.6	7.2	0
HCM Lane LOS	B	A	A
HCM 95th %tile Q(veh)	0	0	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	20	15	110	15	20	5	120	190	20	5	395	105
Future Vol, veh/h	20	15	110	15	20	5	120	190	20	5	395	105
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	22	16	120	16	22	5	130	207	22	5	429	114

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	988	985	486	1042	1031	218	543	0	0	229	0	0
Stage 1	496	496	-	478	478	-	-	-	-	-	-	-
Stage 2	492	489	-	564	553	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	226	248	581	208	233	822	1026	-	-	1339	-	-
Stage 1	556	545	-	568	556	-	-	-	-	-	-	-
Stage 2	558	549	-	510	514	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	182	211	581	138	198	822	1026	-	-	1339	-	-
Mov Cap-2 Maneuver	182	211	-	138	198	-	-	-	-	-	-	-
Stage 1	475	542	-	485	475	-	-	-	-	-	-	-
Stage 2	452	469	-	391	511	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.2	30.3	3.3	0.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1026	-	-	392	185	1339	-	-
HCM Lane V/C Ratio	0.127	-	-	0.402	0.235	0.004	-	-
HCM Control Delay (s)	9	0	-	20.2	30.3	7.7	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	1.9	0.9	0	-	-

Intersection	
Intersection Delay, s/veh	21.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	215	45	0	0	135	45	25	200	35	55	0	405
Future Vol, veh/h	215	45	0	0	135	45	25	200	35	55	0	405
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	234	49	0	0	147	49	27	217	38	60	0	440
Number of Lanes	1	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	17.5	14.8	17	29
HCM LOS	C	B	C	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	10%	100%	0%	0%	12%
Vol Thru, %	77%	0%	100%	75%	0%
Vol Right, %	13%	0%	0%	25%	88%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	260	215	45	180	460
LT Vol	25	215	0	0	55
Through Vol	200	0	45	135	0
RT Vol	35	0	0	45	405
Lane Flow Rate	283	234	49	196	500
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.524	0.513	0.101	0.388	0.808
Departure Headway (Hd)	6.674	7.91	7.397	7.144	5.82
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	537	453	482	501	620
Service Time	4.759	5.697	5.183	5.243	3.888
HCM Lane V/C Ratio	0.527	0.517	0.102	0.391	0.806
HCM Control Delay	17	18.8	11	14.8	29
HCM Lane LOS	C	C	B	B	D
HCM 95th-tile Q	3	2.9	0.3	1.8	8.1

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	255	25	50	620	5	10
Future Vol, veh/h	255	25	50	620	5	10
Conflicting Peds, #/hr	0	3	3	0	5	13
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	277	27	54	674	5	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	307	0	1081	307
Stage 1	-	-	-	-	294	-
Stage 2	-	-	-	-	787	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1254	-	241	733
Stage 1	-	-	-	-	756	-
Stage 2	-	-	-	-	449	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1250	-	223	722
Mov Cap-2 Maneuver	-	-	-	-	223	-
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	447	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	414	-	-	1250	-
HCM Lane V/C Ratio	0.039	-	-	0.043	-
HCM Control Delay (s)	14.1	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	10	280	35	205	365	10	0	0	0	5	10	0
Future Vol, veh/h	10	280	35	205	365	10	0	0	0	5	10	0
Conflicting Peds, #/hr	5	0	2	2	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	11	304	38	223	397	11	0	0	0	5	11	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	413	0	0	344	0	0			1204	1220	413
Stage 1	-	-	-	-	-	-			854	854	-
Stage 2	-	-	-	-	-	-			350	366	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1146	-	-	1215	-	-			203	180	639
Stage 1	-	-	-	-	-	-			417	375	-
Stage 2	-	-	-	-	-	-			713	623	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	1141	-	-	1215	-	-			151	0	633
Mov Cap-2 Maneuver	-	-	-	-	-	-			151	0	-
Stage 1	-	-	-	-	-	-			312	0	-
Stage 2	-	-	-	-	-	-			709	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	3	31.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1141	-	-	1215	-	-	151
HCM Lane V/C Ratio	0.01	-	-	0.183	-	-	0.108
HCM Control Delay (s)	8.2	0	-	8.6	0	-	31.7
HCM Lane LOS	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0	-	-	0.7	-	-	0.4

Intersection	
Int Delay, s/veh	13.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	40	15	315	50	5	55	0	235	5	10	0
Future Vol, veh/h	0	40	15	315	50	5	55	0	235	5	10	0
Conflicting Peds, #/hr	0	0	60	60	0	0	41	0	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	43	16	342	54	5	60	0	255	5	11	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	119	0	0	898	854	117	926	860	98
Stage 1	-	-	-	-	-	-	111	111	-	741	741	-
Stage 2	-	-	-	-	-	-	787	743	-	185	119	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1545	-	-	1469	-	-	260	296	935	249	294	958
Stage 1	-	-	-	-	-	-	894	804	-	408	423	-
Stage 2	-	-	-	-	-	-	385	422	-	817	797	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1545	-	-	1385	-	-	182	208	877	141	206	921
Mov Cap-2 Maneuver	-	-	-	-	-	-	182	208	-	141	206	-
Stage 1	-	-	-	-	-	-	843	758	-	408	315	-
Stage 2	-	-	-	-	-	-	266	314	-	576	752	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.2	22.9	27.1
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	509	1545	-	-	1385	-	-	179
HCM Lane V/C Ratio	0.619	-	-	-	0.247	-	-	0.091
HCM Control Delay (s)	22.9	0	-	-	8.5	0	-	27.1
HCM Lane LOS	C	A	-	-	A	A	-	D
HCM 95th %tile Q(veh)	4.2	0	-	-	1	-	-	0.3

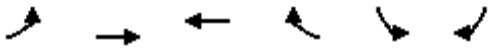
APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Base Year 2021 PM Peak

HCM 6th Signalized Intersection Summary
1: E Main St & Central Ave

06/20/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	410	540	325	465	115
Future Volume (veh/h)	70	410	540	325	465	115
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	446	587	129	505	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	329	996	748	627	581	517
Arrive On Green	0.06	0.53	0.40	0.40	0.33	0.33
Sat Flow, veh/h	1781	1870	1870	1567	1781	1585
Grp Volume(v), veh/h	76	446	587	129	505	68
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1567	1781	1585
Q Serve(g_s), s	1.3	8.3	15.5	3.0	15.1	1.7
Cycle Q Clear(g_c), s	1.3	8.3	15.5	3.0	15.1	1.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	329	996	748	627	581	517
V/C Ratio(X)	0.23	0.45	0.78	0.21	0.87	0.13
Avail Cap(c_a), veh/h	597	3832	3303	2768	818	728
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.5	8.1	14.8	11.1	17.9	13.4
Incr Delay (d2), s/veh	0.4	0.3	1.9	0.2	7.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.7	6.0	0.9	6.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.9	8.4	16.7	11.3	25.2	13.5
LnGrp LOS	B	A	B	B	C	B
Approach Vol, veh/h		522	716		573	
Approach Delay, s/veh		8.8	15.7		23.8	
Approach LOS		A	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		34.1		22.5	7.5	26.7
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		116.0		26.0	12.0	100.0
Max Q Clear Time (g_c+I1), s		10.3		17.1	3.3	17.5
Green Ext Time (p_c), s		3.2		1.4	0.1	5.1

Intersection Summary	
HCM 6th Ctrl Delay	16.3
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	435	0	0	430	170	30	100	60	0	0	0
Future Volume (veh/h)	130	435	0	0	430	170	30	100	60	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.98	1.00		0.91			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	141	473	0	0	467	64	33	109	12			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	536	1115	0	0	716	592	79	262	265			
Arrive On Green	0.10	0.60	0.00	0.00	0.38	0.38	0.18	0.18	0.18			
Sat Flow, veh/h	1781	1870	0	0	1870	1546	430	1419	1435			
Grp Volume(v), veh/h	141	473	0	0	467	64	142	0	12			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1546	1849	0	1435			
Q Serve(g_s), s	1.4	5.0	0.0	0.0	7.5	1.0	2.5	0.0	0.3			
Cycle Q Clear(g_c), s	1.4	5.0	0.0	0.0	7.5	1.0	2.5	0.0	0.3			
Prop In Lane	1.00		0.00	0.00		1.00	0.23		1.00			
Lane Grp Cap(c), veh/h	536	1115	0	0	716	592	342	0	265			
V/C Ratio(X)	0.26	0.42	0.00	0.00	0.65	0.11	0.42	0.00	0.05			
Avail Cap(c_a), veh/h	935	5932	0	0	5114	4226	1314	0	1020			
HCM Platoon Ratio	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	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	5.6	4.0	0.0	0.0	9.3	7.3	13.2	0.0	12.3			
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.0	1.0	0.1	0.8	0.0	0.1			
Initial Q Delay(d3),s/veh	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	0.8	0.0	0.0	2.3	0.2	0.9	0.0	0.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.9	4.2	0.0	0.0	10.3	7.3	14.0	0.0	12.3			
LnGrp LOS	A	A	A	A	B	A	B	A	B			
Approach Vol, veh/h		614			531			154				
Approach Delay, s/veh		4.6			9.9			13.8				
Approach LOS		A			A			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		25.8			7.8	18.0		10.8				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		116.0			12.0	100.0		26.0				
Max Q Clear Time (g_c+I1), s		7.0			3.4	9.5		4.5				
Green Ext Time (p_c), s		3.5			0.2	3.6		0.7				
Intersection Summary												
HCM 6th Ctrl Delay			7.9									
HCM 6th LOS			A									

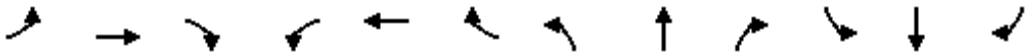
Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	405	30	25	410	0	0	0	0	80	55	60
Future Vol, veh/h	0	405	30	25	410	0	0	0	0	80	55	60
Conflicting Peds, #/hr	17	0	19	19	0	17	9	0	10	10	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	45	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	440	33	27	446	0	0	0	0	87	60	65

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	492	0	0			967	992	455
Stage 1	-	-	-	-	-	-			500	500	-
Stage 2	-	-	-	-	-	-			467	492	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1071	-	0			282	246	605
Stage 1	0	-	-	-	-	0			609	543	-
Stage 2	0	-	-	-	-	0			631	548	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1071	-	-			272	0	600
Mov Cap-2 Maneuver	-	-	-	-	-	-			272	0	-
Stage 1	-	-	-	-	-	-			588	0	-
Stage 2	-	-	-	-	-	-			631	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.5	17.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1071	-	272	600
HCM Lane V/C Ratio	-	-	0.025	-	0.32	0.208
HCM Control Delay (s)	-	-	8.4	0	24.3	12.6
HCM Lane LOS	-	-	A	A	C	B
HCM 95th %tile Q(veh)	-	-	0.1	-	1.3	0.8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	75	55	370	105	35	40	315	285	40	270	15
Future Volume (veh/h)	15	75	55	370	105	35	40	315	285	40	270	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.95	0.97		0.98	0.99		0.98	0.99		0.98
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	82	24	402	114	11	43	342	117	43	293	15
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	410	283	83	752	868	84	429	571	476	120	431	21
Arrive On Green	0.21	0.21	0.21	0.22	0.52	0.52	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1217	1373	402	1781	1676	162	1063	1870	1557	99	1410	67
Grp Volume(v), veh/h	16	0	106	402	0	125	43	342	117	351	0	0
Grp Sat Flow(s),veh/h/ln	1217	0	1775	1781	0	1838	1063	1870	1557	1576	0	0
Q Serve(g_s), s	0.5	0.0	2.3	6.9	0.0	1.6	0.0	7.0	2.6	2.2	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	2.3	6.9	0.0	1.6	1.8	7.0	2.6	9.3	0.0	0.0
Prop In Lane	1.00		0.23	1.00		0.09	1.00		1.00	0.12		0.04
Lane Grp Cap(c), veh/h	410	0	366	752	0	951	429	571	476	571	0	0
V/C Ratio(X)	0.04	0.00	0.29	0.53	0.00	0.13	0.10	0.60	0.25	0.61	0.00	0.00
Avail Cap(c_a), veh/h	1020	0	1255	1535	0	2680	715	1075	894	1015	0	0
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.5	0.0	15.2	8.4	0.0	5.6	11.5	13.4	11.8	13.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.4	0.6	0.0	0.1	0.1	1.0	0.3	1.1	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	0.1	0.0	0.8	2.0	0.0	0.4	0.3	2.6	0.8	2.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.5	0.0	15.6	9.0	0.0	5.7	11.6	14.4	12.1	14.8	0.0	0.0
LnGrp LOS	B	A	B	A	A	A	B	B	B	B	A	A
Approach Vol, veh/h		122			527			502			351	
Approach Delay, s/veh		15.5			8.2			13.6			14.8	
Approach LOS		B			A			B			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	14.1	13.3		17.8		27.4		17.8				
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s	30.0	32.0		26.0		66.0		26.0				
Max Q Clear Time (g_c+I1), s	8.9	4.3		11.3		3.6		9.0				
Green Ext Time (p_c), s	1.2	0.6		1.9		0.8		2.5				

Intersection Summary			
HCM 6th Ctrl Delay		12.1	
HCM 6th LOS		B	

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	0	25	390	0	0
Future Vol, veh/h	25	0	25	390	0	0
Conflicting Peds, #/hr	0	25	25	0	0	27
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16965	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	0	27	424	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	503	-	25	0
Stage 1	25	-	-	-
Stage 2	478	-	-	-
Critical Hdwy	6.42	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3.518	-	2.218	-
Pot Cap-1 Maneuver	528	0	1589	-
Stage 1	-	0	-	-
Stage 2	624	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	492	-	1551	-
Mov Cap-2 Maneuver	492	-	-	-
Stage 1	-	-	-	-
Stage 2	609	-	-	-

Approach	EB	NB
HCM Control Delay, s	12.7	0.4
HCM LOS	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	1551	-	492
HCM Lane V/C Ratio	0.018	-	0.055
HCM Control Delay (s)	7.4	0	12.7
HCM Lane LOS	A	A	B
HCM 95th %tile Q(veh)	0.1	-	0.2

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	45	0	0	0	5	145
Future Vol, veh/h	45	0	0	0	5	145
Conflicting Peds, #/hr	2	8	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	0	0	0	5	158

Major/Minor	Minor1		Major2	
Conflicting Flow All	174	-	4	0
Stage 1	4	-	-	-
Stage 2	170	-	-	-
Critical Hdwy	6.42	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3.518	-	2.218	-
Pot Cap-1 Maneuver	816	0	1618	-
Stage 1	-	0	-	-
Stage 2	860	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	810	-	1612	-
Mov Cap-2 Maneuver	810	-	-	-
Stage 1	-	-	-	-
Stage 2	860	-	-	-

Approach	WB	SB
HCM Control Delay, s	9.7	0.2
HCM LOS	A	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	810	1612	-
HCM Lane V/C Ratio	0.06	0.003	-
HCM Control Delay (s)	9.7	7.2	0
HCM Lane LOS	A	A	A
HCM 95th %tile Q(veh)	0.2	0	-

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	20	25	235	10	15	5	125	205	25	5	280	70
Future Vol, veh/h	20	25	235	10	15	5	125	205	25	5	280	70
Conflicting Peds, #/hr	0	0	2	2	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	22	27	255	11	16	5	136	223	27	5	304	76

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	871	874	344	1004	899	237	380	0	0	250	0	0
Stage 1	352	352	-	509	509	-	-	-	-	-	-	-
Stage 2	519	522	-	495	390	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	271	288	699	220	279	802	1178	-	-	1316	-	-
Stage 1	665	632	-	547	538	-	-	-	-	-	-	-
Stage 2	540	531	-	556	608	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	228	248	698	114	240	802	1178	-	-	1316	-	-
Mov Cap-2 Maneuver	228	248	-	114	240	-	-	-	-	-	-	-
Stage 1	575	629	-	473	465	-	-	-	-	-	-	-
Stage 2	448	459	-	335	605	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.4	27.5	3	0.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1178	-	-	533	192	1316	-	-
HCM Lane V/C Ratio	0.115	-	-	0.571	0.17	0.004	-	-
HCM Control Delay (s)	8.5	0	-	20.4	27.5	7.7	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	3.6	0.6	0	-	-

Intersection	
Intersection Delay, s/veh	27.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	295	120	0	0	110	65	45	285	55	50	0	270
Future Vol, veh/h	295	120	0	0	110	65	45	285	55	50	0	270
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	321	130	0	0	120	71	49	310	60	54	0	293
Number of Lanes	1	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	26	16.7	36.1	23.3
HCM LOS	D	C	E	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	12%	100%	0%	0%	16%
Vol Thru, %	74%	0%	100%	63%	0%
Vol Right, %	14%	0%	0%	37%	84%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	385	295	120	175	320
LT Vol	45	295	0	0	50
Through Vol	285	0	120	110	0
RT Vol	55	0	0	65	270
Lane Flow Rate	418	321	130	190	348
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.828	0.738	0.282	0.42	0.673
Departure Headway (Hd)	7.126	8.286	7.771	7.946	6.961
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	506	436	462	451	518
Service Time	5.189	6.051	5.535	6.029	5.028
HCM Lane V/C Ratio	0.826	0.736	0.281	0.421	0.672
HCM Control Delay	36.1	31.1	13.6	16.7	23.3
HCM Lane LOS	E	D	B	C	C
HCM 95th-tile Q	8.2	5.9	1.1	2	5

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	365	15	35	410	10	60
Future Vol, veh/h	365	15	35	410	10	60
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	397	16	38	446	11	65

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	418	0	932	410
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	522	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1141	-	296	642
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	595	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1136	-	281	639
Mov Cap-2 Maneuver	-	-	-	-	281	-
Stage 1	-	-	-	-	637	-
Stage 2	-	-	-	-	595	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	541	-	-	1136	-
HCM Lane V/C Ratio	0.141	-	-	0.033	-
HCM Control Delay (s)	12.7	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	5	375	35	110	295	10	0	0	0	5	10	5
Future Vol, veh/h	5	375	35	110	295	10	0	0	0	5	10	5
Conflicting Peds, #/hr	1	0	6	6	0	1	3	0	5	5	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	5	408	38	120	321	11	0	0	0	5	11	5

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	333	0	0	452	0	0			1010	1030	331
Stage 1	-	-	-	-	-	-			568	568	-
Stage 2	-	-	-	-	-	-			442	462	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1226	-	-	1109	-	-			266	233	711
Stage 1	-	-	-	-	-	-			567	506	-
Stage 2	-	-	-	-	-	-			648	565	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	1225	-	-	1109	-	-			229	0	708
Mov Cap-2 Maneuver	-	-	-	-	-	-			229	0	-
Stage 1	-	-	-	-	-	-			489	0	-
Stage 2	-	-	-	-	-	-			647	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	2.3	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1225	-	-	1109	-	-	346
HCM Lane V/C Ratio	0.004	-	-	0.108	-	-	0.063
HCM Control Delay (s)	8	0	-	8.6	0	-	16.1
HCM Lane LOS	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	-	-	0.4	-	-	0.2

Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	45	25	235	40	5	25	5	290	5	5	0
Future Vol, veh/h	0	45	25	235	40	5	25	5	290	5	5	0
Conflicting Peds, #/hr	0	0	11	11	0	0	18	0	2	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	49	27	255	43	5	27	5	315	5	5	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	48	0	0	87	0	0	650	632	76	781	643	64
Stage 1	-	-	-	-	-	-	74	74	-	556	556	-
Stage 2	-	-	-	-	-	-	576	558	-	225	87	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1559	-	-	1509	-	-	382	398	985	312	392	1000
Stage 1	-	-	-	-	-	-	935	833	-	515	513	-
Stage 2	-	-	-	-	-	-	503	512	-	778	823	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1559	-	-	1493	-	-	317	325	973	180	320	983
Mov Cap-2 Maneuver	-	-	-	-	-	-	317	325	-	180	320	-
Stage 1	-	-	-	-	-	-	926	825	-	515	423	-
Stage 2	-	-	-	-	-	-	402	422	-	521	815	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	6.6	12.6	21.4
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	816	1559	-	-	1493	-	-	230
HCM Lane V/C Ratio	0.426	-	-	-	0.171	-	-	0.047
HCM Control Delay (s)	12.6	0	-	-	7.9	0	-	21.4
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	2.1	0	-	-	0.6	-	-	0.1

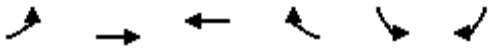
APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Future Year 2021 AM Peak

HCM 6th Signalized Intersection Summary
1: E Main St & Central Ave

06/20/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	75	420	635	320	445	95
Future Volume (veh/h)	75	420	635	320	445	95
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	457	690	140	484	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	312	1096	883	743	534	475
Arrive On Green	0.11	1.00	0.47	0.47	0.30	0.30
Sat Flow, veh/h	1781	1870	1870	1575	1781	1585
Grp Volume(v), veh/h	82	457	690	140	484	27
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1575	1781	1585
Q Serve(g_s), s	1.5	0.0	21.6	3.6	18.3	0.8
Cycle Q Clear(g_c), s	1.5	0.0	21.6	3.6	18.3	0.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	312	1096	883	743	534	475
V/C Ratio(X)	0.26	0.42	0.78	0.19	0.91	0.06
Avail Cap(c_a), veh/h	338	1096	883	743	611	543
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.0	0.0	15.5	10.7	23.6	17.5
Incr Delay (d2), s/veh	0.4	1.1	6.8	0.6	16.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.3	9.7	1.2	9.5	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.4	1.1	22.3	11.3	39.6	17.5
LnGrp LOS	B	A	C	B	D	B
Approach Vol, veh/h		539	830		511	
Approach Delay, s/veh		2.7	20.4		38.4	
Approach LOS		A	C		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		45.0		25.0	8.0	37.0
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		38.0		24.0	5.0	29.0
Max Q Clear Time (g_c+I1), s		2.0		20.3	3.5	23.6
Green Ext Time (p_c), s		3.2		0.7	0.0	2.4

Intersection Summary		
HCM 6th Ctrl Delay	20.2	
HCM 6th LOS	C	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	415	0	0	550	115	25	105	25	0	0	0
Future Volume (veh/h)	95	415	0	0	550	115	25	105	25	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.91			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	103	451	0	0	598	74	27	114	3			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	690	1393	0	0	1170	981	50	211	204			
Arrive On Green	0.06	0.74	0.00	0.00	1.00	1.00	0.14	0.14	0.14			
Sat Flow, veh/h	1781	1870	0	0	1870	1569	355	1498	1445			
Grp Volume(v), veh/h	103	451	0	0	598	74	141	0	3			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1569	1853	0	1445			
Q Serve(g_s), s	1.2	5.7	0.0	0.0	0.0	0.0	5.0	0.0	0.1			
Cycle Q Clear(g_c), s	1.2	5.7	0.0	0.0	0.0	0.0	5.0	0.0	0.1			
Prop In Lane	1.00		0.00	0.00		1.00	0.19		1.00			
Lane Grp Cap(c), veh/h	690	1393	0	0	1170	981	262	0	204			
V/C Ratio(X)	0.15	0.32	0.00	0.00	0.51	0.08	0.54	0.00	0.01			
Avail Cap(c_a), veh/h	733	1393	0	0	1170	981	529	0	413			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.92	0.92	0.00	0.00	0.62	0.62	1.00	0.00	1.00			
Uniform Delay (d), s/veh	3.0	3.0	0.0	0.0	0.0	0.0	27.9	0.0	25.9			
Incr Delay (d2), s/veh	0.1	0.6	0.0	0.0	1.0	0.1	1.7	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			
%ile BackOfQ(50%),veh/ln	0.3	1.4	0.0	0.0	0.3	0.0	2.2	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.1	3.6	0.0	0.0	1.0	0.1	29.7	0.0	25.9			
LnGrp LOS	A	A	A	A	A	A	C	A	C			
Approach Vol, veh/h		554			672			144				
Approach Delay, s/veh		3.5			0.9			29.6				
Approach LOS		A			A			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		56.1			8.3	47.8		13.9				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		42.0			6.0	32.0		20.0				
Max Q Clear Time (g_c+I1), s		7.7			3.2	2.0		7.0				
Green Ext Time (p_c), s		3.1			0.1	4.7		0.5				
Intersection Summary												
HCM 6th Ctrl Delay			5.0									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	360	50	40	430	85	0	0	0	70	115	80
Future Volume (veh/h)	110	360	50	40	430	85	0	0	0	70	115	80
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98				1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870				1900	1870	1900
Adj Flow Rate, veh/h	120	391	47	43	467	85				76	125	58
Peak Hour Factor	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				0	2	0
Cap, veh/h	153	1007	121	70	874	159				95	156	72
Arrive On Green	0.09	0.62	0.62	0.04	0.57	0.57				0.18	0.18	0.18
Sat Flow, veh/h	1781	1633	196	1781	1533	279				516	849	394
Grp Volume(v), veh/h	120	0	438	43	0	552				259	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1830	1781	0	1812				1759	0	0
Q Serve(g_s), s	5.0	0.0	9.0	1.8	0.0	14.1				10.6	0.0	0.0
Cycle Q Clear(g_c), s	5.0	0.0	9.0	1.8	0.0	14.1				10.6	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.15				0.29		0.22
Lane Grp Cap(c), veh/h	153	0	1128	70	0	1033				324	0	0
V/C Ratio(X)	0.79	0.00	0.39	0.61	0.00	0.53				0.80	0.00	0.00
Avail Cap(c_a), veh/h	214	0	1128	143	0	1033				446	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.82	0.00	0.82	0.85	0.00	0.85				1.00	0.00	0.00
Uniform Delay (d), s/veh	33.6	0.0	7.2	35.5	0.0	10.0				29.3	0.0	0.0
Incr Delay (d2), s/veh	10.0	0.0	0.8	7.1	0.0	1.7				7.1	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
%ile BackOfQ(50%),veh/ln	2.5	0.0	3.2	0.9	0.0	5.3				4.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.6	0.0	8.1	42.6	0.0	11.6				36.4	0.0	0.0
LnGrp LOS	D	A	A	D	A	B				D	A	A
Approach Vol, veh/h		558			595						259	
Approach Delay, s/veh		15.7			13.9						36.4	
Approach LOS		B			B						D	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	7.0	50.3		17.8	10.4	46.8
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	38.0		19.0	9.0	35.0
Max Q Clear Time (g_c+I1), s	3.8	11.0		12.6	7.0	16.1
Green Ext Time (p_c), s	0.0	2.9		0.8	0.1	3.6

Intersection Summary		
HCM 6th Ctrl Delay		18.7
HCM 6th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	145	50	310	60	55	25	210	450	30	315	10
Future Volume (veh/h)	20	145	50	310	60	55	25	210	450	30	315	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.97	0.98		0.98	0.99		0.97	0.98		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	158	31	337	65	21	27	228	211	33	342	10
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	487	370	73	619	658	213	482	593	486	120	526	15
Arrive On Green	0.25	0.25	0.25	0.15	0.49	0.49	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1271	1509	296	1781	1348	435	1014	1870	1533	77	1659	46
Grp Volume(v), veh/h	22	0	189	337	0	86	27	228	211	385	0	0
Grp Sat Flow(s),veh/h/ln	1271	0	1805	1781	0	1783	1014	1870	1533	1783	0	0
Q Serve(g_s), s	0.5	0.0	3.6	5.4	0.0	1.1	0.0	3.9	4.5	1.3	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	3.6	5.4	0.0	1.1	0.8	3.9	4.5	7.5	0.0	0.0
Prop In Lane	1.00		0.16	1.00		0.24	1.00		1.00	0.09		0.03
Lane Grp Cap(c), veh/h	487	0	442	619	0	870	482	593	486	661	0	0
V/C Ratio(X)	0.05	0.00	0.43	0.54	0.00	0.10	0.06	0.38	0.43	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1226	0	1492	619	0	1907	801	1182	969	1200	0	0
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.9	0.0	13.1	8.5	0.0	5.7	9.9	10.9	11.1	12.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.7	1.0	0.0	0.0	0.0	0.4	0.6	0.8	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	0.1	0.0	1.3	1.6	0.0	0.3	0.1	1.3	1.3	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.0	0.0	13.7	9.5	0.0	5.7	9.9	11.3	11.7	12.9	0.0	0.0
LnGrp LOS	B	A	B	A	A	A	A	B	B	B	A	A
Approach Vol, veh/h		211			423			466			385	
Approach Delay, s/veh		13.6			8.7			11.4			12.9	
Approach LOS		B			A			B			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.0	14.1		17.0		24.1		17.0				
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s	6.0	34.0		26.0		44.0		26.0				
Max Q Clear Time (g_c+I1), s	7.4	5.6		9.5		3.1		6.5				
Green Ext Time (p_c), s	0.0	1.2		2.2		0.5		2.1				

Intersection Summary	
HCM 6th Ctrl Delay	11.3
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	0	60	260	0	0
Future Vol, veh/h	10	0	60	260	0	0
Conflicting Peds, #/hr	0	21	38	0	0	38
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16965	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	0	65	283	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	451	-	38	0
Stage 1	38	-	-	-
Stage 2	413	-	-	-
Critical Hdwy	6.42	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3.518	-	2.218	-
Pot Cap-1 Maneuver	566	0	1572	-
Stage 1	-	0	-	-
Stage 2	668	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	499	-	1515	-
Mov Cap-2 Maneuver	499	-	-	-
Stage 1	-	-	-	-
Stage 2	644	-	-	-

Approach	EB	NB
HCM Control Delay, s	12.4	1.4
HCM LOS	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	1515	-	499
HCM Lane V/C Ratio	0.043	-	0.022
HCM Control Delay (s)	7.5	0	12.4
HCM Lane LOS	A	A	B
HCM 95th %tile Q(veh)	0.1	-	0.1

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	35	35	155	120	240
Future Vol, veh/h	50	35	35	155	120	240
Conflicting Peds, #/hr	41	7	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	54	38	38	168	130	261

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	688	133	0	0	210	0
Stage 1	126	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	412	916	-	-	1361	-
Stage 1	900	-	-	-	-	-
Stage 2	571	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	350	906	-	-	1356	-
Mov Cap-2 Maneuver	350	-	-	-	-	-
Stage 1	796	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.6	0	2.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	468	1356	-
HCM Lane V/C Ratio	-	-	0.197	0.096	-
HCM Control Delay (s)	-	-	14.6	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.3	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	15	120	15	20	5	115	190	20	5	410	110
Future Vol, veh/h	25	15	120	15	20	5	115	190	20	5	410	110
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	27	16	130	16	22	5	125	207	22	5	446	120

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	998	995	506	1057	1044	218	566	0	0	229	0	0
Stage 1	516	516	-	468	468	-	-	-	-	-	-	-
Stage 2	482	479	-	589	576	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	223	245	566	203	229	822	1006	-	-	1339	-	-
Stage 1	542	534	-	575	561	-	-	-	-	-	-	-
Stage 2	565	555	-	494	502	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	180	209	566	130	195	822	1006	-	-	1339	-	-
Mov Cap-2 Maneuver	180	209	-	130	195	-	-	-	-	-	-	-
Stage 1	464	531	-	493	481	-	-	-	-	-	-	-
Stage 2	459	476	-	366	499	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.3	31.4	3.2	0.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1006	-	-	379	179	1339	-	-
HCM Lane V/C Ratio	0.124	-	-	0.459	0.243	0.004	-	-
HCM Control Delay (s)	9.1	0	-	22.3	31.4	7.7	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	2.3	0.9	0	-	-

Intersection	
Intersection Delay, s/veh	25.3
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	225	50	0	0	135	45	20	195	35	55	0	435
Future Vol, veh/h	225	50	0	0	135	45	20	195	35	55	0	435
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	245	54	0	0	147	49	22	212	38	60	0	473
Number of Lanes	1	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	18.8	15.4	17.5	36.5
HCM LOS	C	C	C	E

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	8%	100%	0%	0%	11%
Vol Thru, %	78%	0%	100%	75%	0%
Vol Right, %	14%	0%	0%	25%	89%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	250	225	50	180	490
LT Vol	20	225	0	0	55
Through Vol	195	0	50	135	0
RT Vol	35	0	0	45	435
Lane Flow Rate	272	245	54	196	533
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.526	0.553	0.115	0.404	0.871
Departure Headway (Hd)	6.966	8.133	7.618	7.427	6.007
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	519	445	472	485	607
Service Time	4.985	5.848	5.334	5.462	4.007
HCM Lane V/C Ratio	0.524	0.551	0.114	0.404	0.878
HCM Control Delay	17.5	20.5	11.3	15.4	36.5
HCM Lane LOS	C	C	B	C	E
HCM 95th-tile Q	3	3.3	0.4	1.9	10

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	280	0	0	690	0	0
Future Vol, veh/h	280	0	0	690	0	0
Conflicting Peds, #/hr	0	3	3	0	5	13
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	304	0	0	750	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	307	0	1062	320
Stage 1	-	-	-	-	307	-
Stage 2	-	-	-	-	755	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1254	-	247	721
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	464	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1250	-	245	710
Mov Cap-2 Maneuver	-	-	-	-	245	-
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	462	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1250	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	230	60	285	350	10	20	0	50	5	10	0
Future Vol, veh/h	10	230	60	285	350	10	20	0	50	5	10	0
Conflicting Peds, #/hr	5	0	2	2	0	5	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	11	250	65	310	380	11	22	0	54	5	11	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	396	0	0	317	0	0	1323	1323	290	1348	1350	396
Stage 1	-	-	-	-	-	-	307	307	-	1011	1011	-
Stage 2	-	-	-	-	-	-	1016	1016	-	337	339	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1163	-	-	1243	-	-	133	156	749	128	150	653
Stage 1	-	-	-	-	-	-	703	661	-	289	317	-
Stage 2	-	-	-	-	-	-	287	315	-	677	640	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1157	-	-	1241	-	-	91	104	744	88	100	647
Mov Cap-2 Maneuver	-	-	-	-	-	-	91	104	-	88	100	-
Stage 1	-	-	-	-	-	-	693	652	-	284	215	-
Stage 2	-	-	-	-	-	-	184	213	-	617	631	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	3.9	26.3	50
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	244	1157	-	-	1241	-	-	96
HCM Lane V/C Ratio	0.312	0.009	-	-	0.25	-	-	0.17
HCM Control Delay (s)	26.3	8.1	0	-	8.9	0	-	50
HCM Lane LOS	D	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	1.3	0	-	-	1	-	-	0.6

Intersection	
Int Delay, s/veh	12.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	55	15	320	55	5	55	0	190	5	10	0
Future Vol, veh/h	0	55	15	320	55	5	55	0	190	5	10	0
Conflicting Peds, #/hr	0	0	60	60	0	0	41	0	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	60	16	348	60	5	60	0	207	5	11	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	65	0	0	136	0	0	933	889	134	937	895	104
Stage 1	-	-	-	-	-	-	128	128	-	759	759	-
Stage 2	-	-	-	-	-	-	805	761	-	178	136	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1537	-	-	1448	-	-	246	282	915	245	280	951
Stage 1	-	-	-	-	-	-	876	790	-	399	415	-
Stage 2	-	-	-	-	-	-	376	414	-	824	784	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1537	-	-	1365	-	-	170	195	858	147	194	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	170	195	-	147	194	-
Stage 1	-	-	-	-	-	-	826	745	-	399	305	-
Stage 2	-	-	-	-	-	-	256	304	-	622	739	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.2	23.9	27.7
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	450	1537	-	-	1365	-	-	175
HCM Lane V/C Ratio	0.592	-	-	-	0.255	-	-	0.093
HCM Control Delay (s)	23.9	0	-	-	8.5	0	-	27.7
HCM Lane LOS	C	A	-	-	A	A	-	D
HCM 95th %tile Q(veh)	3.7	0	-	-	1	-	-	0.3

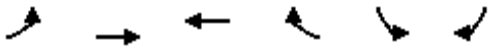
APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Future Year 2021 PM Peak

HCM 6th Signalized Intersection Summary
1: E Main St & Central Ave

06/20/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	90	515	600	320	450	130
Future Volume (veh/h)	90	515	600	320	450	130
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	560	652	136	489	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	327	1091	857	719	539	479
Arrive On Green	0.12	1.00	0.46	0.46	0.30	0.30
Sat Flow, veh/h	1781	1870	1870	1569	1781	1585
Grp Volume(v), veh/h	98	560	652	136	489	40
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1569	1781	1585
Q Serve(g_s), s	1.8	0.0	20.3	3.6	18.5	1.3
Cycle Q Clear(g_c), s	1.8	0.0	20.3	3.6	18.5	1.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	327	1091	857	719	539	479
V/C Ratio(X)	0.30	0.51	0.76	0.19	0.91	0.08
Avail Cap(c_a), veh/h	359	1091	857	719	611	543
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.9	0.0	15.8	11.2	23.5	17.5
Incr Delay (d2), s/veh	0.5	1.6	6.3	0.6	16.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.5	9.2	1.3	9.6	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.4	1.6	22.1	11.8	39.8	17.6
LnGrp LOS	B	A	C	B	D	B
Approach Vol, veh/h		658	788		529	
Approach Delay, s/veh		3.0	20.3		38.1	
Approach LOS		A	C		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		44.8		25.2	8.8	36.1
Change Period (Y+Rc), s		4.0		4.0	4.5	4.0
Max Green Setting (Gmax), s		38.0		24.0	5.5	28.0
Max Q Clear Time (g_c+I1), s		2.0		20.5	3.8	22.3
Green Ext Time (p_c), s		4.2		0.7	0.0	2.4

Intersection Summary	
HCM 6th Ctrl Delay	19.3
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	560	0	0	500	170	30	105	60	0	0	0
Future Volume (veh/h)	140	560	0	0	500	170	30	105	60	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.98	1.00		0.89			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	152	609	0	0	543	109	33	114	6			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	692	1362	0	0	1129	942	65	226	222			
Arrive On Green	0.07	0.73	0.00	0.00	1.00	1.00	0.16	0.16	0.16			
Sat Flow, veh/h	1781	1870	0	0	1870	1560	415	1434	1409			
Grp Volume(v), veh/h	152	609	0	0	543	109	147	0	6			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1560	1850	0	1409			
Q Serve(g_s), s	2.0	9.2	0.0	0.0	0.0	0.0	5.1	0.0	0.3			
Cycle Q Clear(g_c), s	2.0	9.2	0.0	0.0	0.0	0.0	5.1	0.0	0.3			
Prop In Lane	1.00		0.00	0.00		1.00	0.22		1.00			
Lane Grp Cap(c), veh/h	692	1362	0	0	1129	942	291	0	222			
V/C Ratio(X)	0.22	0.45	0.00	0.00	0.48	0.12	0.51	0.00	0.03			
Avail Cap(c_a), veh/h	724	1362	0	0	1129	942	528	0	402			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.89	0.89	0.00	0.00	0.67	0.67	1.00	0.00	1.00			
Uniform Delay (d), s/veh	3.5	3.8	0.0	0.0	0.0	0.0	27.0	0.0	25.0			
Incr Delay (d2), s/veh	0.1	0.9	0.0	0.0	1.0	0.2	1.4	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			
%ile BackOfQ(50%),veh/ln	0.5	2.5	0.0	0.0	0.3	0.0	2.3	0.0	0.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.6	4.8	0.0	0.0	1.0	0.2	28.4	0.0	25.0			
LnGrp LOS	A	A	A	A	A	A	C	A	C			
Approach Vol, veh/h		761			652			153				
Approach Delay, s/veh		4.5			0.8			28.2				
Approach LOS		A			A			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		55.0			8.7	46.3		15.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		42.0			6.0	32.0		20.0				
Max Q Clear Time (g_c+I1), s		11.2			4.0	2.0		7.1				
Green Ext Time (p_c), s		4.6			0.1	4.3		0.6				
Intersection Summary												
HCM 6th Ctrl Delay			5.3									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	410	30	25	410	75	0	0	0	205	80	80
Future Volume (veh/h)	90	410	30	25	410	75	0	0	0	205	80	80
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870				1900	1870	1900
Adj Flow Rate, veh/h	98	446	30	27	446	75				223	87	69
Peak Hour Factor	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				0	2	0
Cap, veh/h	125	969	65	51	806	136				260	101	80
Arrive On Green	0.07	0.56	0.56	0.03	0.52	0.52				0.25	0.25	0.25
Sat Flow, veh/h	1781	1731	116	1781	1556	262				1032	403	319
Grp Volume(v), veh/h	98	0	476	27	0	521				379	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1847	1781	0	1817				1754	0	0
Q Serve(g_s), s	4.1	0.0	11.5	1.1	0.0	14.5				15.5	0.0	0.0
Cycle Q Clear(g_c), s	4.1	0.0	11.5	1.1	0.0	14.5				15.5	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.14				0.59		0.18
Lane Grp Cap(c), veh/h	125	0	1034	51	0	942				441	0	0
V/C Ratio(X)	0.78	0.00	0.46	0.53	0.00	0.55				0.86	0.00	0.00
Avail Cap(c_a), veh/h	143	0	1034	119	0	942				585	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.87	0.00	0.87	0.86	0.00	0.86				1.00	0.00	0.00
Uniform Delay (d), s/veh	34.3	0.0	9.8	35.9	0.0	12.2				26.8	0.0	0.0
Incr Delay (d2), s/veh	19.2	0.0	1.3	7.1	0.0	2.0				9.7	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
%ile BackOfQ(50%),veh/ln	2.4	0.0	4.4	0.6	0.0	5.8				7.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	0.0	11.1	43.0	0.0	14.2				36.5	0.0	0.0
LnGrp LOS	D	A	B	D	A	B				D	A	A
Approach Vol, veh/h		574			548						379	
Approach Delay, s/veh		18.3			15.6						36.5	
Approach LOS		B			B						D	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	6.2	46.0		22.9	9.3	42.9
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s	5.0	33.0		25.0	6.0	32.0
Max Q Clear Time (g_c+I1), s	3.1	13.5		17.5	6.1	16.5
Green Ext Time (p_c), s	0.0	3.0		1.4	0.0	3.1

Intersection Summary		
HCM 6th Ctrl Delay		21.9
HCM 6th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	80	55	390	105	35	40	280	370	45	290	20
Future Volume (veh/h)	15	80	55	390	105	35	40	280	370	45	290	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.95	0.97		0.98	0.99		0.98	0.99		0.98
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	87	24	424	114	12	43	304	206	49	315	20
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	400	284	78	754	864	91	414	580	483	123	443	26
Arrive On Green	0.20	0.20	0.20	0.23	0.52	0.52	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1215	1394	385	1781	1660	175	1038	1870	1557	118	1431	85
Grp Volume(v), veh/h	16	0	111	424	0	126	43	304	206	384	0	0
Grp Sat Flow(s),veh/h/ln	1215	0	1779	1781	0	1835	1038	1870	1557	1633	0	0
Q Serve(g_s), s	0.5	0.0	2.5	7.7	0.0	1.7	0.0	6.3	5.0	3.6	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	2.5	7.7	0.0	1.7	2.0	6.3	5.0	10.0	0.0	0.0
Prop In Lane	1.00		0.22	1.00		0.10	1.00		1.00	0.13		0.05
Lane Grp Cap(c), veh/h	400	0	362	754	0	955	414	580	483	592	0	0
V/C Ratio(X)	0.04	0.00	0.31	0.56	0.00	0.13	0.10	0.52	0.43	0.65	0.00	0.00
Avail Cap(c_a), veh/h	977	0	1207	1474	0	2569	665	1031	858	984	0	0
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.2	0.0	16.0	8.8	0.0	5.8	11.9	13.4	12.9	14.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.5	0.7	0.0	0.1	0.1	0.7	0.6	1.2	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	0.1	0.0	0.9	2.3	0.0	0.5	0.3	2.4	1.5	3.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.2	0.0	16.4	9.4	0.0	5.9	12.0	14.1	13.5	15.6	0.0	0.0
LnGrp LOS	B	A	B	A	A	A	B	B	B	B	A	A
Approach Vol, veh/h		127			550			553			384	
Approach Delay, s/veh		16.3			8.6			13.8			15.6	
Approach LOS		B			A			B			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	14.9	13.6		18.6		28.5		18.6				
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s	30.0	32.0		26.0		66.0		26.0				
Max Q Clear Time (g_c+I1), s	10.7	4.5		12.0		3.7		8.3				
Green Ext Time (p_c), s	1.3	0.6		2.1		0.8		2.6				

Intersection Summary		
HCM 6th Ctrl Delay	12.6	
HCM 6th LOS	B	

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	0	50	375	0	0
Future Vol, veh/h	15	0	50	375	0	0
Conflicting Peds, #/hr	0	25	25	0	0	27
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	16965	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	0	54	408	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	541	-	25	0
Stage 1	25	-	-	-
Stage 2	516	-	-	-
Critical Hdwy	6.42	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3.518	-	2.218	-
Pot Cap-1 Maneuver	502	0	1589	-
Stage 1	-	0	-	-
Stage 2	599	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	457	-	1551	-
Mov Cap-2 Maneuver	457	-	-	-
Stage 1	-	-	-	-
Stage 2	585	-	-	-

Approach	EB	NB
HCM Control Delay, s	13.2	0.9
HCM LOS	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	1551	-	457
HCM Lane V/C Ratio	0.035	-	0.036
HCM Control Delay (s)	7.4	0	13.2
HCM Lane LOS	A	A	B
HCM 95th %tile Q(veh)	0.1	-	0.1

Intersection	
Int Delay, s/veh	11.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	230	145	50	115	85	135
Future Vol, veh/h	230	145	50	115	85	135
Conflicting Peds, #/hr	2	8	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	250	158	54	125	92	147

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	454	129	0	0	183	0
Stage 1	121	-	-	-	-	-
Stage 2	333	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	564	921	-	-	1392	-
Stage 1	904	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	520	911	-	-	1387	-
Mov Cap-2 Maneuver	520	-	-	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	725	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21	0	3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	623	1387	-
HCM Lane V/C Ratio	-	-	0.654	0.067	-
HCM Control Delay (s)	-	-	21	7.8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	4.8	0.2	-

Intersection	
Int Delay, s/veh	9.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	40	25	240	10	15	5	120	205	25	5	290	75
Future Vol, veh/h	40	25	240	10	15	5	120	205	25	5	290	75
Conflicting Peds, #/hr	0	0	2	2	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	43	27	261	11	16	5	130	223	27	5	315	82

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	873	876	358	1009	904	237	397	0	0	250	0	0
Stage 1	366	366	-	497	497	-	-	-	-	-	-	-
Stage 2	507	510	-	512	407	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	271	287	686	219	277	802	1162	-	-	1316	-	-
Stage 1	653	623	-	555	545	-	-	-	-	-	-	-
Stage 2	548	538	-	545	597	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	229	249	685	111	240	802	1162	-	-	1316	-	-
Mov Cap-2 Maneuver	229	249	-	111	240	-	-	-	-	-	-	-
Stage 1	568	620	-	483	474	-	-	-	-	-	-	-
Stage 2	457	468	-	320	594	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.6	28	2.9	0.1
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1162	-	-	488	189	1316	-	-
HCM Lane V/C Ratio	0.112	-	-	0.679	0.173	0.004	-	-
HCM Control Delay (s)	8.5	0	-	26.6	28	7.7	0	-
HCM Lane LOS	A	A	-	D	D	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	5.1	0.6	0	-	-

Intersection	
Intersection Delay, s/veh	31.3
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	335	130	0	0	110	65	35	265	60	55	0	290
Future Vol, veh/h	335	130	0	0	110	65	35	265	60	55	0	290
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	364	141	0	0	120	71	38	288	65	60	0	315
Number of Lanes	1	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	35.3	17.6	35.3	28.5
HCM LOS	E	C	E	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	10%	100%	0%	0%	16%
Vol Thru, %	74%	0%	100%	63%	0%
Vol Right, %	17%	0%	0%	37%	84%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	360	335	130	175	345
LT Vol	35	335	0	0	55
Through Vol	265	0	130	110	0
RT Vol	60	0	0	65	290
Lane Flow Rate	391	364	141	190	375
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.809	0.849	0.309	0.435	0.745
Departure Headway (Hd)	7.447	8.396	7.88	8.233	7.154
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	485	430	455	436	503
Service Time	5.521	6.17	5.654	6.332	5.231
HCM Lane V/C Ratio	0.806	0.847	0.31	0.436	0.746
HCM Control Delay	35.3	43.5	14.2	17.6	28.5
HCM Lane LOS	E	E	B	C	D
HCM 95th-tile Q	7.6	8.3	1.3	2.2	6.3

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	465	0	0	455	0	0
Future Vol, veh/h	465	0	0	455	0	0
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	505	0	0	495	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	510	0	1005	510
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	495	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1055	-	268	563
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	613	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1050	-	267	560
Mov Cap-2 Maneuver	-	-	-	-	267	-
Stage 1	-	-	-	-	600	-
Stage 2	-	-	-	-	613	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1050	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	5	325	55	165	270	10	55	0	145	5	10	5
Future Vol, veh/h	5	325	55	165	270	10	55	0	145	5	10	5
Conflicting Peds, #/hr	1	0	6	6	0	1	3	0	5	5	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	5	353	60	179	293	11	60	0	158	5	11	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	305	0	0	419	0	0	1067	1062	394	1135	1087	303
Stage 1	-	-	-	-	-	-	399	399	-	658	658	-
Stage 2	-	-	-	-	-	-	668	663	-	477	429	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1256	-	-	1140	-	-	200	223	655	179	216	737
Stage 1	-	-	-	-	-	-	627	602	-	453	461	-
Stage 2	-	-	-	-	-	-	448	459	-	569	584	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1255	-	-	1133	-	-	160	178	648	115	173	734
Mov Cap-2 Maneuver	-	-	-	-	-	-	160	178	-	115	173	-
Stage 1	-	-	-	-	-	-	620	595	-	450	373	-
Stage 2	-	-	-	-	-	-	349	371	-	426	578	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	3.3	30.4	27
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	352	1255	-	-	1133	-	-	185
HCM Lane V/C Ratio	0.618	0.004	-	-	0.158	-	-	0.118
HCM Control Delay (s)	30.4	7.9	0	-	8.8	0	-	27
HCM Lane LOS	D	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	3.9	0	-	-	0.6	-	-	0.4

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	55	25	260	45	5	25	5	250	5	5	0
Future Vol, veh/h	0	55	25	260	45	5	25	5	250	5	5	0
Conflicting Peds, #/hr	0	0	11	11	0	0	18	0	2	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	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	60	27	283	49	5	27	5	272	5	5	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	54	0	0	98	0	0	723	705	87	832	716	70
Stage 1	-	-	-	-	-	-	85	85	-	618	618	-
Stage 2	-	-	-	-	-	-	638	620	-	214	98	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1551	-	-	1495	-	-	342	361	971	288	356	993
Stage 1	-	-	-	-	-	-	923	824	-	477	481	-
Stage 2	-	-	-	-	-	-	465	480	-	788	814	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1551	-	-	1479	-	-	278	287	959	172	283	976
Mov Cap-2 Maneuver	-	-	-	-	-	-	278	287	-	172	283	-
Stage 1	-	-	-	-	-	-	914	816	-	477	386	-
Stage 2	-	-	-	-	-	-	362	385	-	560	806	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	6.7	12.8	22.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	761	1551	-	-	1479	-	-	214
HCM Lane V/C Ratio	0.4	-	-	-	0.191	-	-	0.051
HCM Control Delay (s)	12.8	0	-	-	8	0	-	22.7
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	1.9	0	-	-	0.7	-	-	0.2

APPENDIX D

TRAFFIC SIGNAL WARRANTS

Warrant 1: Eight-Hour Vehicular Volume - Main Street & Church Street - Existing Conditions

Condition A - Minimum volume									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vechicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% *	80%	70% **	56%	100% *	80%	70% **	56%
1	1	**500**	400	350	280	**150**	**120**	105	84
2 or more	1	600	480	420	336	**150**	**120**	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	**500**	400	350	280	200	160	140	112

Condition B - Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vechicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% *	80%	70% **	56%	100% *	80%	70% **	56%
1	1	**750**	**600**	525	420	**75**	60	53	42
2 or more	1	900	720	630	504	**75**	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	**750**	**600**	525	420	100	80	70	56

* Basic Minimum Hourly Volume

** May be used when the major street speed exceeds 40 mph, or in an isolated community with a population of less than 10,000.

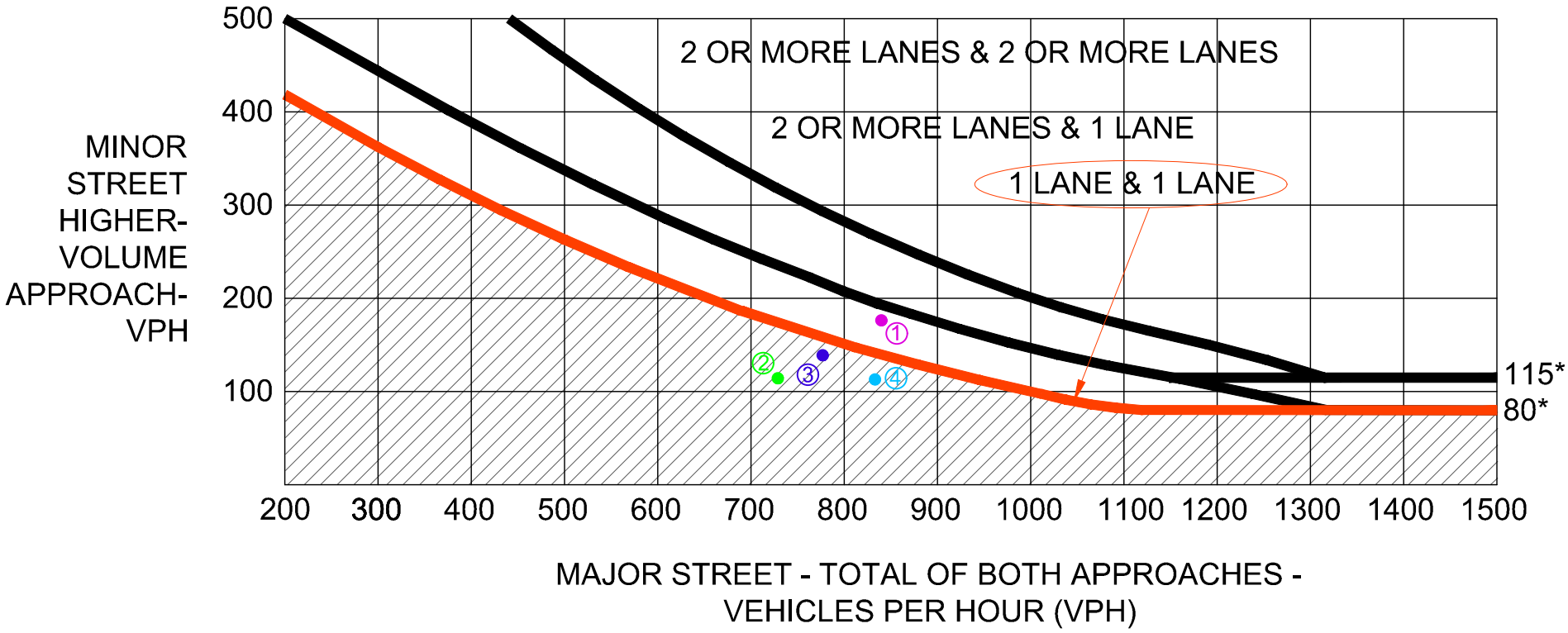
INTERSECTION INFORMATION		Condition A Vol	Condition B Vol	Condition A+B
# Major St. Lanes	**1**	**500**	**750**	**600**
# Minor St. Lanes	**1**	**150**	**75**	**120**
Major St. Speed	**30**			
Percentile Column	100%			

Including Mainline Left-Turn **Hours**

WARRANT MET? **YES, Cond B** 8

	MAJOR STREET (Main Street)		MINOR STREET (Church Street)		EB TH/LT WB LT/TH MAIN	SBLT HIGHEST	CONDITION		
TIME	EB TH/RT WBLT/TH			SB TH/RT	TOTAL	MINOR	A	B	A + B
6:00 AM	399			103	399	103	NO	NO	NO
6:15 AM	539			132	539	132	NO	NO	NO
6:30 AM	667			142	667	142	NO	NO	YES
6:45 AM	760			162	760	162	YES	YES	N/A
7:00 AM	840			178	840	178	N/A	N/A	N/A
7:15 AM	858			135	858	135	N/A	N/A	N/A
7:30 AM	847			128	847	128	N/A	N/A	YES
7:45 AM	821			104	821	104	NO	YES	N/A
8:00 AM	760			100	760	100	NO	N/A	N/A
8:15 AM	722			89	722	89	NO	N/A	N/A
8:30 AM	701			79	701	79	NO	N/A	NO
8:45 AM	693			79	693	79	NO	NO	NO
9:00 AM	718			77	718	77	NO	NO	NO
9:15 AM	726			78	726	78	NO	NO	NO
9:30 AM	735			84	735	84	NO	NO	NO
9:45 AM	768			78	768	78	NO	YES	NO
10:00 AM	747			82	747	82	NO	N/A	NO
10:15 AM	727			92	727	92	NO	N/A	NO
10:30 AM	737			78	737	78	NO	N/A	NO
10:45 AM	734			92	734	92	NO	NO	NO
11:00 AM	744			88	744	88	NO	NO	NO
11:15 AM	764			87	764	87	NO	YES	NO
11:30 AM	744			103	744	103	NO	N/A	NO
11:45 AM	747			102	747	102	NO	N/A	NO
12:00 PM	729			114	729	114	NO	N/A	NO
12:15 PM	711			110	711	110	NO	NO	NO
12:30 PM	722			101	722	101	NO	NO	NO
12:45 PM	711			98	711	98	NO	NO	NO
1:00 PM	714			102	714	102	NO	NO	NO
1:15 PM	727			124	727	124	NO	NO	YES
1:30 PM	761			129	761	129	NO	YES	N/A
1:45 PM	777			138	777	138	NO	N/A	N/A
2:00 PM	794			132	794	132	NO	N/A	N/A
2:15 PM	798			114	798	114	NO	N/A	NO
2:30 PM	787			114	787	114	NO	YES	NO
2:45 PM	782			108	782	108	NO	N/A	NO
3:00 PM	788			105	788	105	NO	N/A	NO
3:15 PM	815			100	815	100	NO	N/A	NO
3:30 PM	815			111	815	111	NO	YES	NO
3:45 PM	833			113	833	113	NO	N/A	NO
4:00 PM	852			114	852	114	NO	N/A	NO
4:15 PM	854			118	854	118	NO	N/A	NO
4:30 PM	858			96	858	96	NO	YES	NO
4:45 PM	841			86	841	86	NO	N/A	NO
5:00 PM	806			75	806	75	NO	N/A	NO
5:15 PM							NO	N/A	NO
5:30 PM							NO	NO	NO
5:45 PM							NO	NO	NO
6:00 PM							NO	NO	NO

Warrant 2, Four-Hour Vehicular Volume

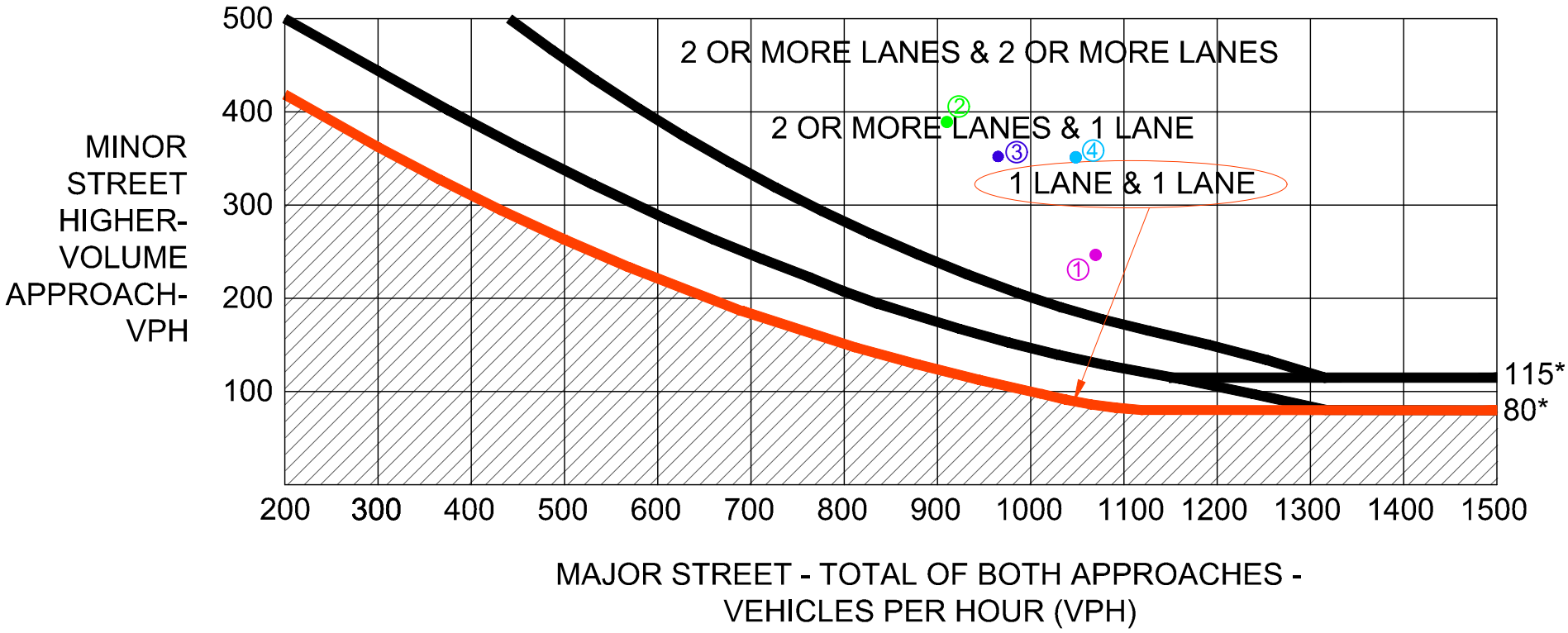


① AM PEAK 7:00 AM - 8:00 AM: (840, 178)
② PM 12:00 PM - 1:00 PM: (729, 114)
③ PM 1:45 PM - 2:45 PM: (777, 138)
④ PM PEAK 3:45 PM - 4:45 PM (833, 113)

Note
1. 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

WAILUKU CIVIC HUB TIAR	AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII	FIGURE D2
	FOUR HOUR TRAFFIC SIGNAL WARRANT FOR EXISTING YEAR 2017 CONDITIONS EAST MAIN STREET/NORTH CHURCH STREET	

Warrant 2, Four-Hour Vehicular Volume



① AM PEAK 7:00 AM - 8:00 AM: (1075, 265)
② PM 12:00 PM - 1:00 PM: (910, 395)
③ PM 1:45 PM - 2:45 PM: (970, 366)
④ PM PEAK 3:45 PM - 4:45 PM (1040, 365)

Note
1. 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

WAILUKU CIVIC HUB TIAR	AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII	FIGURE D3
	FOUR HOUR TRAFFIC SIGNAL WARRANT FOR FUTURE YEAR 2021 EAST MAIN STREET/NORTH CHURCH STREET	