EAST TOWN CROSSING
TRAFFIC IMPACT ANALYSIS

PUYALLUP, WA

06/15/2022

Prepared for: Greg Helle
13313 86th Ave E
Puyallup, WA 98373

Revised
June 2022

June 15, 2022

Bryan Roberts, P.E.
Transportation Engineer
City of Puyallup

Subject: East Town Crossing TIA Revisions and Comment Responses

This letter addresses comments as received from your May 6, 2022 Development Review Team (DRT) Letter and previous TIA comments from your February 4, 2022 email. Additional modifications made to the updated TIA resulting from an updated site plan in addition to other revisions as requested by the City are also discussed below.

The TIA has been updated per the new site plan and updated scoping memo, including updating all project traffic volume estimates to coincide with the ITE *Trip Generation Manual,* 11th Edition. The volumes presented in the updated TIA match that of the updated and approved scoping.

Other updates include, collecting new traffic counts at all study intersections to establish baseline 2022 conditions as traffic volumes have largely returned to normal, pre-COVID levels, updated the horizon year from 2023 to 2025, and used a 3 percent background growth rate as discussed to account for miscellaneous and pipeline growth. All narrative, figures and calculations regarding existing and forecast PM peak hour analysis have been updated accordingly.

The TIA was also updated to include a WSDOT Exhibit 1310-11 evaluation at the E Pioneer access with additional narrative. Other miscellaneous updates have occurred throughout the report. These include, but are not limited to, discussion regarding the new site plan, access sight distance requirements and school zone/bus stop design adequacy.

Please feel free to contact me should you have any questions.

Thank you,

Aaron Van Aken, P.E., PTOE

EAST TOWN CROSSING
TRAFFIC IMPACT ANALYSIS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EAST TOWN CROSSING
TRAFFIC IMPACT ANALYSIS

1. INTRODUCTION

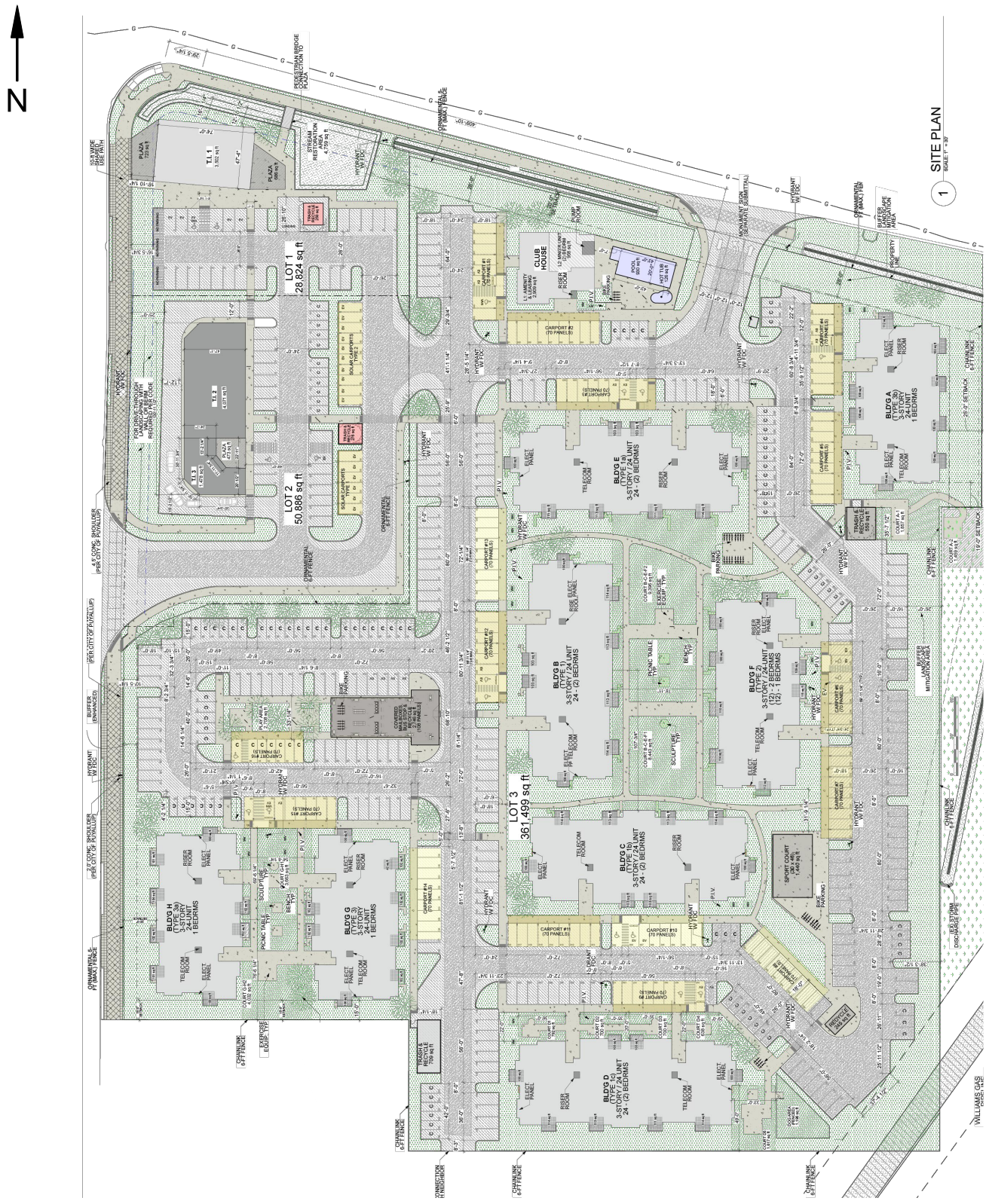
The main goals of this study focus on the assessment of existing roadway conditions and forecasts of newly generated project traffic. The first task includes the review of general roadway information on the adjacent streets serving the subject site and gathering existing vehicular volumes within a defined study area. Forecasts of future traffic and dispersion patterns on the street system are then determined using established trip generation and distribution techniques. As a final step, appropriate conclusions and mitigation measures are defined, if needed.

2. PROJECT DESCRIPTION

East Town Crossing is a proposed mixed-used development comprised of approximately 193 apartment units and up to 10,202 square feet of retail/commercial development. The subject site, located in the city of Puyallup, is situated on the south side of E Pioneer and the east side of Shaw Road. The collective site area totals approximately 10.93-acres on seven tax parcels (042026-4053; -4054; -1066; -4021; -1030; -1029; & -1026). Figure 1 on the following page illustrates the general vicinity of the site. As part of site development, three single-family residences located on the southwest portion of the property would be removed.

A site plan of the proposed development is provided in Figure 2 and illustrates two access points to and from the site. One access driveway is proposed to extend east from Shaw Road, opposite the Pioneer Crossings access, creating a four-leg signalized intersection. No southbound left turns into the site would be available due to the proximity and roadway geometrics with the E Pioneer intersection. A second full-movement access is proposed on E Pioneer. Moreover, a center two-way left-turn lane and an eastbound left-turn pocket is to be constructed at the E Pioneer access. Surrounding development is a mixture of commercial, agricultural, residential and institutional. A local elementary school is located just southwest with respect to the subject property.

Figure 1: Site Vicinity Map



HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

EAST TOWN CROSSING

SITE PLAN
FIGURE 2

3. EXISTING CONDITIONS

3.1 Surrounding Roadways

The street network serving the proposed project consists of a variety of roadways. The major roadways and arterials surrounding the site are listed and described below.

East Pioneer: is an east-west, multi-lane major arterial bordering the subject site to the north. Travel lanes are approximately 10- to 11-feet in width, with turn-lanes and marked crosswalks are provided at major intersections. Shoulders north/northeast of the subject site are composed of narrow, paved segments followed by grass/gravel. Curb and gutter are provided west of the subject site, with the addition of sidewalks on the southern side of the roadway. The posted speed limit adjacent the subject site is 35 mph.

Shaw Road E: is a north-south, multi-lane major arterial bordering the subject site to the west. Travel lanes are approximately 10- to 12-feet in width, with turn-lanes and marked crosswalks provided at major intersections. Along the project frontage, shoulders are composed of curb/gutter. Elsewhere (north of 12th Avenue SE), shoulders generally consist of curb, gutter and sidewalk. The posted speed limit is 35 mph and 20 mph within the adjacent school zone established for Shaw Road Elementary.

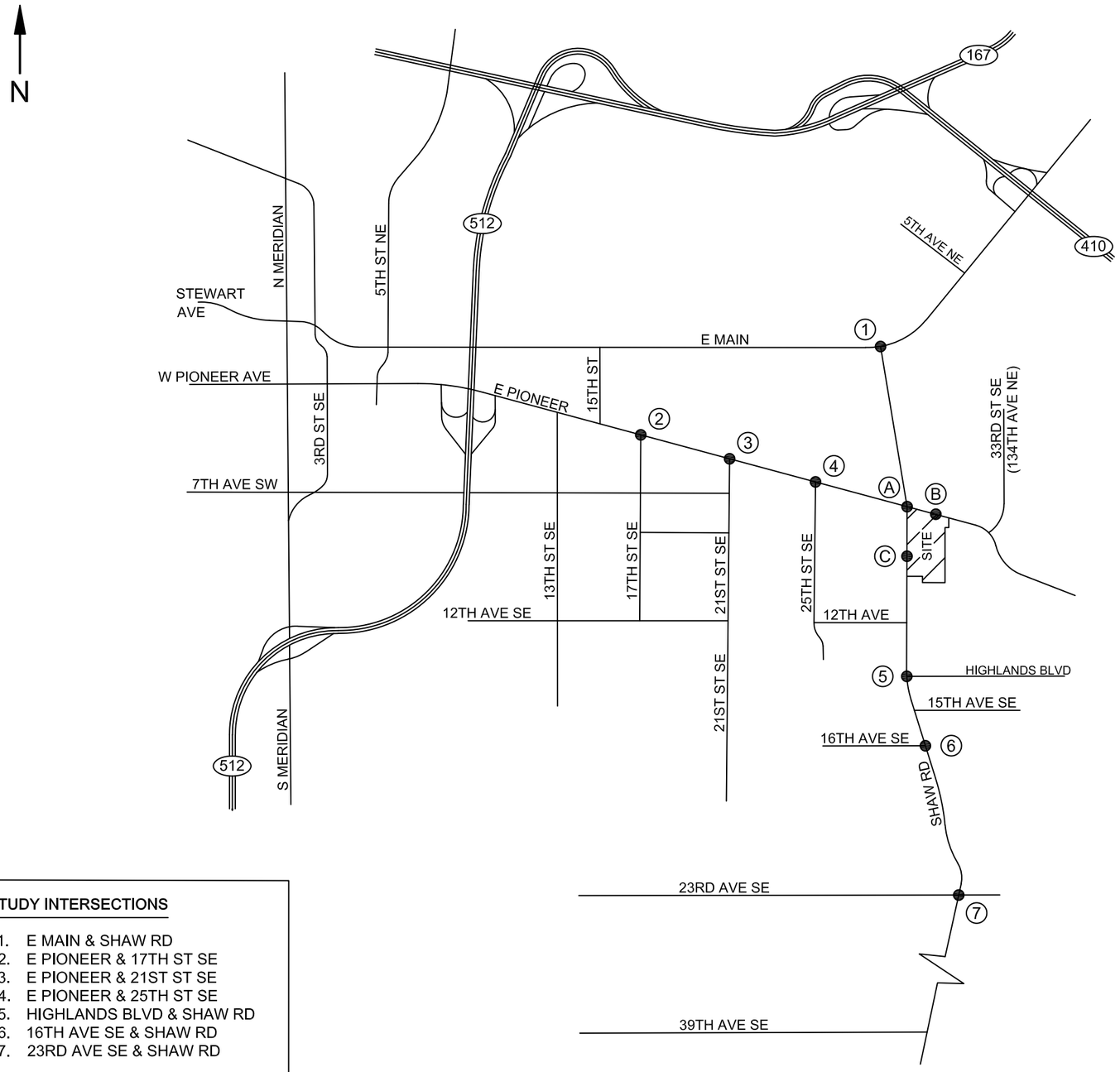
3.2 Peak Hour Volumes

Per comments made by the City during the most recent scoping process, new counts were conducted at all study intersections in December of 2021 and May of 2022. Data was collected at the following intersections of study:

1. E Main & Shaw Rd (5/4/22)
2. E Pioneer & 17th St E (5/4/22)
3. E Pioneer & 21st St E (5/4/22)
4. E Pioneer & 25th St E (5/4/22)
5. Highlands Blvd & Shaw Rd (5/4/22)
6. 16th Ave SE & Shaw Rd (5/4/22)
7. 23rd Ave SE & Shaw Rd (12/15/21)

A. E Pioneer & Shaw Rd (5/4/22)
B. E Pioneer & Access (5/4/22)
C. Access & Shaw Rd (5/4/22)

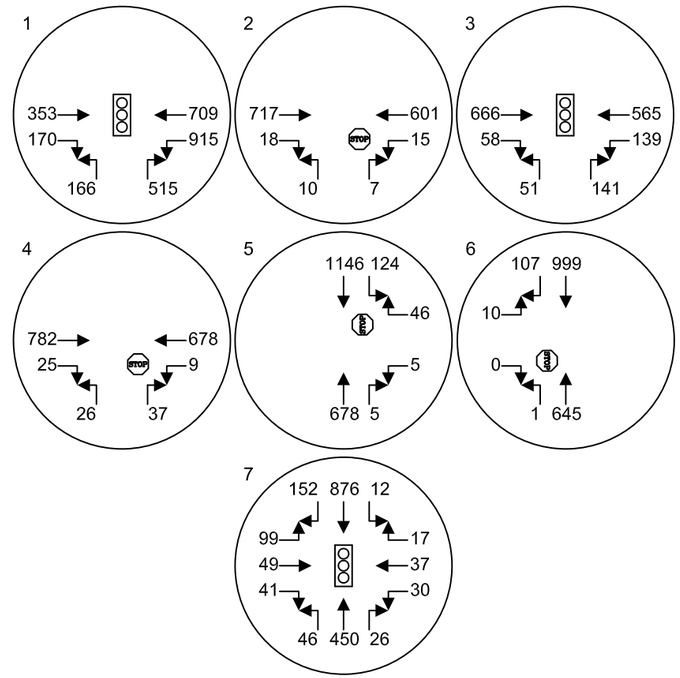
Data was obtained during the evening peak period between the hours of 4:00 PM – 6:00 PM, which generally translates to highest overall roadway volumes in a given 24-hour period. The peak hour of the PM timeframe was then derived from each field count and used for analysis. Existing intersection volumes for the PM peak hour are presented in Figure 3. The full two-hour counts have been attached to the appendix.

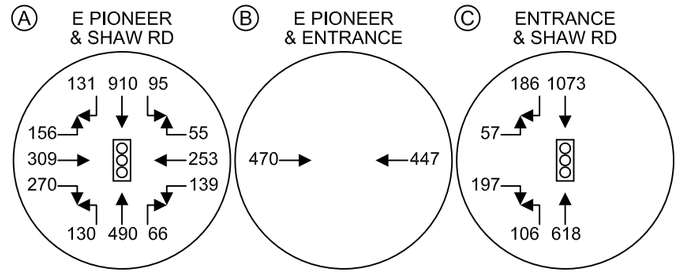


STUDY INTERSECTIONS

1. E MAIN & SHAW RD
2. E PIONEER & 17TH ST SE
3. E PIONEER & 21ST ST SE
4. E PIONEER & 25TH ST SE
5. HIGHLANDS BLVD & SHAW RD
6. 16TH AVE SE & SHAW RD
7. 23RD AVE SE & SHAW RD

A. E PIONEER & SHAW RD
B. E PIONEER & ACCESS
C. ACCESS & SHAW RD





HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

EAST TOWN CROSSING

BASELINE 2022 PM PEAK HOUR VOLUMES
FIGURE 3

PO Box 397 Puyallup, WA 98371
(253) 770 1401 heathtraffic.com

3.3 Non-Motorist Infrastructure

Presently, sidewalk is available along the south side of E Pioneer, west of Shaw Road. The signalized intersection of E Pioneer & Shaw Road allows for safe pedestrian crossings via an actuated pedestrian signal phase. Along the north side of E Pioneer, the Foothills Trail begins which is a recreational trail spanning 21 miles before terminating in the city of Buckley. This trail provides an amenity for all types of non-motorist users and would be available to future East Town Crossing residents. As part of site development, frontage improvements include sidewalk from the proposed Pioneer access to Shaw Road E, creating a continuous walking route to connect to the local trailhead or nearby Pioneer Crossings shopping development. Lastly, access intersection design and frontage improvements required by the development should be coordinated with the Puyallup School District and city of Puyallup to ensure that adequate school zone, school bus stop and pedestrian crossing opportunities are provided.

3.4 Transit Service

A review of the Pierce Transit regional bus schedule indicates transit service is available along the East Main Street corridor through Route 409 – Puyallup - 72nd Street. Route 409 provides service from the 72nd Street Transit Center to 29th Street E & 5th Avenue NE. The nearest stops are provided approximately 0.50 miles north at E Main & Shaw Road. Weekday service is provided from 9:20 AM – 6:16 PM with 60-minute headways. Saturday service is provided from 9:07 AM – 6:25 PM with 60-minute headways. Sunday service is provided from 9:05 AM – 6:25 PM with 60-minute headways. Given the proximity and availability, transit use stemming from the project site can be expected. Refer to the Pierce County Transit schedule for more detailed information.

3.5 Roadway Improvements

A review of the current City of Puyallup Six-Year Adopted (2020-2026) Transportation Improvement Program indicates the following planned projects in the general area.

> *Shaw Road Widening- Phase 4 (12th to 23rd; Project #13):* This project entails a major widening of the roadway to include 5 lanes, curb, gutter sidewalk, bike lanes and street lighting. The total estimated cost is $39,200,000 and construction is not anticipated to begin until 2026 or later.
>
> *Intelligent Transportation System (ITS) Signal Improvements (E Pioneer and E Main; Project #18):* This project entails installing intelligent signals along the E Pioneer corridor from Shaw Road to 5th St SE and along E Main from Shaw Road to 5th Street SE. The total estimated cost is $2,100,000 and construction is anticipated to have begun in 2021.

21st Street SE Road Improvements (Project #33): This project entails rebuilding and possibly realigning the road to improve sight distance. The total estimated cost is $5,000,000 and construction is not anticipated to begin until 2026 or later.

Shared Use Path On E Pioneer (21st Street SE – Shaw Road; Project #51): Scoping needs to be done to determine project location (south or north side of roadway) and how to secure property rights. The total estimated cost is $2,000,000 and plans are anticipated to begin in 2023.

3.6 Sight Distance at Access Driveways

Assessments of the proposed access driveway will be made at the time of site development drawings with sight distance to meet city of Puyallup standards. The drawings shall inventory all obstructions that could limit sight distance. Entering sight line availability at all proposed accesses should be verified upon final site design.

4. FUTURE TRAFFIC CONDITIONS

4.1 Trip Generation

Trip generation is defined by the number of vehicular movements that enter or exit a site during a particular timeframe such as a specific hour or an entire day. To establish estimated trip generation demand as a result of the proposed development, data have been derived the Institute of Transportation Engineer's publication *Trip Generation,* 11th Edition. Applicable Land Use Codes (LUCs) and average rates have been applied for each respective use, which include LUC 220 – Multi-Family Low-Rise and LUC 822 – Strip Retail Plaza. An aggregate trip generation summary is provided in Table 1 below. The volumes have been reviewed and approved as part of the scoping process. Available in the appendix is a use-specific breakdown including rates used for calculations.

Table 1: Project Trip Generation

Trip Type	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
		In	Out	Total	In	Out	Total
Primary	1547	28	63	91	71	49	120
Pass-by	133	3	3	6	10	10	20
Net New Total	**1680**	31	66	**97**	81	59	**140**

As summarized in Table 1, trips to and from the site are broken into primary and pass-by. Primary trips are considered new trips to the adjacent street network whereas pass-by trips are trips already passing the site along E Pioneer/Shaw Road and make an intermediate stop on their way to a primary destination. Commercial uses along an arterial generally attract some passerby traffic. These trips are not considered new to the City system but will increase turning movements at the project's driveways. Pass-by rates have been derived from the ITE manual and through City scoping. Also taken into consideration are internal linked-trips as one trip into the site may use two or more services (i.e., retail to residential). Complimentary uses in close-proximity can result in linked trips that would reduce the overall demand estimate. Internal capture rates have been estimated using the *NCHRP 8-51 Internal Trip Capture Estimation Tool*. See appendix for further details.

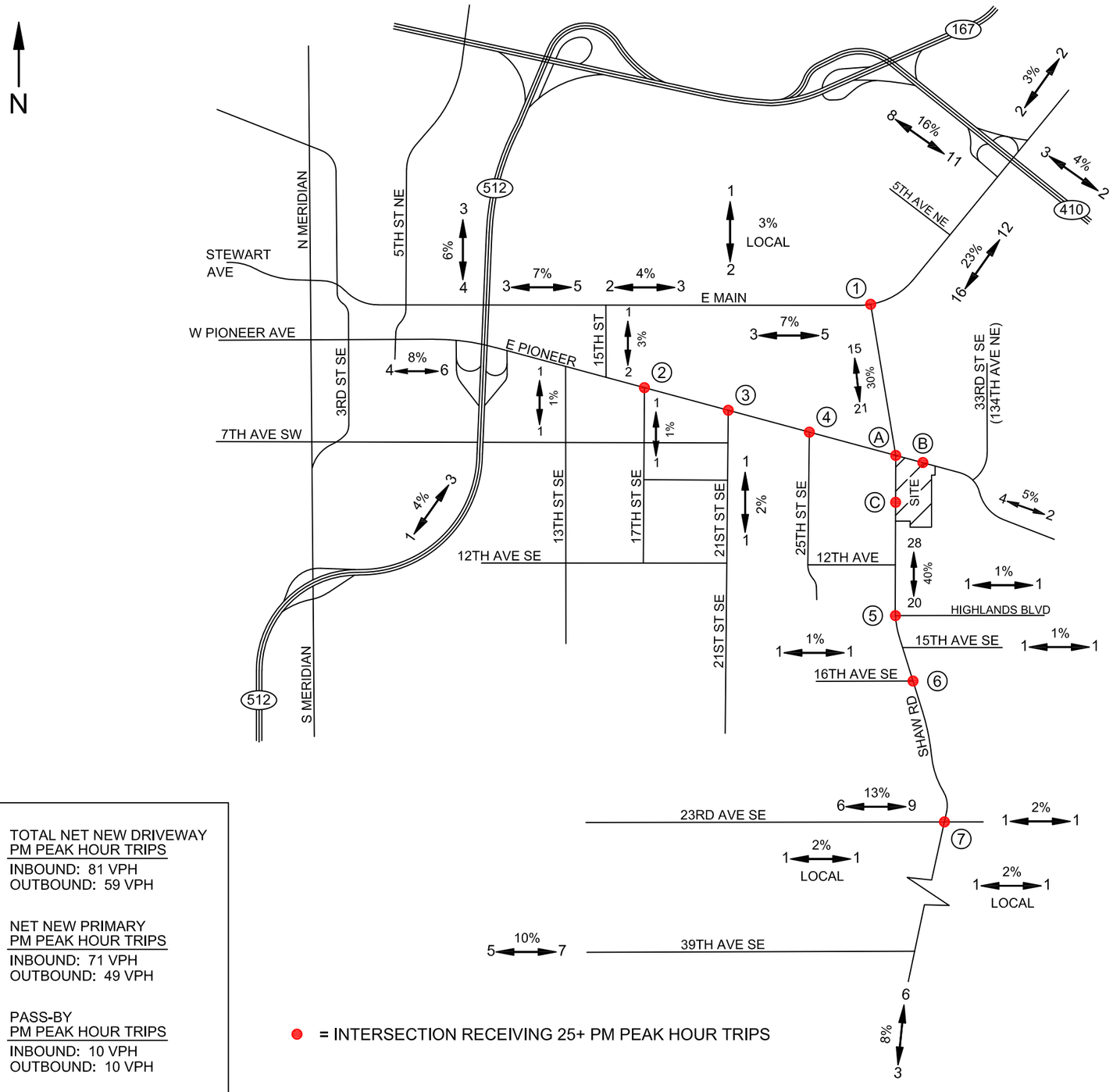
In total, 1,680 net new vehicular trips per day are expected as a result from the proposed development with 97 trips occurring in the AM peak hour and 140 trips in the PM peak hour. This trip generation summary includes activity from all proposed on-site uses.

4.2 Distribution & Assignment

Trip distribution describes the anticipated travel routes for inbound and outbound project traffic during the peak hour study periods. Trips generated by the project are expected to follow the general pattern as shown in Figure 4. Percentages are generally based on the adjacent roadway network and existing traffic volumes and were coordinated for approval with the City. Included in the figure are primary and pass-by trips. As previously mentioned, no southbound left turn movements at the Shaw Road signalized intersection would be available. All traffic intending to enter the site from the north were distributed via the Pioneer access. The Pioneer access is proposed as a full-movement driveway.

4.3 Peak Hour Volumes

A 3-year horizon of 2025 was used for future traffic delay analysis and to present conditions assuming project buildout. As directed during scoping discussions with the City, forecast 2025 background traffic volumes were derived by applying a 3.0 percent compound annual growth rate to the existing volumes shown in Figure 3. This growth rate is anticipated to account for miscellaneous growth and nearby pipeline projects in the project vicinity. Forecast 2025 background peak hour volumes and volumes with the addition of project-generated traffic are presented in Figures 5 and 6, respectively.

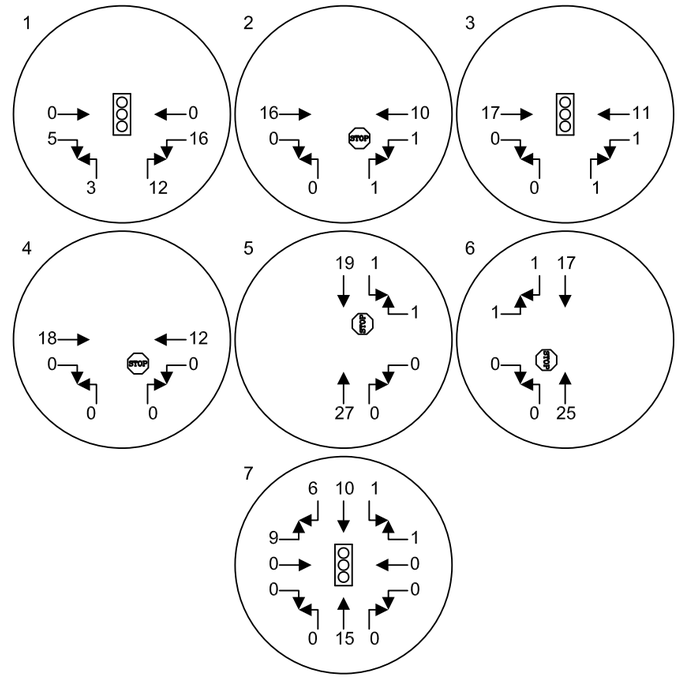


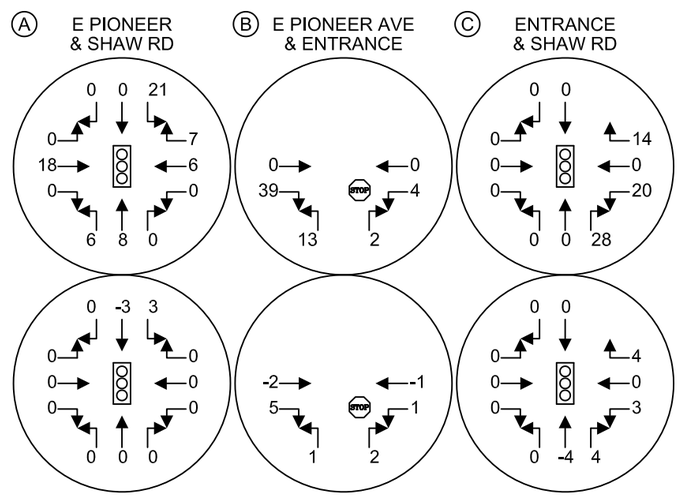
TOTAL NET NEW DRIVEWAY
PM PEAK HOUR TRIPS
INBOUND: 81 VPH
OUTBOUND: 59 VPH

NET NEW PRIMARY
PM PEAK HOUR TRIPS
INBOUND: 71 VPH
OUTBOUND: 49 VPH

PASS-BY
PM PEAK HOUR TRIPS
INBOUND: 10 VPH
OUTBOUND: 10 VPH

PRIMARY TRIPS





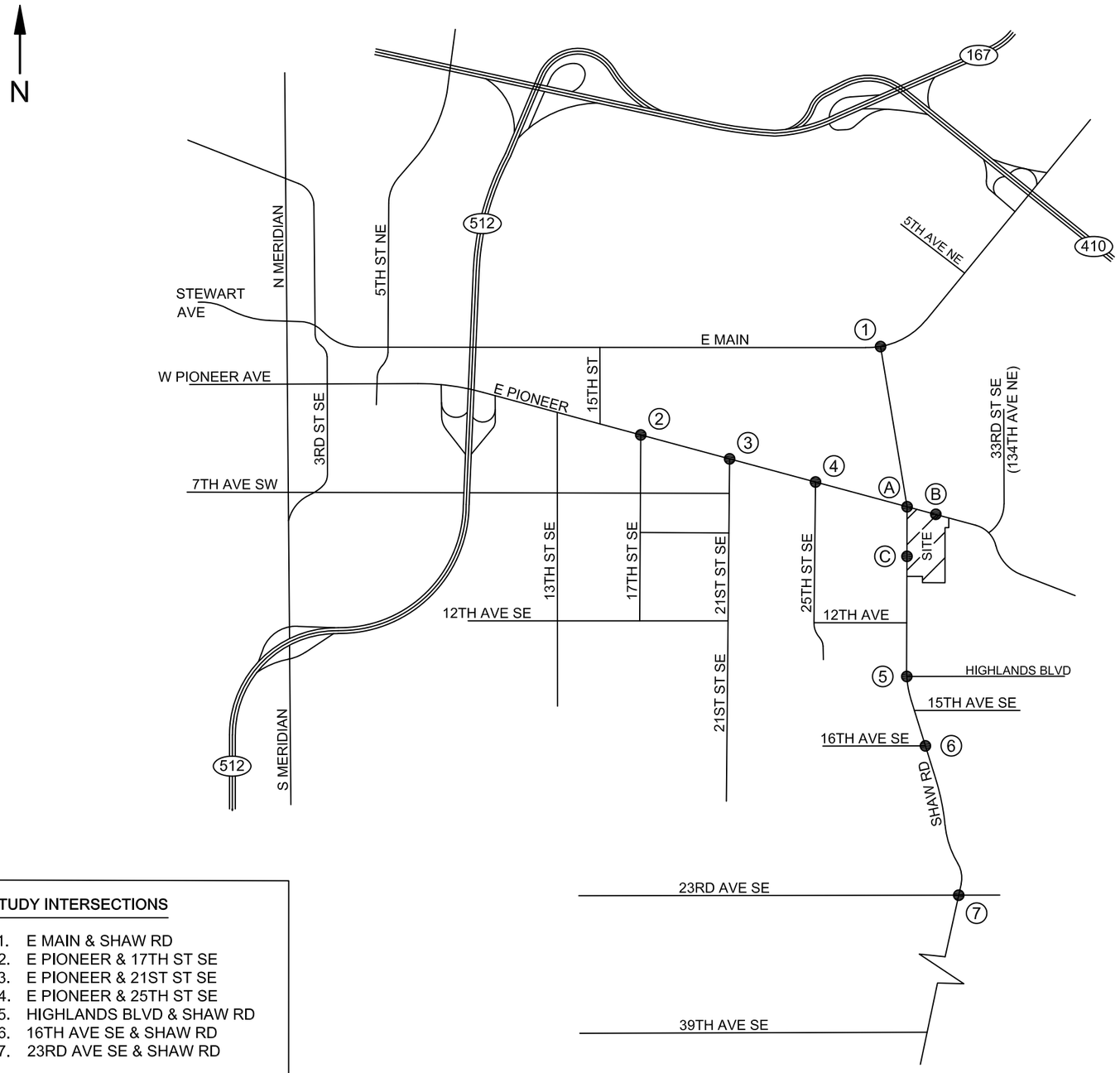
HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

EAST TOWN CROSSING

PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 4

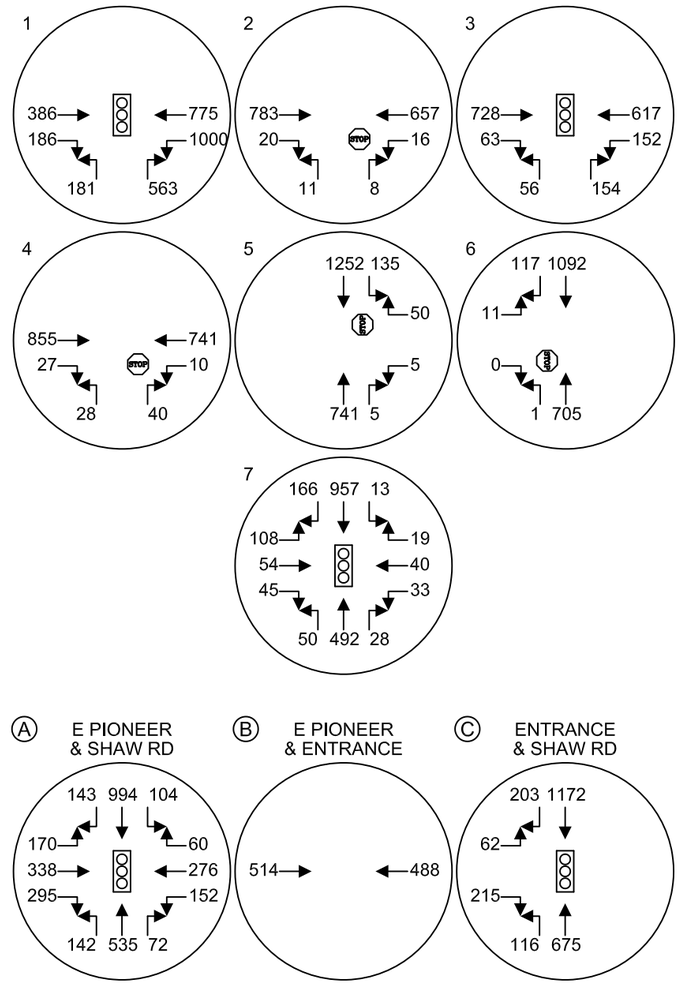
PO Box 397 Puyallup, WA 98371
(253) 770 1401 heathtraffic.com



STUDY INTERSECTIONS

1. E MAIN & SHAW RD
2. E PIONEER & 17TH ST SE
3. E PIONEER & 21ST ST SE
4. E PIONEER & 25TH ST SE
5. HIGHLANDS BLVD & SHAW RD
6. 16TH AVE SE & SHAW RD
7. 23RD AVE SE & SHAW RD

A. E PIONEER & SHAW RD
B. E PIONEER & ACCESS
C. ACCESS & SHAW RD



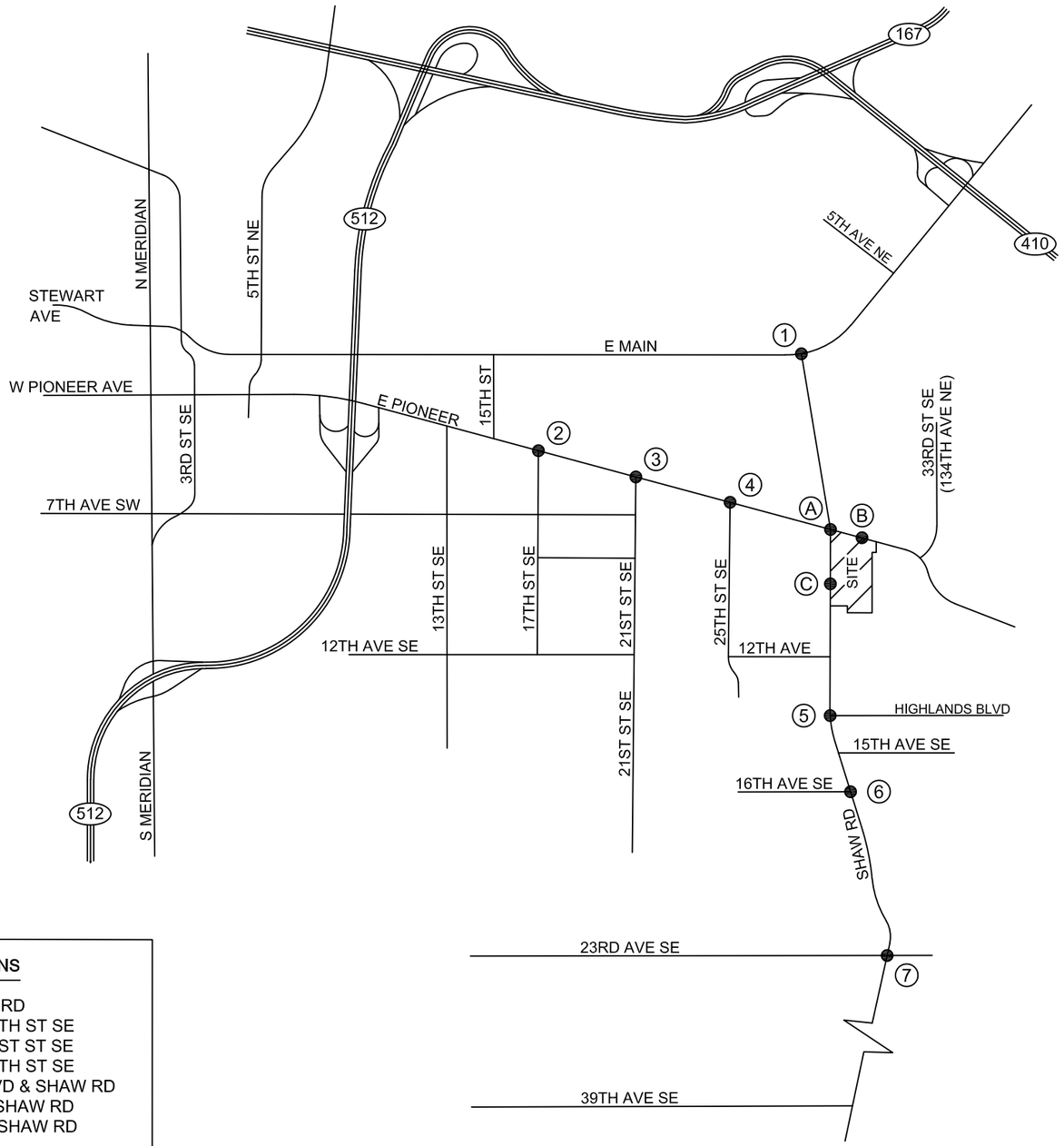
HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

EAST TOWN CROSSING

FORECAST 2025 PM PEAK HOUR BACKGROUND VOLUMES
FIGURE 5

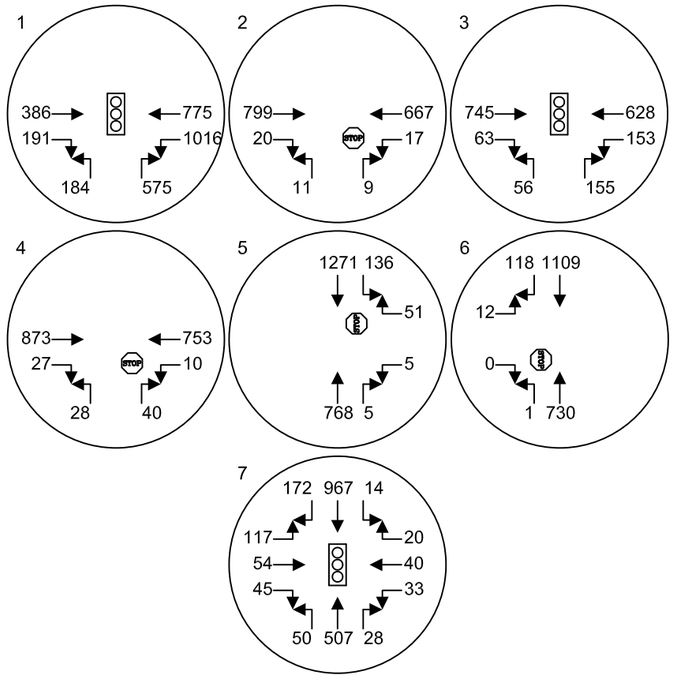
PO Box 397 Puyallup, WA 98371
(253) 770 1401 heathtraffic.com

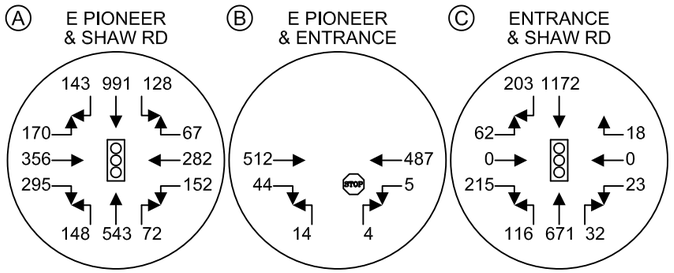


STUDY INTERSECTIONS

1. E MAIN & SHAW RD
2. E PIONEER & 17TH ST SE
3. E PIONEER & 21ST ST SE
4. E PIONEER & 25TH ST SE
5. HIGHLANDS BLVD & SHAW RD
6. 16TH AVE SE & SHAW RD
7. 23RD AVE SE & SHAW RD

A. E PIONEER & SHAW RD
B. E PIONEER & ACCESS
C. ACCESS & SHAW RD





HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

PO Box 397 Puyallup, WA 98371
(253) 770 1401 heathtraffic.com

EAST TOWN CROSSING

FORECAST 2025 PM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 6

4.4 Level of Service

Existing and forecast 2025 peak hour delays were determined through the use of the *Highway Capacity Manual* 6th Edition. Capacity analysis is used to determine level of service (LOS) which is an established measure of congestion for transportation facilities. The range[1] for intersection level of service is LOS A to LOS F ranging from low control delays to heavy control delays. Level of service calculations derived from *Synchro 11.* For signalized intersections, LOS is determined by the intersection's overall average delay. For side-street stop-controlled intersections, LOS is determined by the approach with the highest delay. Summarized in Table 2 below are LOS conditions for baseline and forecast 2025 conditions.

Table 2: Existing & Forecast 2025 PM Peak Hour Level of Service

Delays given in seconds per vehicle

					Forecast 2025			
			Existing		Without		With	
Ref #	Intersection	Control	LOS	Delay	LOS	Delay	LOS	Delay
1	E Main & Shaw Rd	Signal	C	22.0	C	32.6	D	36.2
2	E Pioneer & 17th St SE	Stop	C	18.3	C	20.3	C	20.5
3	E Pioneer & 21st St SE	Signal	A	5.7	A	6.0	A	6.1
4	E Pioneer & 25th St SE	Stop	C	22.1	D	26.4	D	27.3
5	Highlands Blvd & Shaw Rd	Stop	C	24.2	D	29.2	D	31.6
6	16th Ave SE & Shaw Rd	Stop	E	46.4	F	59.6	F	65.0
7	23rd Ave SE & Shaw Rd	Signal	B	16.2	B	19.2	B	19.7
A	E Pioneer & Shaw Rd	Signal	D	47.9	D	51.3	E	55.8
B	E Pioneer & Access	Stop	--	--	--	--	B	16.0
C	Shaw Rd & Access	Signal	B	12.4	B	13.4	B	14.4

[1] *Signalized Intersections - Level of Service*

Level of Service	Control Delay per Vehicle (sec)
A	≤10
B	> 10 and ≤20
C	> 20 and ≤35
D	> 35 and ≤55
E	> 55 and ≤80
F	> 80

Stop Controlled Intersections – Level of Service

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

Highway Capacity Manual, 6th Edition

The City of Puyallup has adopted LOS D standards for most city intersections though LOS E is allowed along the Shaw Road corridor. All study intersections are shown to meet City LOS standards based on forecast 2025 PM peak hour analysis. As such, no operational deficiencies are identified as a result of the proposed development with the exception of Shaw Road & 16th Avenue SE. Performance descriptions of the proposed access driveways and substandard study intersection are discussed as follows:

Shaw Road & 16th Avenue SE: is anticipated to operate with LOS F delays under forecast PM peak hour conditions both without and with project-generated traffic. Delays are primarily experienced by eastbound left-turn movements. It should be noted that the 95th percentile queue for this movement is calculated at less than 1 vehicle length. Moreover, only 12 vehicles are performing this maneuver throughout the entire peak hour. Given the minimal amount of vehicles experiencing the substandard delay and minimal noted queue, no mitigation at Shaw Road & 16th Avenue SE is deemed necessary at this time.

Shaw Road/Pioneer Crossing Access: based on the proximity of the dual northbound left turn lanes at the E Pioneer & Shaw Road intersection, southbound left-turns into the site at the access would be prohibited. Project traffic intending to enter the site from the north would therefore need to route to the Pioneer access and enter via a right-turn movement. Also, as this approach would create a fourth leg to the intersection, crosswalk and right-turn lane considerations are discussed below.

Crosswalk

Creating an east leg at the Pioneer Crossing's signalized intersection on Shaw Road would result in a new four-leg intersection. To facilitate safe non-motorists crossings along the arterial, it is recommend that a striped crosswalk be included along the south side of the intersection. This location is closest in proximity to both the on-site residential uses (away from commercial uses) and the nearby elementary school, creating the most-direct routes for pedestrian travel. Further, a crossing along the south side would eliminate a second crossing point from the Pioneer Crossings driveway access for pedestrians intending to travel south to the school. Final design and layout shall be coordinated for approval with the City.

Right-Turn Warrants

As stated in WSDOT's Design Manual, "For signalized intersections, use a traffic signal analysis to determine whether a right-turn lane is needed and what the length is." Based on the acceptable level of service B conditions with the project, no capacity deficiencies are identified that would require the construction of a northbound right-turn lane into the site. The access was shown to operate acceptably as proposed.

Pioneer Road Access: this access driveway has been located such that over 400 feet of separation from Shaw Road can be achieved, exceeding City of Puyallup intersection spacing requirements (300 feet required). Based on forecast 2025 PM peak hour conditions, LOS is anticipated to operate acceptably with LOS B conditions. This analysis assumed an extension of the westbound left-turn lane and transitioning into a two-way left-turn lane at the project access thereby allowing departing traffic a two-step opportunity to enter E Pioneer and advance westbound. Final design shall be coordinated with City for approval.

Right-Turn Warrants

It should be noted that as part of frontage improvements, the project would construct a second eastbound travel lane along Pioneer Road from Shaw Road and terminating at the proposed entrance. This lane could be extended in the future should the City undergo a widening project along Pioneer to construct a five-lane section (two-travel lanes in either direction and a center lane). However, timing is unknown and the widening in not included on the City's Six-Year TIP so it's unlikely to occur in the near future.

Per WSDOT's Design Manual Exhibit 1310-11, right-turn lane requirements are based on a function of vehicular volumes, number of turning vehicles from the major roadway and posted speed limits. Under the present conditions with a two-lane cross section on Pioneer, a right-turn lane would be warranted. The newly constructed eastbound lane would function as a right-turn drop lane serving the subject property and therefore satisfying interim right-turn lane needs. Assuming a full buildout scenario where Pioneer would have two travel lanes in either direction, warrant calculations would change by reducing the sensitivity of when right-turn warrants are needed given the additional travel lanes. As the timing is unknown for when Pioneer would be fully constructed, as are the conditions of the traffic volumes (and volumes per inside and outside lanes), the warrant could not be accurately applied. Given the acceptable service levels and interim right-turn lane, no additional widening or right-of-way dedication is recommended. Warrant sheets are included in the appendix for reference. Construction details, geometry, alignment, right-of-way, etc., are all to be coordinated with City of Puyallup for an approved design.

Queuing:

Queuing demands were determined through the use of modeling *SimTraffic* software via forecast 2025 PM peak hour simulations. The intersection of E Pioneer & Shaw Road was evaluated to determine average and 95th percentile queues and how that may influence the proposed access driveway. The forecast queues are as follows:

Table 3: Forecast 2025 PM Peak Hour Queuing

Intersection	Movement	Average Queue	95th Percentile Queue
Pioneer & Shaw	Westbound Thru/RT	356 ft	598 ft
	Westbound LT	190 ft	312 ft

As shown above, the average queue from the westbound traffic along Pioneer from the Shaw road signal is estimated at 356 feet for the through and right-turn lane and 190 feet for the left-turn lane. The project's driveway would be positioned in excess of 400 feet from the intersection and would therefore, on average, remain unblocked during the critical PM peak hour timeframe. The 95th percentile queue, or an occurrence that has a 5 percent probability or less, is shown to extend just under 600 feet.

Outside of peak travel times, the driveway is anticipated to remain unblocked to allow one-step entry onto E Pioneer. During peak congestion periods, outbound traffic may need to stage their maneuver by entering the two-way left-turn lane (TWLTL) and wait for the queue to advance from the signal before entering. As demonstrated, the 95th percentile queues for the westbound left-turns at E Pioneer & Shaw Road are 312 feet indicating that approximately 90-95 percent of the highest volume hour of the day, outbound traffic would be able to enter the TWLTL unobstructed. Drivers would also develop a familiarity with the site and may choose to exit via the signalized Shaw Road access during peak times.

5. SUMMARY & MITIGATION

The East Town Crossing project proposes to construct a mixed-use development comprising 193 apartment units and up to 10,202 square feet of commercial/retail space in the city of Puyallup. The subject site is bordered to the north by E Pioneer and to the west by Shaw Road on a cumulative 10.93-acres (tax parcel #'s: 042026-4053; -4054; -1066; -4021; -1030; -1029; & -1026). Two accesses are proposed with one extending south from E Pioneer. This stop-controlled access will comprise an eastbound right-turn lane in addition to a center two-way left-turn lane accommodating median storage for northbound left-turning vehicles. The other proposed project access is to extend east from Shaw Road, forming a four-leg signalized intersection opposite the Pioneer Crossing development. According to ITE data, site development would generate an estimated 1680 total net new daily trips with 97 net new trips occurring during the AM peak hour and 140 net new trips occurring during the PM peak hour. As shown in Table 1 and further outlined in the trip generation sheet provided in the appendix, a portion of these trips are anticipated to be in the form of pass-by and internally-linked.

Existing and forecast 2025 PM peak hour delays at the study intersections are shown to meet City LOS D and LOS E (Shaw Road) standards with the exception of Shaw Road & 16th Avenue SE. While this intersection operates with substandard delays under forecast conditions, minimal vehicles experience said delays and a minimal 95th percentile queue was calculated. The proposed unrestricted access on E Pioneer was shown to operate with acceptable LOS conditions and exceeds City spacing requirements. The second access, creating a fourth leg at the newly signalized Shaw Road & Pioneer Crossing intersection, was also shown to operate with acceptable LOS B conditions.

Proposed mitigation for the project is as follows:

1. Based on the analysis presented herein, the proposed full-movement access on East Pioneer was shown to operate with acceptable conditions. As is typical and common with corner properties throughout the city, queues may extend past the project's proposed driveway access at times. However, the driveway was shown to remain unblocked for all but a portion of the peak hour of a typical weekday. Furthermore, the provision of a two-way left-turn lane across the project's frontage would accommodate a two-stage maneuver and allow refuge while drivers wait to enter the advancing lane. The driveway provides separation from the E Pioneer & Shaw Road intersection that exceeds the City's minimum spacing requirements.
   If this driveway poses a concern in the future, the City has the right to restrict the access to right-turns only.

2. All frontage improvements shall be designed in accordance with City of Puyallup Engineering Design standards and should be coordinated with City staff for approval.

3. Sight distance shall be verified upon final site plan to ensure compliance with at least minimum sight line requirements.

4. Create an east leg at the proposed signalized Shaw Road access per City of Puyallup's engineering standards. It is recommended to include an east/west crosswalk along the south side of the intersection due to proximity with the nearby school and on-site residential uses. Final plans shall be approved by the City.

5. Coordinate signal modifications with City's Signal Contractor based on the modifications and creation of a further leg at Shaw Road access intersection.

6. Coordinate any school related requirements (school zone speed, crossing availability, bus stop locations, etc.) with Puyallup School District and City of Puyallup.

7. Traffic Impact Fees (TIF) will be assessed in accordance with fees adopted by ordinance, per PMC 21.10. Impact fees are subject to change and are adopted by ordinance. The applicant shall pay the proportionate impact fees at the time of building permit application.

No further mitigation is identified at this time; however, additional mitigation may be required based on City's final review.

EAST TOWN CROSSING
TRAFFIC IMPACT ANALYSIS

APPENDIX

INTERSECTION COUNT SHEETS

Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074ff
Site Code : 00004074
Start Date : 5/4/2022
Page No : 1

Groups Printed- Passenger + - Heavy

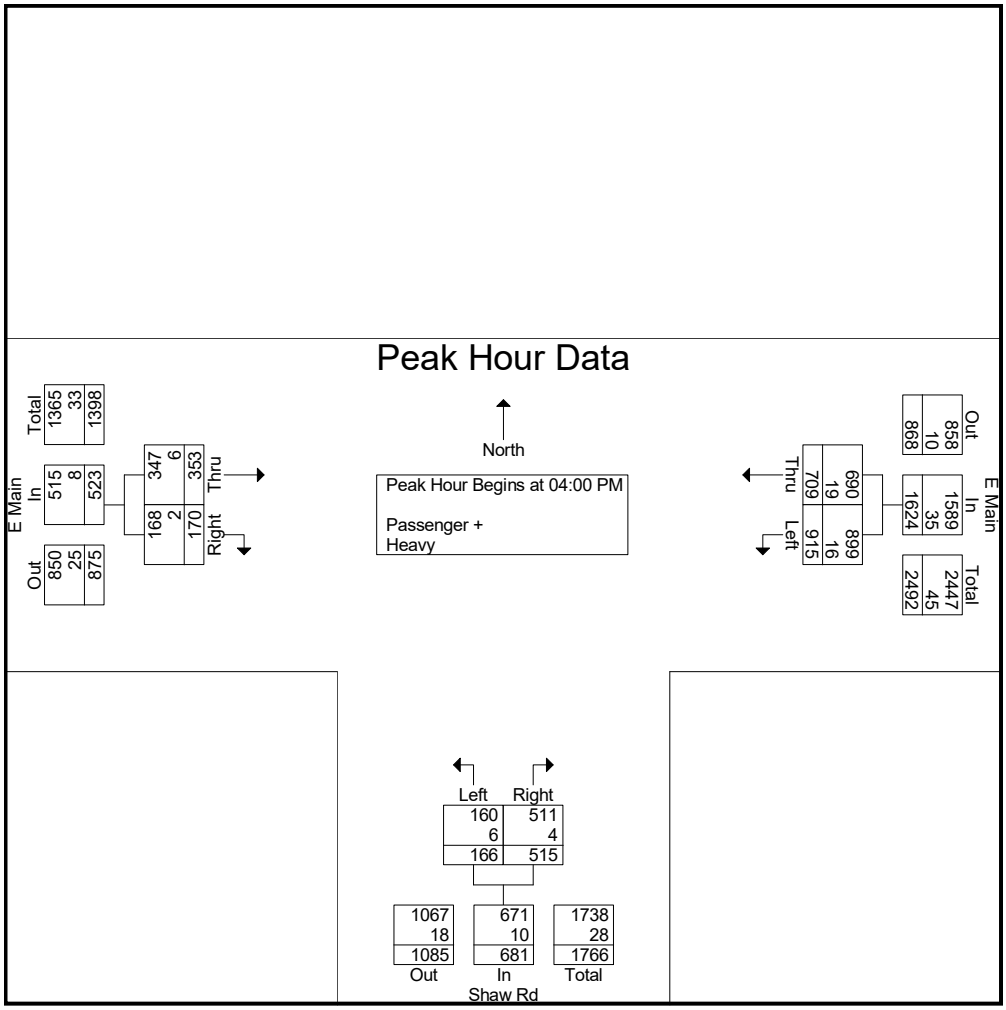
	E Main Westbound			Shaw Rd Northbound			E Main Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
04:00 PM	168	228	396	132	54	186	55	96	151	733
04:15 PM	181	234	415	151	4	155	32	92	124	694
04:30 PM	190	243	433	133	65	198	45	94	139	770
04:45 PM	170	210	380	99	43	142	38	71	109	631
Total	709	915	1624	515	166	681	170	353	523	2828
05:00 PM	165	258	423	100	55	155	43	91	134	712
05:15 PM	146	250	396	118	47	165	41	61	102	663
05:30 PM	136	206	342	139	66	205	42	83	125	672
05:45 PM	141	231	372	103	48	151	31	89	120	643
Total	588	945	1533	460	216	676	157	324	481	2690
Grand Total	1297	1860	3157	975	382	1357	327	677	1004	5518
Apprch %	41.1	58.9		71.8	28.2		32.6	67.4		
Total %	23.5	33.7	57.2	17.7	6.9	24.6	5.9	12.3	18.2	
Passenger +	1265	1829	3094	967	368	1335	323	664	987	5416
% Passenger +	97.5	98.3	98	99.2	96.3	98.4	98.8	98.1	98.3	98.2
Heavy	32	31	63	8	14	22	4	13	17	102
% Heavy	2.5	1.7	2	0.8	3.7	1.6	1.2	1.9	1.7	1.8

Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074ff
Site Code : 00004074
Start Date : 5/4/2022
Page No : 2

	E Main Westbound			Shaw Rd Northbound			E Main Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	168	228	396	132	54	186	**55**	**96**	**151**	733
04:15 PM	181	234	415	**151**	4	155	32	92	124	694
04:30 PM	**190**	**243**	**433**	133	**65**	**198**	45	94	139	**770**
04:45 PM	170	210	380	99	43	142	38	71	109	631
Total Volume	709	915	1624	515	166	681	170	353	523	2828
% App. Total	43.7	56.3		75.6	24.4		32.5	67.5		
PHF	.933	.941	.938	.853	.638	.860	.773	.919	.866	.918
Passenger +	690	899	1589	511	160	671	168	347	515	2775
% Passenger +	97.3	98.3	97.8	99.2	96.4	98.5	98.8	98.3	98.5	98.1
Heavy	19	16	35	4	6	10	2	6	8	53
% Heavy	2.7	1.7	2.2	0.8	3.6	1.5	1.2	1.7	1.5	1.9



Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074dd
Site Code : 00004074
Start Date : 5/4/2022
Page No : 1

Groups Printed- Passenger + - Heavy

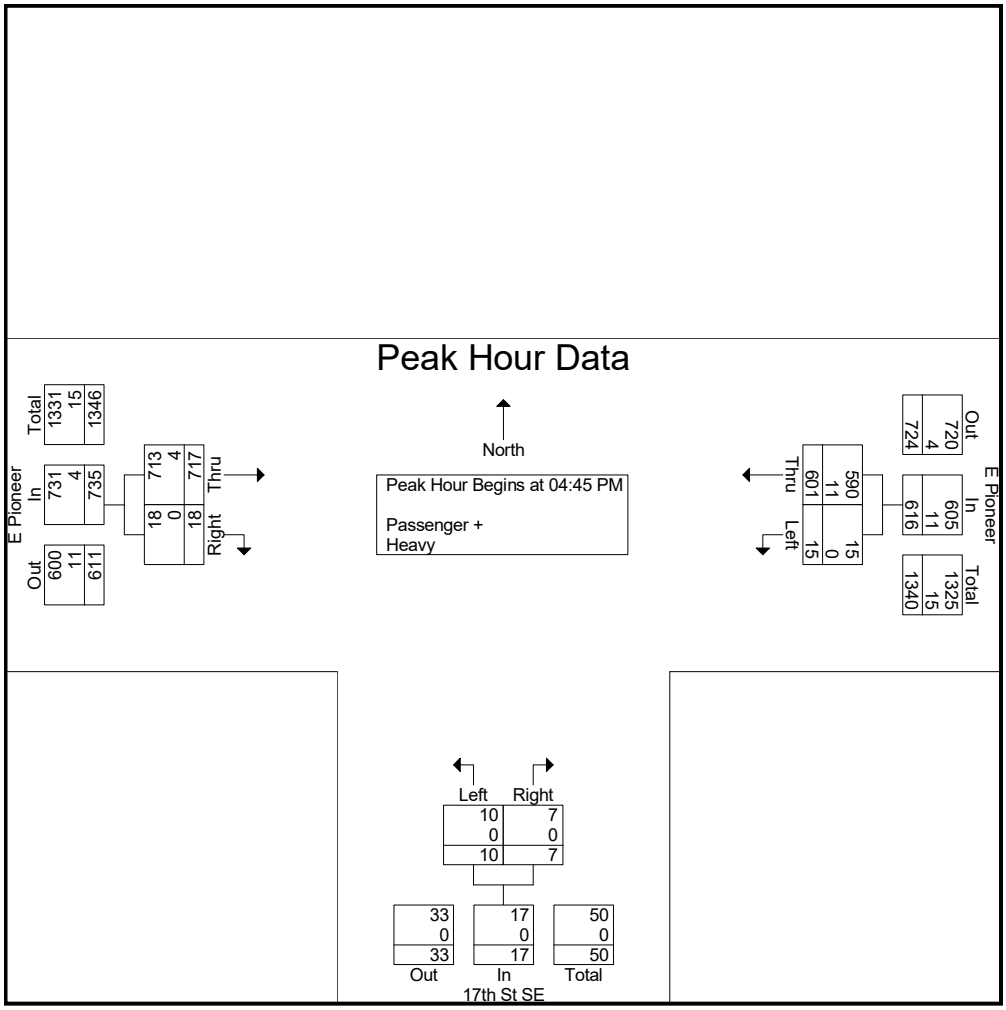
	E Pioneer Westbound			17th St SE Northbound			E Pioneer Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
04:00 PM	161	4	165	2	2	4	2	171	173	342
04:15 PM	176	1	177	1	4	5	2	144	146	328
04:30 PM	158	3	161	0	2	2	4	150	154	317
04:45 PM	153	4	157	0	5	5	4	176	180	342
Total	648	12	660	3	13	16	12	641	653	1329
05:00 PM	144	1	145	1	1	2	4	197	201	348
05:15 PM	159	5	164	5	2	7	1	176	177	348
05:30 PM	145	5	150	1	2	3	9	168	177	330
05:45 PM	114	2	116	1	3	4	5	139	144	264
Total	562	13	575	8	8	16	19	680	699	1290
Grand Total	1210	25	1235	11	21	32	31	1321	1352	2619
Apprch %	98	2		34.4	65.6		2.3	97.7		
Total %	46.2	1	47.2	0.4	0.8	1.2	1.2	50.4	51.6	
Passenger +	1183	25	1208	11	21	32	31	1308	1339	2579
% Passenger +	97.8	100	97.8	100	100	100	100	99	99	98.5
Heavy	27	0	27	0	0	0	0	13	13	40
% Heavy	2.2	0	2.2	0	0	0	0	1	1	1.5

Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074dd
Site Code : 00004074
Start Date : 5/4/2022
Page No : 2

	E Pioneer Westbound			17th St SE Northbound			E Pioneer Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	153	4	157	0	**5**	5	4	176	180	342
05:00 PM	144	1	145	1	1	2	4	**197**	**201**	**348**
05:15 PM	**159**	**5**	**164**	**5**	2	**7**	1	176	177	348
05:30 PM	145	5	150	1	2	3	**9**	168	177	330
Total Volume	601	15	616	7	10	17	18	717	735	1368
% App. Total	97.6	2.4		41.2	58.8		2.4	97.6		
PHF	.945	.750	.939	.350	.500	.607	.500	.910	.914	.983
Passenger +	590	15	605	7	10	17	18	713	731	1353
% Passenger +	98.2	100	98.2	100	100	100	100	99.4	99.5	98.9
Heavy	11	0	11	0	0	0	0	4	4	15
% Heavy	1.8	0	1.8	0	0	0	0	0.6	0.5	1.1



Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074bb
Site Code : 00004074
Start Date : 5/4/2022
Page No : 1

Groups Printed- Passenger - Heavy

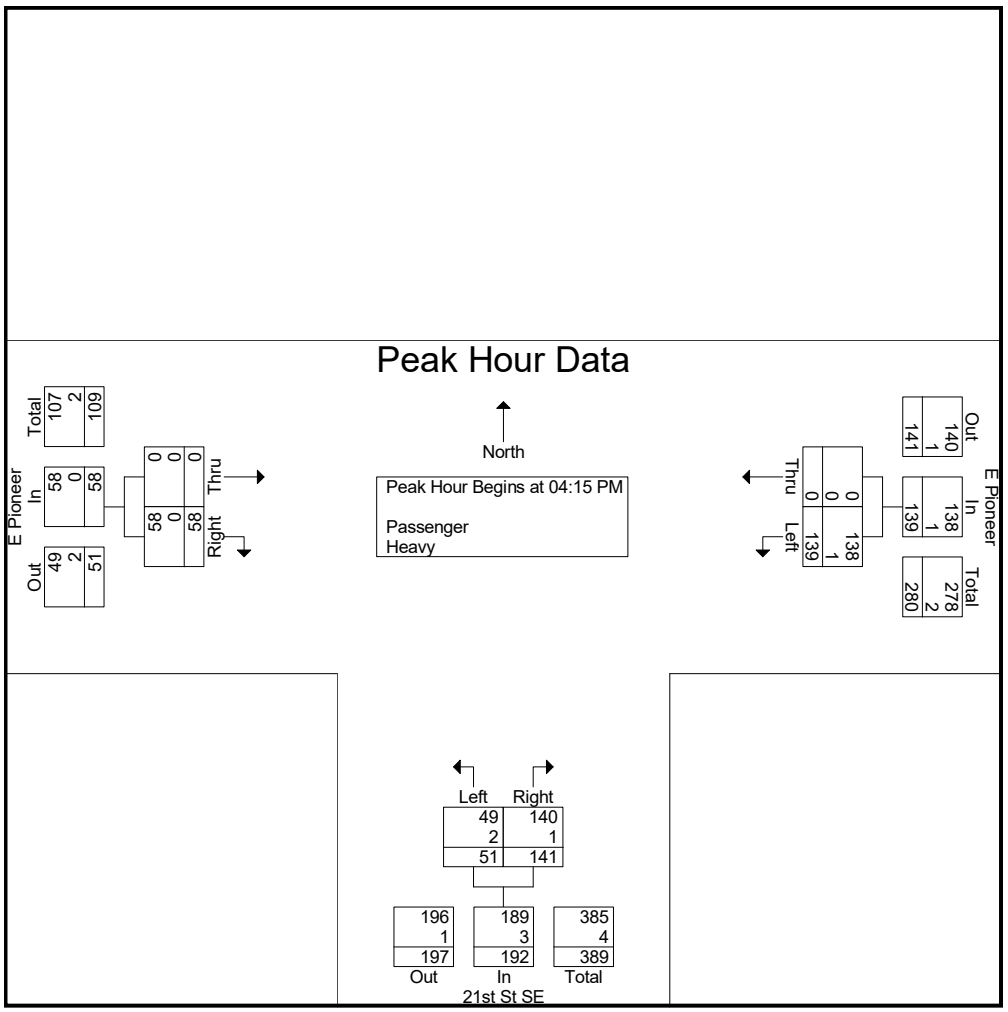
	E Pioneer Westbound			21st St SE Northbound			E Pioneer Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
04:00 PM	0	32	32	28	9	37	23	0	23	92
04:15 PM	0	33	33	35	6	41	12	0	12	86
04:30 PM	0	36	36	25	14	39	13	0	13	88
04:45 PM	0	38	38	34	7	41	20	0	20	99
Total	0	139	139	122	36	158	68	0	68	365
05:00 PM	0	32	32	47	24	71	13	0	13	116
05:15 PM	0	21	21	31	13	44	8	0	8	73
05:30 PM	0	31	31	44	15	59	11	0	11	101
05:45 PM	0	22	22	30	12	42	12	0	12	76
Total	0	106	106	152	64	216	44	0	44	366
Grand Total	0	245	245	274	100	374	112	0	112	731
Apprch %	0	100		73.3	26.7		100	0		
Total %	0	33.5	33.5	37.5	13.7	51.2	15.3	0	15.3	
Passenger	0	244	244	273	95	368	110	0	110	722
% Passenger	0	99.6	99.6	99.6	95	98.4	98.2	0	98.2	98.8
Heavy	0	1	1	1	5	6	2	0	2	9
% Heavy	0	0.4	0.4	0.4	5	1.6	1.8	0	1.8	1.2

Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074bb
Site Code : 00004074
Start Date : 5/4/2022
Page No : 2

	E Pioneer Westbound			21st St SE Northbound			E Pioneer Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	33	33	35	6	41	12	0	12	86
04:30 PM	0	36	36	25	14	39	13	0	13	88
04:45 PM	0	**38**	**38**	34	7	41	**20**	0	**20**	99
05:00 PM	0	32	32	**47**	**24**	**71**	13	0	13	**116**
Total Volume	0	139	139	141	51	192	58	0	58	389
% App. Total	0	100		73.4	26.6		100	0		
PHF	.000	.914	.914	.750	.531	.676	.725	.000	.725	.838
Passenger	0	138	138	140	49	189	58	0	58	385
% Passenger	0	99.3	99.3	99.3	96.1	98.4	100	0	100	99.0
Heavy	0	1	1	1	2	3	0	0	0	4
% Heavy	0	0.7	0.7	0.7	3.9	1.6	0	0	0	1.0



Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074ee
Site Code : 00004074
Start Date : 5/4/2022
Page No : 1

Groups Printed- Passenger + - Heavy

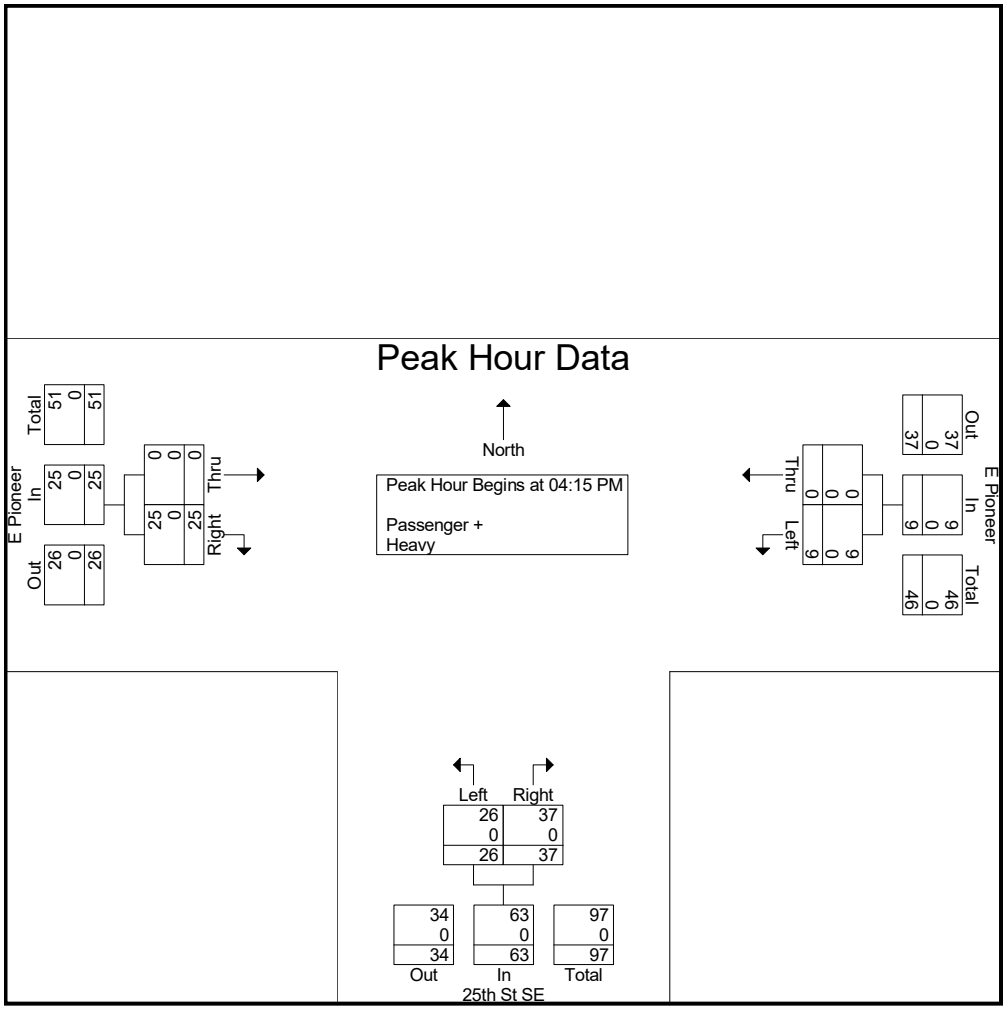
	E Pioneer Westbound			25th St SE Northbound			E Pioneer Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
04:00 PM	0	2	2	7	4	11	8	0	8	21
04:15 PM	0	1	1	12	11	23	7	0	7	31
04:30 PM	0	4	4	12	3	15	3	0	3	22
04:45 PM	0	2	2	1	7	8	7	0	7	17
Total	0	9	9	32	25	57	25	0	25	91
05:00 PM	0	2	2	12	5	17	8	0	8	27
05:15 PM	0	4	4	2	1	3	9	0	9	16
05:30 PM	0	2	2	8	10	18	7	0	7	27
05:45 PM	0	0	0	5	4	9	3	0	3	12
Total	0	8	8	27	20	47	27	0	27	82
Grand Total	0	17	17	59	45	104	52	0	52	173
Apprch %	0	100		56.7	43.3		100	0		
Total %	0	9.8	9.8	34.1	26	60.1	30.1	0	30.1	
Passenger +	0	17	17	59	45	104	52	0	52	173
% Passenger +	0	100	100	100	100	100	100	0	100	100
Heavy	0	0	0	0	0	0	0	0	0	0
% Heavy	0	0	0	0	0	0	0	0	0	0

Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074ee
Site Code : 00004074
Start Date : 5/4/2022
Page No : 2

	E Pioneer Westbound			25th St SE Northbound			E Pioneer Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	1	1	**12**	**11**	**23**	7	0	7	**31**
04:30 PM	0	**4**	**4**	12	3	15	3	0	3	22
04:45 PM	0	2	2	1	7	8	7	0	7	17
05:00 PM	0	2	2	12	5	17	**8**	0	**8**	27
Total Volume	0	9	9	37	26	63	25	0	25	97
% App. Total	0	100		58.7	41.3		100	0		
PHF	.000	.563	.563	.771	.591	.685	.781	.000	.781	.782
Passenger +	0	9	9	37	26	63	25	0	25	97
% Passenger +	0	100	100	100	100	100	100	0	100	100
Heavy	0	0	0	0	0	0	0	0	0	0
% Heavy	0	0	0	0	0	0	0	0	0	0



Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074cc
Site Code : 00004074
Start Date : 5/4/2022
Page No : 1

Groups Printed- Passenger + - Heavy

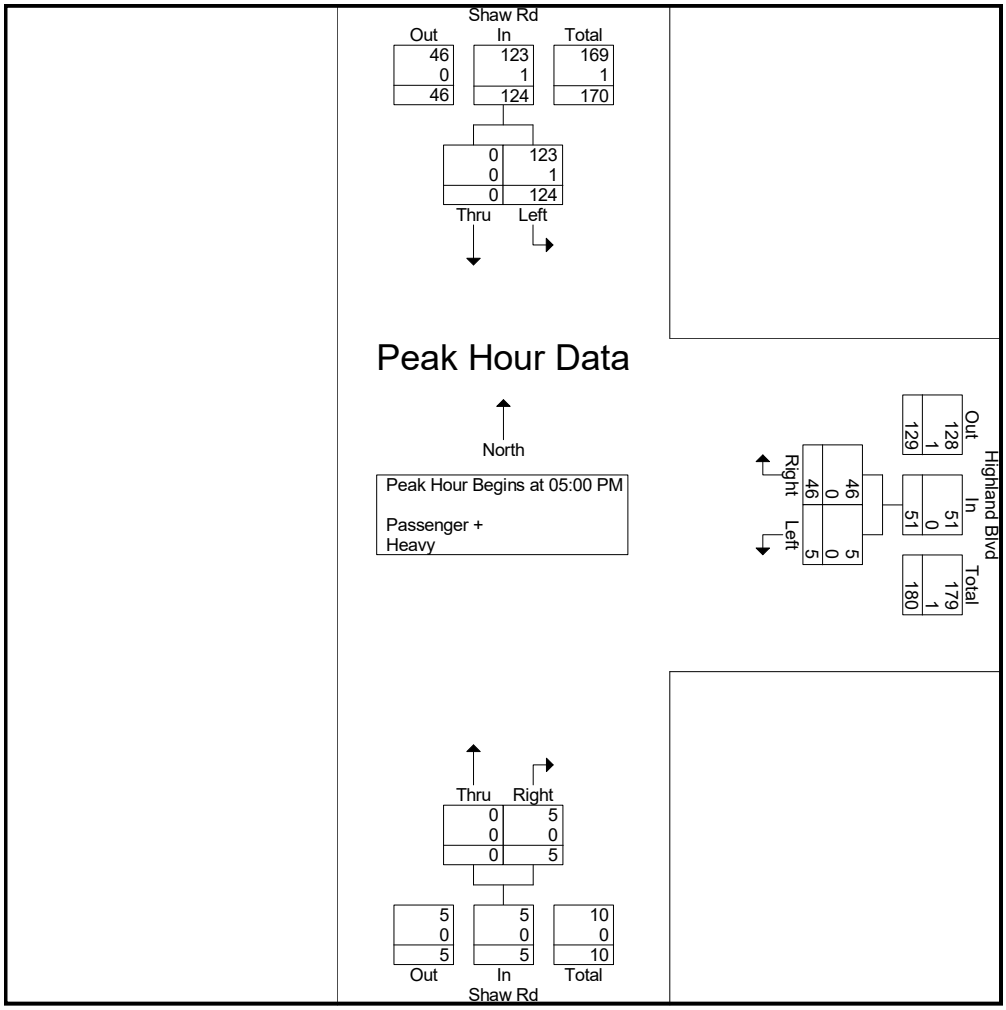
	Shaw Rd Southbound			Highland Blvd Westbound			Shaw Rd Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
04:00 PM	0	21	21	16	0	16	2	0	2	39
04:15 PM	0	39	39	7	0	7	2	0	2	48
04:30 PM	0	30	30	16	2	18	2	0	2	50
04:45 PM	0	22	22	18	0	18	1	0	1	41
Total	0	112	112	57	2	59	7	0	7	178
05:00 PM	0	27	27	8	1	9	0	0	0	36
05:15 PM	0	29	29	14	1	15	3	0	3	47
05:30 PM	0	36	36	11	2	13	0	0	0	49
05:45 PM	0	32	32	13	1	14	2	0	2	48
Total	0	124	124	46	5	51	5	0	5	180
Grand Total	0	236	236	103	7	110	12	0	12	358
Apprch %	0	100		93.6	6.4		100	0		
Total %	0	65.9	65.9	28.8	2	30.7	3.4	0	3.4	
Passenger +	0	235	235	102	7	109	11	0	11	355
% Passenger +	0	99.6	99.6	99	100	99.1	91.7	0	91.7	99.2
Heavy	0	1	1	1	0	1	1	0	1	3
% Heavy	0	0.4	0.4	1	0	0.9	8.3	0	8.3	0.8

Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074cc
Site Code : 00004074
Start Date : 5/4/2022
Page No : 2

	Shaw Rd Southbound			Highland Blvd Westbound			Shaw Rd Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	27	27	8	1	9	0	0	0	36
05:15 PM	0	29	29	**14**	1	**15**	**3**	0	**3**	47
05:30 PM	0	**36**	**36**	11	**2**	13	0	0	0	**49**
05:45 PM	0	32	32	13	1	14	2	0	2	48
Total Volume	0	124	124	46	5	51	5	0	5	180
% App. Total	0	100		90.2	9.8		100	0		
PHF	.000	.861	.861	.821	.625	.850	.417	.000	.417	.918
Passenger +	0	123	123	46	5	51	5	0	5	179
% Passenger +	0	99.2	99.2	100	100	100	100	0	100	99.4
Heavy	0	1	1	0	0	0	0	0	0	1
% Heavy	0	0.8	0.8	0	0	0	0	0	0	0.6



Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074aa
Site Code : 00004074
Start Date : 5/4/2022
Page No : 1

Groups Printed- Passenger + - Heavy

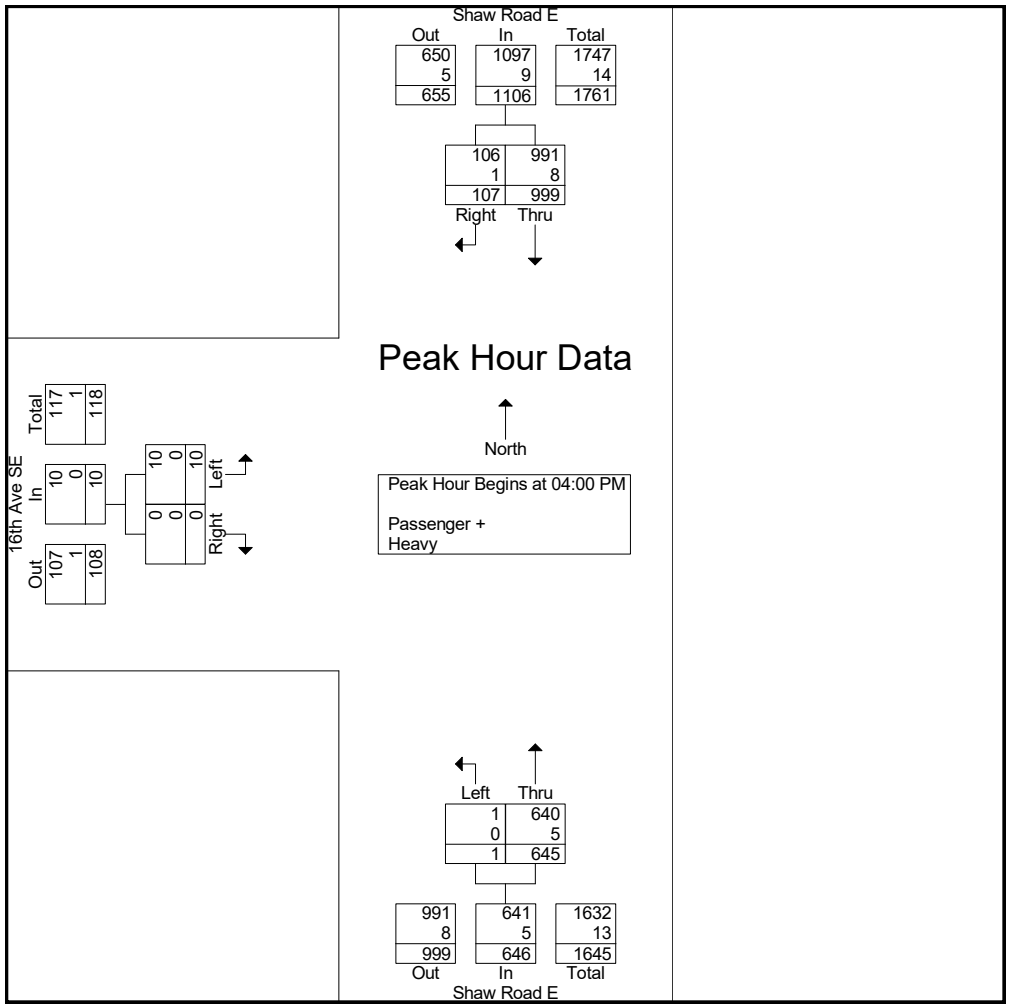
	Shaw Road E Southbound			Shaw Road E Northbound			16th Ave SE Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
04:00 PM	25	243	268	171	0	171	0	1	1	440
04:15 PM	23	236	259	184	1	185	0	3	3	447
04:30 PM	33	256	289	153	0	153	0	3	3	445
04:45 PM	26	264	290	137	0	137	0	3	3	430
Total	107	999	1106	645	1	646	0	10	10	1762
05:00 PM	20	241	261	151	1	152	0	0	0	413
05:15 PM	17	266	283	179	2	181	0	3	3	467
05:30 PM	22	257	279	137	2	139	1	3	4	422
05:45 PM	27	245	272	167	0	167	3	2	5	444
Total	86	1009	1095	634	5	639	4	8	12	1746
Grand Total	193	2008	2201	1279	6	1285	4	18	22	3508
Apprch %	8.8	91.2		99.5	0.5		18.2	81.8		
Total %	5.5	57.2	62.7	36.5	0.2	36.6	0.1	0.5	0.6	
Passenger +	192	1990	2182	1268	6	1274	4	18	22	3478
% Passenger +	99.5	99.1	99.1	99.1	100	99.1	100	100	100	99.1
Heavy	1	18	19	11	0	11	0	0	0	30
% Heavy	0.5	0.9	0.9	0.9	0	0.9	0	0	0	0.9

Heath & Associates

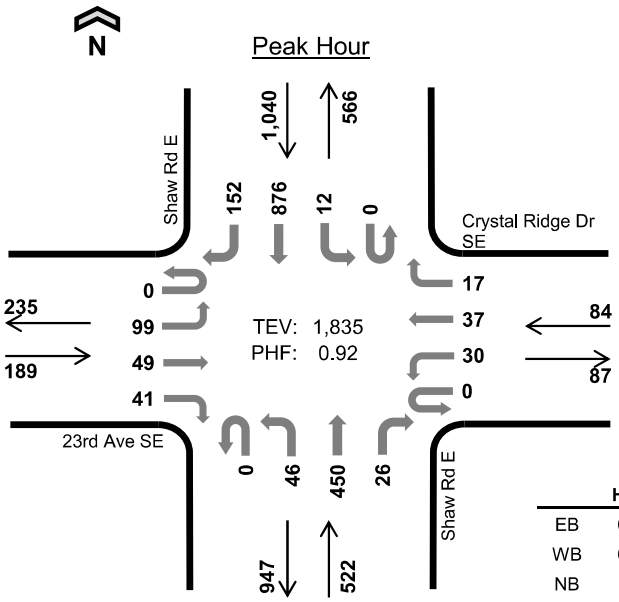
PO Box 397
Puyallup, WA 98371

File Name : 4074aa
Site Code : 00004074
Start Date : 5/4/2022
Page No : 2

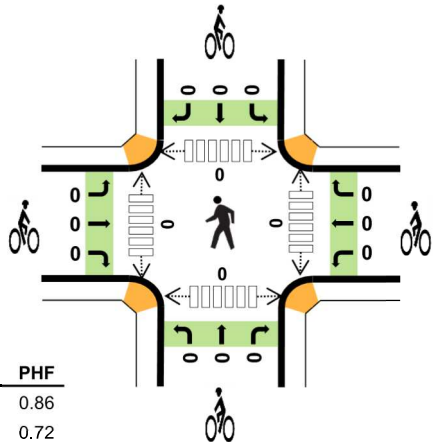
	Shaw Road E Southbound			Shaw Road E Northbound			16th Ave SE Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	25	243	268	171	0	171	0	1	1	440
04:15 PM	23	236	259	184	1	185	0	3	3	447
04:30 PM	33	256	289	153	0	153	0	3	3	445
04:45 PM	26	264	290	137	0	137	0	3	3	430
Total Volume	107	999	1106	645	1	646	0	10	10	1762
% App. Total	9.7	90.3		99.8	0.2		0	100		
PHF	.811	.946	.953	.876	.250	.873	.000	.833	.833	.985
Passenger +	106	991	1097	640	1	641	0	10	10	1748
% Passenger +	99.1	99.2	99.2	99.2	100	99.2	0	100	100	99.2
Heavy	1	8	9	5	0	5	0	0	0	14
% Heavy	0.9	0.8	0.8	0.8	0	0.8	0	0	0	0.8



Shaw Rd E
23rd Ave SE



Date: 12/15/2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	0.5%	0.86
WB	0.0%	0.72
NB	1.9%	0.88
SB	1.4%	0.90
TOTAL	1.4%	0.92

Two-Hour Count Summaries

Interval Start		23rd Ave SE Eastbound				Crystal Ridge Dr SE Westbound				Shaw Rd E Northbound				Shaw Rd E Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**20**	**19**	**16**	**0**	**16**	**9**	**4**	**0**	**15**	**108**	**4**	**0**	**4**	**251**	**34**	**500**	0
4:15 PM		**0**	**29**	**14**	**9**	**0**	**2**	**7**	**4**	**0**	**14**	**125**	**9**	**0**	**3**	**200**	**43**	**459**	0
4:30 PM		**0**	**19**	**7**	**4**	**0**	**6**	**10**	**6**	**0**	**10**	**120**	**7**	**0**	**2**	**220**	**36**	**447**	0
4:45 PM		**0**	**31**	**9**	**12**	**0**	**6**	**11**	**3**	**0**	**7**	**97**	**6**	**0**	**3**	**205**	**39**	**429**	**1,835**
5:00 PM		0	21	12	11	0	4	9	1	0	4	84	8	0	2	181	42	379	1,714
5:15 PM		0	30	12	7	0	4	4	1	0	5	126	14	0	2	220	29	454	1,709
5:30 PM		0	20	20	5	0	6	6	6	0	6	111	8	0	5	200	41	434	1,696
5:45 PM		0	17	7	4	0	7	7	14	0	7	111	6	0	5	214	28	427	1,694
Count Total		0	187	100	68	0	51	63	39	0	68	882	62	0	26	1,691	292	3,529	0
Peak Hour	**All**	**0**	**99**	**49**	**41**	**0**	**30**	**37**	**17**	**0**	**46**	**450**	**26**	**0**	**12**	**876**	**152**	**1,835**	**0**
	HV	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**13**	**2**	**26**	**0**
	HV%	**-**	**1%**	**0%**	**0%**	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**2%**	**0%**	**-**	**0%**	**1%**	**1%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	**0**	**0**	**3**	**7**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:15 PM	**1**	**0**	**3**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**0**	**0**	**2**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**0**	**2**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:00 PM	0	0	1	1	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	0	0	1	1	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	1	2	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	1	1	1	3	*6*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	2	2	15	21	*40*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**1**	**0**	**10**	**15**	***26***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	23rd Ave SE				Crystal Ridge Dr SE				Shaw Rd E				Shaw Rd E				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**6**	**1**	**10**	0
4:15 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**2**	**0**	**6**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**5**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**1**	**5**	**26**
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	18
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	14
5:30 PM	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	1	4	13
5:45 PM	0	1	0	0	0	0	0	1	0	0	1	0	0	1	2	0	6	14
Count Total	0	2	0	0	0	0	0	2	0	0	15	0	0	1	17	3	40	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**13**	**2**	**26**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	23rd Ave SE			Crystal Ridge Dr SE			Shaw Rd E			Shaw Rd E			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074hh
Site Code : 00004074
Start Date : 5/4/2022
Page No : 1

Groups Printed- Passenger + - Heavy

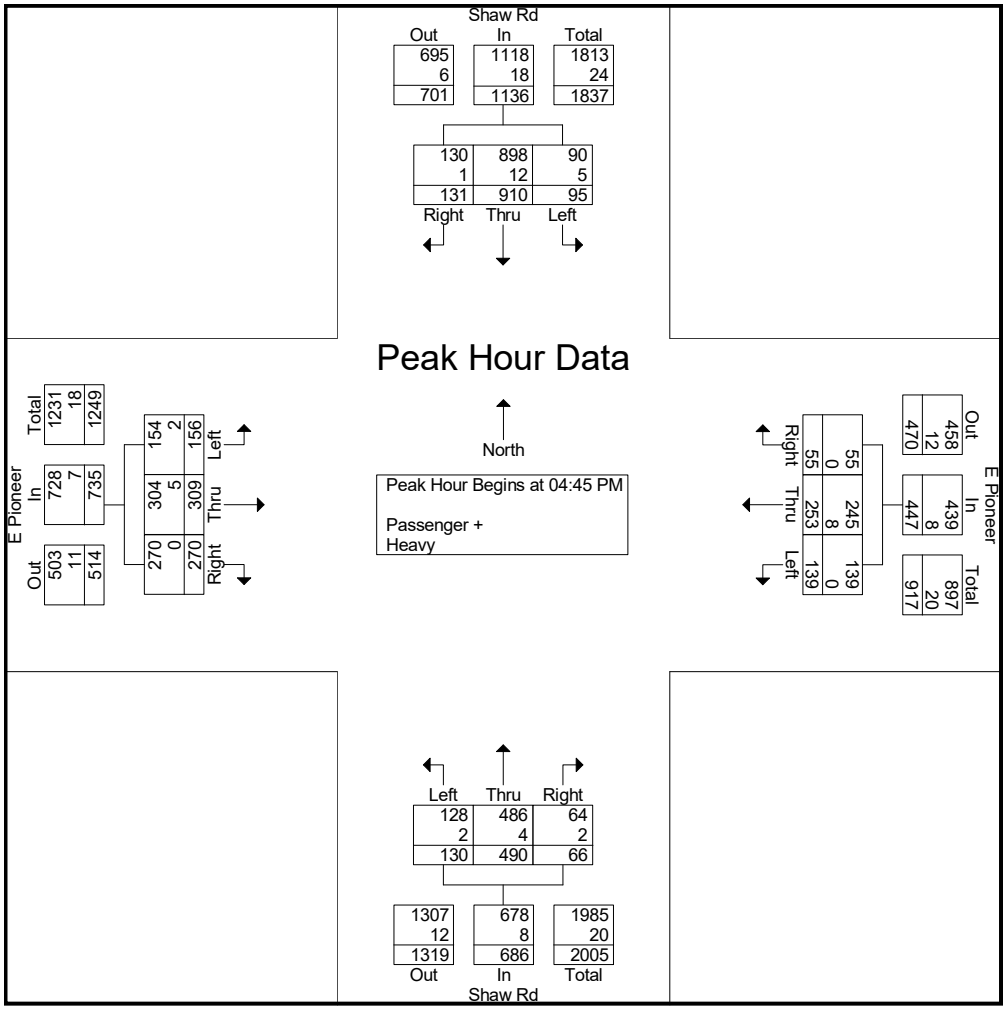
	Shaw Rd Southbound				E Pioneer Westbound				Shaw Rd Northbound				E Pioneer Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	37	178	19	234	19	88	33	140	21	110	32	163	56	68	37	161	698
04:15 PM	40	196	14	250	18	85	37	140	18	155	36	209	52	62	40	154	753
04:30 PM	45	190	21	256	14	81	40	135	9	115	29	153	53	55	52	160	704
04:45 PM	33	252	26	311	10	68	24	102	16	110	40	166	53	62	34	149	728
Total	155	816	80	1051	61	322	134	517	64	490	137	691	214	247	163	624	2883
05:00 PM	28	210	20	258	17	68	36	121	14	109	22	145	76	101	44	221	745
05:15 PM	34	234	24	292	14	61	35	110	20	147	36	203	72	83	34	189	794
05:30 PM	36	214	25	275	14	56	44	114	16	124	32	172	69	63	44	176	737
05:45 PM	27	189	27	243	18	58	38	114	24	117	31	172	48	75	32	155	684
Total	125	847	96	1068	63	243	153	459	74	497	121	692	265	322	154	741	2960
Grand Total	280	1663	176	2119	124	565	287	976	138	987	258	1383	479	569	317	1365	5843
Apprch %	13.2	78.5	8.3		12.7	57.9	29.4		10	71.4	18.7		35.1	41.7	23.2		
Total %	4.8	28.5	3	36.3	2.1	9.7	4.9	16.7	2.4	16.9	4.4	23.7	8.2	9.7	5.4	23.4	
Passenger +	275	1643	168	2086	124	552	282	958	136	976	253	1365	478	559	309	1346	5755
% Passenger +	98.2	98.8	95.5	98.4	100	97.7	98.3	98.2	98.6	98.9	98.1	98.7	99.8	98.2	97.5	98.6	98.5
Heavy	5	20	8	33	0	13	5	18	2	11	5	18	1	10	8	19	88
% Heavy	1.8	1.2	4.5	1.6	0	2.3	1.7	1.8	1.4	1.1	1.9	1.3	0.2	1.8	2.5	1.4	1.5

Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074hh
Site Code : 00004074
Start Date : 5/4/2022
Page No : 2

	Shaw Rd Southbound				E Pioneer Westbound				Shaw Rd Northbound				E Pioneer Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	33	**252**	**26**	**311**	10	**68**	24	102	16	110	**40**	166	53	62	34	149	728
05:00 PM	28	210	20	258	**17**	68	36	**121**	14	109	22	145	**76**	**101**	**44**	**221**	745
05:15 PM	34	234	24	292	14	61	35	110	**20**	**147**	36	**203**	72	83	34	189	**794**
05:30 PM	**36**	214	25	275	14	56	**44**	114	16	124	32	172	69	63	44	176	737
Total Volume	131	910	95	1136	55	253	139	447	66	490	130	686	270	309	156	735	3004
% App. Total	11.5	80.1	8.4		12.3	56.6	31.1		9.6	71.4	19		36.7	42	21.2		
PHF	.910	.903	.913	.913	.809	.930	.790	.924	.825	.833	.813	.845	.888	.765	.886	.831	.946
Passenger +	130	898	90	1118	55	245	139	439	64	486	128	678	270	304	154	728	2963
% Passenger +	99.2	98.7	94.7	98.4	100	96.8	100	98.2	97.0	99.2	98.5	98.8	100	98.4	98.7	99.0	98.6
Heavy	1	12	5	18	0	8	0	8	2	4	2	8	0	5	2	7	41
% Heavy	0.8	1.3	5.3	1.6	0	3.2	0	1.8	3.0	0.8	1.5	1.2	0	1.6	1.3	1.0	1.4



Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074gg
Site Code : 00004074
Start Date : 5/4/2022
Page No : 1

Groups Printed- Passenger + - Heavy

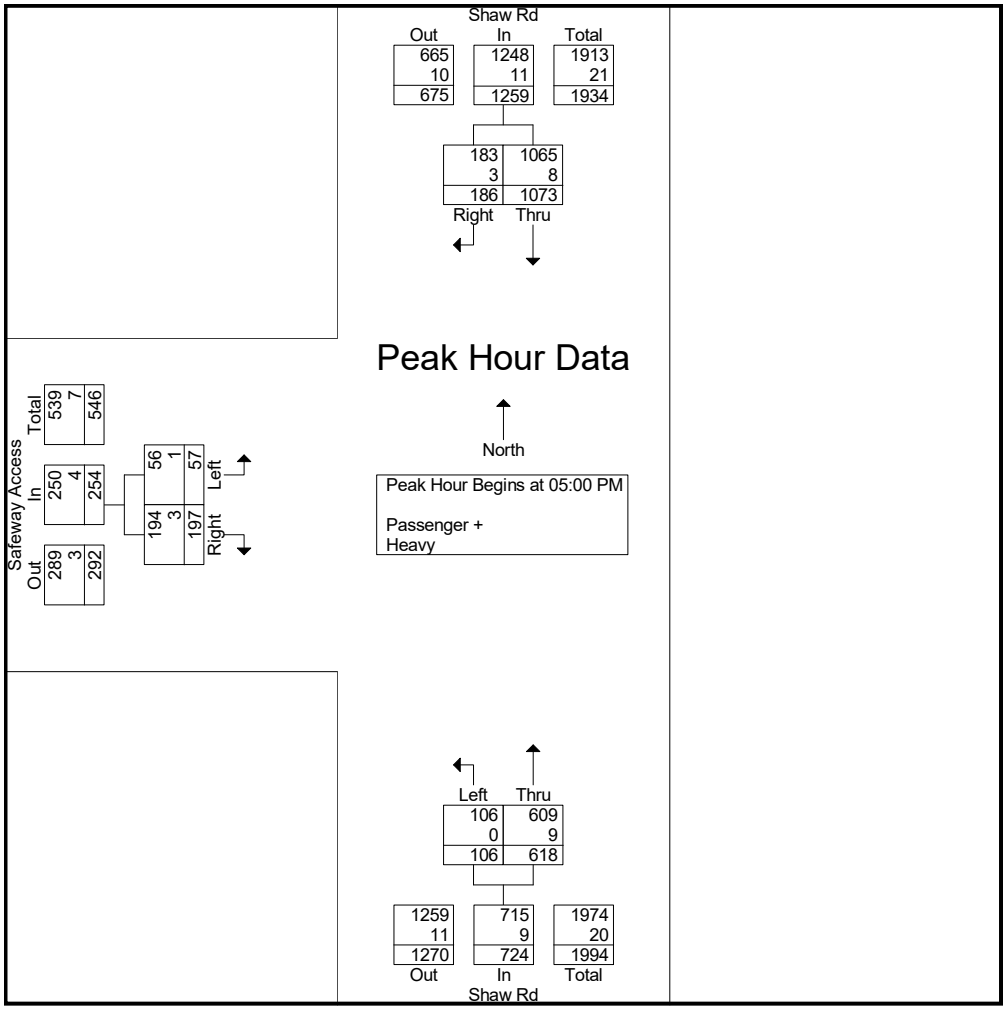
	Shaw Rd Southbound			Shaw Rd Northbound			Safeway Access Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
04:00 PM	51	208	259	153	20	173	51	17	68	500
04:15 PM	49	246	295	176	19	195	51	7	58	548
04:30 PM	32	256	288	142	24	166	42	15	57	511
04:45 PM	48	272	320	144	23	167	44	10	54	541
Total	180	982	1162	615	86	701	188	49	237	2100
05:00 PM	45	270	315	142	22	164	42	19	61	540
05:15 PM	48	282	330	176	23	199	53	12	65	594
05:30 PM	45	272	317	141	21	162	47	14	61	540
05:45 PM	48	249	297	159	40	199	55	12	67	563
Total	186	1073	1259	618	106	724	197	57	254	2237
Grand Total	366	2055	2421	1233	192	1425	385	106	491	4337
Apprch %	15.1	84.9		86.5	13.5		78.4	21.6		
Total %	8.4	47.4	55.8	28.4	4.4	32.9	8.9	2.4	11.3	
Passenger +	361	2035	2396	1213	192	1405	381	105	486	4287
% Passenger +	98.6	99	99	98.4	100	98.6	99	99.1	99	98.8
Heavy	5	20	25	20	0	20	4	1	5	50
% Heavy	1.4	1	1	1.6	0	1.4	1	0.9	1	1.2

Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4074gg
Site Code : 00004074
Start Date : 5/4/2022
Page No : 2

	Shaw Rd Southbound			Shaw Rd Northbound			Safeway Access Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	45	270	315	142	22	164	42	**19**	61	540
05:15 PM	**48**	**282**	**330**	**176**	23	**199**	53	12	65	**594**
05:30 PM	45	272	317	141	21	162	47	14	61	540
05:45 PM	48	249	297	159	**40**	199	**55**	12	**67**	563
Total Volume	186	1073	1259	618	106	724	197	57	254	2237
% App. Total	14.8	85.2		85.4	14.6		77.6	22.4		
PHF	.969	.951	.954	.878	.663	.910	.895	.750	.948	.941
Passenger +	183	1065	1248	609	106	715	194	56	250	2213
% Passenger +	98.4	99.3	99.1	98.5	100	98.8	98.5	98.2	98.4	98.9
Heavy	3	8	11	9	0	9	3	1	4	24
% Heavy	1.6	0.7	0.9	1.5	0	1.2	1.5	1.8	1.6	1.1



EAST TOWN CROSSING
TRAFFIC IMPACT ANALYSIS

APPENDIX

TRIP GENERATION SUMMARY

Heath & Associates Transportation Engineering
Project: East Town Crossing
Jurisdiction: City of Puyallup

East Town Crossing - Trip Generation Summary

Average Weekday Trips

Development	Land Use	LUC	Variable	Value	Rate	Distribution		Total Trips			Internal Capture		Pass-by Trips		Primary Trips		
						In	Out	In	Out	Total	%	Total	%	Total	In	Out	Total
Previous	Single-Family	#210	Dwelling Units	3	9.43	50%	50%	14.1	14.1	28.3	0%	0	0%	0.0	14.1	14.1	28.3
Proposed	Multi-Family (Low-Rise)	#220	Dwelling Units	193	6.74	50%	50%	650.4	650.4	1300.8	8%	104.1	0%	0.0	598.4	598.4	1196.8
	Strip Retail Plaza	#822	1000 Sq. Ft.	10.2	54.45	50%	50%	277.7	277.7	555.4	8%	44.4	26%	132.8	189.1	189.1	378.1
												Net New Primary Trips			**773.3**	**773.3**	**1546.6**

Weekday AM Peak Hour

Development	Land Use	LUC	Variable	Value	Rate	Distribution		Total Trips			Internal Capture		Pass-by Trips		Primary Trips		
						In	Out	In	Out	Total	%	Total	%	Total	In	Out	Total
Previous	Single-Family	#210	Dwelling Units	3	0.7	26%	74%	0.5	1.6	2.1	0%	0	0%	0.0	0.5	1.6	2.1
Proposed	Multi-Family (Low-Rise)	#220	Dwelling Units	193	0.4	24%	76%	18.5	58.7	77.2	2%	1.5	0%	0.0	18.2	57.5	75.7
	Strip Retail Plaza	#822	1000 Sq. Ft.	10.2	2.36	60%	40%	14.4	9.6	24.1	2%	0.5	26%	6.1	10.5	7.0	17.5
												Net New Primary Trips			**28.1**	**62.9**	**91.0**

Weekday PM Peak Hour

Development	Land Use	LUC	Variable	Value	Rate	Distribution		Total Trips			Internal Capture		Pass-by Trips		Primary Trips		
						In	Out	In	Out	Total	%	Total	%	Total	In	Out	Total
Previous	Single-Family	#210	Dwelling Units	3	0.94	63%	37%	1.8	1.0	2.8	0%	0	0%	0.0	1.8	1.0	2.8
Proposed	Multi-Family (Low-Rise)	#220	Dwelling Units	193	0.51	63%	37%	62.0	36.4	98.4	14%	13.8	0%	0.0	53.3	31.3	84.6
	Strip Retail Plaza	#822	1000 Sq. Ft.	10.2	6.59	50%	50%	33.6	33.6	67.2	14%	9.4	34%	19.7	19.1	19.1	38.2
												Net New Primary Trips			**70.6**	**49.4**	**120.0**

Sources:
Institute of Transportation Engineers, *Trip Generation Manual,* 11th Edition, (2021).
Institute of Transportation Engineers, *Trip Generation Handbook,* 3rd Edition, (2017).
Internal Capture Rates based on NCHRP 8-51 Internal Capture (ADT rates are the average of the AM/PM)

EAST TOWN CROSSING
TRAFFIC IMPACT ANALYSIS

APPENDIX

NCHRP 8-51 INTERNAL TRIP CAPTURE
ESTIMATION TOOL

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	East Side Crossing	**Organization:**	Heath & Associates
Project Location:	City of Puyallup	**Performed By:**	PW
Scenario Description:	Full Buildout	**Date:**	2/22/2022
Analysis Year:	2022	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	10,200	SF	24	14.4	9.6
Restaurant						
Cinema/Entertainment				0		
Residential	220	193	Dwelling Units	69.8	18.5	58.7
Hotel				0		
All Other Land Uses[2]				0		
Total				93.8	32.9	68.3

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	102	33	69
Internal Capture Percentage	2%	3%	1%
External Vehicle-Trips[3]	100	32	68
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	7%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	2%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	East Side Crossing
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	14.4	14	1.00	9.6	10
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	18.5	19	1.00	58.7	59
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	3		1	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	12	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	1		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	2	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	13	14	13	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	19	19	19	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	10	10	10	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	58	59	58	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	East Side Crossing	**Organization:**	Heath & Associates
Project Location:	City of Puyallup	**Performed By:**	AV
Scenario Description:	Full Buildout	**Date:**	2/22/2022
Analysis Year:	2022	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	10,200	SF	67.2	33.6	33.6
Restaurant				0	0	0
Cinema/Entertainment				0		
Residential	220	193	Dwelling Units	98.4	62	36.4
Hotel				0		
All Other Land Uses[2]				0		
Total				165.6	95.6	70

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	9	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	3	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	166	96	70
Internal Capture Percentage	14%	13%	17%
External Vehicle-Trips[3]	142	84	58
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	9%	26%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	15%	8%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	East Side Crossing
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends							
Land Use	Table 7-P (D): Entering Trips				Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*		Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0		1.00	0	0
Retail	1.00	33.6	34		1.00	33.6	34
Restaurant	1.00	0	0		1.00	0	0
Cinema/Entertainment	1.00	0	0		1.00	0	0
Residential	1.00	62	62		1.00	36.4	36
Hotel	1.00	0	0		1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		10	1	9	2
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	15	8	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	0	0	2	0
Retail	0		0	0	29	0
Restaurant	0	17		0	10	0
Cinema/Entertainment	0	1	0		2	0
Residential	0	3	0	0		0
Hotel	0	1	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	3	31	34	31	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	9	53	62	53	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	9	25	34	25	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	33	36	33	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

EAST TOWN CROSSING
TRAFFIC IMPACT ANALYSIS

APPENDIX

LEVEL OF SERVICE

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	353	170	915	709	166	515
Future Volume (veh/h)	353	170	915	709	166	515
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		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	1885	1870	1856	1841	1885
Adj Flow Rate, veh/h	384	185	995	771	180	560
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	1	2	3	4	1
Cap, veh/h	727	316	1088	1101	455	729
Arrive On Green	0.20	0.20	0.31	0.59	0.26	0.26
Sat Flow, veh/h	3647	1546	3456	1856	1753	2812
Grp Volume(v), veh/h	384	185	995	771	180	560
Grp Sat Flow(s),veh/h/ln	1777	1546	1728	1856	1753	1406
Q Serve(g_s), s	5.9	6.6	16.9	17.6	5.2	11.2
Cycle Q Clear(g_c), s	5.9	6.6	16.9	17.6	5.2	11.2
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	727	316	1088	1101	455	729
V/C Ratio(X)	0.53	0.59	0.91	0.70	0.40	0.77
Avail Cap(c_a), veh/h	1690	735	1105	1613	805	1291
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	21.6	21.9	20.1	8.6	18.6	20.9
Incr Delay (d2), s/veh	0.6	1.7	11.5	0.8	0.6	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	2.3	7.7	5.3	2.0	3.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.2	23.6	31.6	9.5	19.2	22.6
LnGrp LOS	C	C	C	A	B	C
Approach Vol, veh/h	569			1766	740	
Approach Delay, s/veh	22.7			21.9	21.8	
Approach LOS	C			C	C	

Timer - Assigned Phs	2	3	4	8
Phs Duration (G+Y+Rc), s	20.3	23.7	17.0	40.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	28.0	19.5	29.0	53.0
Max Q Clear Time (g_c+I1), s	13.2	18.9	8.6	19.6
Green Ext Time (p_c), s	2.6	0.3	3.0	6.3

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBT] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	717	18	15	601	10	7
Future Vol, veh/h	717	18	15	601	10	7
Conflicting Peds, #/hr	0	0	0	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	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	2	1	1
Mvmt Flow	732	18	15	613	10	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	750	0	1078	375
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	337	-
Critical Hdwy	-	-	4.12	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	-	-	2.21	-	3.51	3.31
Pot Cap-1 Maneuver	-	-	862	-	215	625
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	698	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	862	-	209	625
Mov Cap-2 Maneuver	-	-	-	-	209	-
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	680	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	18.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	288	-	-	862	-
HCM Lane V/C Ratio	0.06	-	-	0.018	-
HCM Control Delay (s)	18.3	-	-	9.3	0.1
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	666	58	139	565	51	141
Future Volume (veh/h)	666	58	139	565	51	141
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		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	1885	1885	1885	1870	1841	1885
Adj Flow Rate, veh/h	724	63	151	614	55	153
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	2	4	1
Cap, veh/h	1698	148	351	1225	312	284
Arrive On Green	0.51	0.51	0.51	0.51	0.18	0.18
Sat Flow, veh/h	3420	289	338	2486	1753	1598
Grp Volume(v), veh/h	390	397	352	413	55	153
Grp Sat Flow(s),veh/h/ln	1791	1824	1122	1617	1753	1598
Q Serve(g_s), s	3.9	3.9	2.0	4.8	0.8	2.5
Cycle Q Clear(g_c), s	3.9	3.9	6.0	4.8	0.8	2.5
Prop In Lane		0.16	0.43		1.00	1.00
Lane Grp Cap(c), veh/h	914	931	751	825	312	284
V/C Ratio(X)	0.43	0.43	0.47	0.50	0.18	0.54
Avail Cap(c_a), veh/h	3379	3442	2232	3051	1608	1466
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	4.4	4.4	4.5	4.6	10.1	10.8
Incr Delay (d2), s/veh	0.3	0.3	0.5	0.5	0.3	1.6
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	0.5	0.4	0.6	0.2	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.7	4.7	5.0	5.1	10.3	12.4
LnGrp LOS	A	A	A	A	B	B
Approach Vol, veh/h	787			765	208	
Approach Delay, s/veh	4.7			5.1	11.8	
Approach LOS	A			A	B	

Timer - Assigned Phs	2	4	8
Phs Duration (G+Y+Rc), s	9.6	19.2	19.2
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	26.5	54.5	54.5
Max Q Clear Time (g_c+I1), s	4.5	5.9	8.0
Green Ext Time (p_c), s	0.6	5.6	6.7

Intersection Summary	
HCM 6th Ctrl Delay	5.7
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	782	25	9	678	26	37
Future Vol, veh/h	782	25	9	678	26	37
Conflicting Peds, #/hr	0	0	0	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, %	1	1	1	2	1	1
Mvmt Flow	850	27	10	737	28	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	877	0	1253	439
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	389	-
Critical Hdwy	-	-	4.12	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	-	-	2.21	-	3.51	3.31
Pot Cap-1 Maneuver	-	-	772	-	165	568
Stage 1	-	-	-	-	375	-
Stage 2	-	-	-	-	657	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	772	-	161	568
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	375	-
Stage 2	-	-	-	-	643	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	22.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	278	-	-	772	-
HCM Lane V/C Ratio	0.246	-	-	0.013	-
HCM Control Delay (s)	22.1	-	-	9.7	0.1
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	46	678	5	124	1146
Future Vol, veh/h	5	46	678	5	124	1146
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	250	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	50	737	5	135	1246

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2253	737	0	0	742	0
Stage 1	737	-	-	-	-	-
Stage 2	1516	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	46	420	-	-	870	-
Stage 1	475	-	-	-	-	-
Stage 2	201	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	39	420	-	-	870	-
Mov Cap-2 Maneuver	39	-	-	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	170	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.2	0	1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	39	420	870	-
HCM Lane V/C Ratio	-	-	0.139	0.119	0.155	-
HCM Control Delay (s)	-	-	111.7	14.7	9.9	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.4	0.5	-

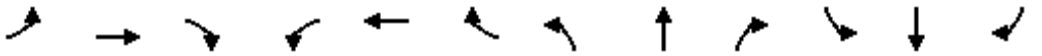
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	0	1	645	999	107
Future Vol, veh/h	10	0	1	645	999	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	75	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	10	0	1	658	1019	109

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1734	1074	1128	0	-	0
Stage 1	1074	-	-	-	-	-
Stage 2	660	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	97	268	623	-	-	-
Stage 1	329	-	-	-	-	-
Stage 2	516	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	97	268	623	-	-	-
Mov Cap-2 Maneuver	97	-	-	-	-	-
Stage 1	328	-	-	-	-	-
Stage 2	516	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	46.4	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	623	-	97	-	-	-
HCM Lane V/C Ratio	0.002	-	0.105	-	-	-
HCM Control Delay (s)	10.8	0	46.4	0	-	-
HCM Lane LOS	B	A	E	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	49	41	30	37	17	46	450	26	12	876	152
Future Volume (veh/h)	99	49	41	30	37	17	46	450	26	12	876	152
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.98		0.95	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	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	108	53	45	33	40	18	50	489	28	13	952	165
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, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	278	104	89	227	89	40	245	1136	940	538	1095	905
Arrive On Green	0.07	0.11	0.11	0.03	0.07	0.07	0.04	0.61	0.61	0.02	0.58	0.58
Sat Flow, veh/h	1795	921	782	1795	1207	543	1781	1870	1547	1795	1885	1559
Grp Volume(v), veh/h	108	0	98	33	0	58	50	489	28	13	952	165
Grp Sat Flow(s),veh/h/ln	1795	0	1703	1795	0	1750	1781	1870	1547	1795	1885	1559
Q Serve(g_s), s	4.2	0.0	4.2	1.3	0.0	2.5	0.8	10.8	0.6	0.2	33.4	3.9
Cycle Q Clear(g_c), s	4.2	0.0	4.2	1.3	0.0	2.5	0.8	10.8	0.6	0.2	33.4	3.9
Prop In Lane	1.00		0.46	1.00		0.31	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	278	0	193	227	0	129	245	1136	940	538	1095	905
V/C Ratio(X)	0.39	0.00	0.51	0.15	0.00	0.45	0.20	0.43	0.03	0.02	0.87	0.18
Avail Cap(c_a), veh/h	298	0	437	283	0	415	284	1726	1427	625	1740	1438
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	1.00	1.00
Uniform Delay (d), s/veh	29.8	0.0	32.5	31.7	0.0	34.6	13.6	8.1	6.1	6.9	13.8	7.7
Incr Delay (d2), s/veh	0.9	0.0	2.1	0.3	0.0	2.4	0.4	0.3	0.0	0.0	3.0	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	1.8	0.6	0.0	1.1	0.4	3.7	0.2	0.1	12.4	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.7	0.0	34.6	32.0	0.0	37.0	14.0	8.4	6.1	6.9	16.9	7.8
LnGrp LOS	C	A	C	C	A	D	B	A	A	A	B	A
Approach Vol, veh/h		206			91			567			1130	
Approach Delay, s/veh		32.6			35.2			8.8			15.4	
Approach LOS		C			D			A			B	

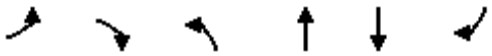
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.7	51.9	7.1	13.3	7.8	49.8	10.1	10.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	72.0	5.0	20.0	5.0	72.0	6.5	18.5
Max Q Clear Time (g_c+I1), s	2.2	12.8	3.3	6.2	2.8	35.4	6.2	4.5
Green Ext Time (p_c), s	0.0	3.5	0.0	0.3	0.0	10.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	309	270	139	253	55	130	490	66	95	910	131
Future Volume (veh/h)	156	309	270	139	253	55	130	490	66	95	910	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	15	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	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	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1786	1772	1786	1786	1758	1786	1772	1786	1758	1730	1786	1786
Adj Flow Rate, veh/h	164	325	284	146	266	58	137	516	69	100	958	138
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	1	1	3	1	2	1	3	5	1	1
Cap, veh/h	195	377	316	195	294	64	617	1005	134	431	1244	153
Arrive On Green	0.07	0.21	0.21	0.07	0.21	0.21	0.38	0.67	0.67	0.26	0.41	0.41
Sat Flow, veh/h	1701	1772	1484	1701	1393	304	3274	2998	399	1647	2970	428
Grp Volume(v), veh/h	164	325	284	146	0	324	137	291	294	100	547	549
Grp Sat Flow(s),veh/h/ln	1701	1772	1484	1701	0	1696	1637	1697	1701	1647	1697	1701
Q Serve(g_s), s	10.7	26.5	19.1	10.1	0.0	27.9	4.3	12.9	13.1	7.2	42.2	42.3
Cycle Q Clear(g_c), s	10.7	26.5	19.1	10.1	0.0	27.9	4.3	12.9	13.1	7.2	42.2	42.3
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.23	1.00		0.25
Lane Grp Cap(c), veh/h	195	377	316	195	0	359	617	569	570	431	693	699
V/C Ratio(X)	0.84	0.86	0.90	0.75	0.00	0.90	0.22	0.51	0.52	0.23	0.79	0.78
Avail Cap(c_a), veh/h	195	587	492	195	0	560	617	569	570	431	693	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.98	0.98	0.98	0.50	0.50	0.50
Uniform Delay (d), s/veh	47.3	56.9	26.9	45.2	0.0	57.6	39.2	18.5	18.6	43.5	39.9	39.7
Incr Delay (d2), s/veh	26.8	7.9	13.3	14.8	0.0	12.4	0.2	3.2	3.2	0.1	4.6	4.5
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	4.0	3.8
%ile BackOfQ(50%),veh/ln	6.3	12.6	7.9	5.1	0.0	13.1	1.7	4.4	4.4	3.0	20.6	20.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.1	64.8	40.2	60.0	0.0	70.0	39.4	21.7	21.8	43.6	48.5	48.0
LnGrp LOS	E	E	D	E	A	E	D	C	C	D	D	D
Approach Vol, veh/h		773			470			722			1196	
Approach Delay, s/veh		57.7			66.9			25.1			47.9	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	43.8	54.8	15.0	36.4	32.8	65.8	15.2	36.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	21.5	50.3	10.5	49.7	10.5	61.3	10.7	49.5
Max Q Clear Time (g_c+I1), s	9.2	15.1	12.1	28.5	6.3	44.3	12.7	29.9
Green Ext Time (p_c), s	0.2	3.8	0.0	2.9	0.1	6.7	0.0	1.8

Intersection Summary	
HCM 6th Ctrl Delay	47.9
HCM 6th LOS	D



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	197	106	618	1073	186
Future Volume (veh/h)	57	197	106	618	1073	186
Initial Q (Qb), veh	0	0	0	0	10	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.98
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	1885	1870	1786	1870
Adj Flow Rate, veh/h	61	210	113	657	1141	198
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	1	2	1	2
Cap, veh/h	261	232	383	2819	1899	318
Arrive On Green	0.15	0.15	0.03	0.79	0.97	0.97
Sat Flow, veh/h	1781	1585	1795	3647	3032	447
Grp Volume(v), veh/h	61	210	113	657	589	750
Grp Sat Flow(s),veh/h/ln	1781	1585	1795	1777	1339	1693
Q Serve(g_s), s	4.5	19.5	2.3	7.0	4.6	4.6
Cycle Q Clear(g_c), s	4.5	19.5	2.3	7.0	4.6	4.6
Prop In Lane	1.00	1.00	1.00			0.26
Lane Grp Cap(c), veh/h	261	232	383	2819	977	1237
V/C Ratio(X)	0.23	0.90	0.30	0.23	0.60	0.61
Avail Cap(c_a), veh/h	327	291	581	2819	978	1236
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.73	0.73
Uniform Delay (d), s/veh	56.5	63.0	6.6	3.9	0.8	0.8
Incr Delay (d2), s/veh	0.5	25.7	0.4	0.2	2.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.5	0.3
%ile BackOfQ(50%),veh/ln	2.1	17.9	1.0	2.3	1.3	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	57.0	88.7	7.0	4.1	3.3	2.7
LnGrp LOS	E	F	A	A	A	A
Approach Vol, veh/h	271			770	1339	
Approach Delay, s/veh	81.5			4.5	3.0	
Approach LOS	F			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		123.5		26.5	9.5	114.0
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		113.5		27.5	20.5	88.5
Max Q Clear Time (g_c+I1), s		9.0		21.5	4.3	6.6
Green Ext Time (p_c), s		5.1		0.5	0.2	13.7

Intersection Summary	
HCM 6th Ctrl Delay	12.4
HCM 6th LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	386	186	1000	775	181	563
Future Volume (veh/h)	386	186	1000	775	181	563
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		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	1885	1870	1856	1841	1885
Adj Flow Rate, veh/h	420	202	1087	842	197	612
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	1	2	3	4	1
Cap, veh/h	758	330	1045	1086	482	773
Arrive On Green	0.21	0.21	0.30	0.59	0.27	0.27
Sat Flow, veh/h	3647	1546	3456	1856	1753	2812
Grp Volume(v), veh/h	420	202	1087	842	197	612
Grp Sat Flow(s),veh/h/ln	1777	1546	1728	1856	1753	1406
Q Serve(g_s), s	6.8	7.6	19.5	22.2	5.9	13.0
Cycle Q Clear(g_c), s	6.8	7.6	19.5	22.2	5.9	13.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	758	330	1045	1086	482	773
V/C Ratio(X)	0.55	0.61	1.04	0.78	0.41	0.79
Avail Cap(c_a), veh/h	1598	695	1045	1525	761	1221
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	22.6	23.0	22.5	10.1	19.1	21.7
Incr Delay (d2), s/veh	0.6	1.8	38.8	1.7	0.6	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.7	12.7	7.2	2.3	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.3	24.8	61.3	11.8	19.7	23.6
LnGrp LOS	C	C	F	B	B	C
Approach Vol, veh/h	622			1929	809	
Approach Delay, s/veh	23.8			39.7	22.6	
Approach LOS	C			D	C	

Timer - Assigned Phs	2	3	4	8
Phs Duration (G+Y+Rc), s	22.2	24.0	18.3	42.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	28.0	19.5	29.0	53.0
Max Q Clear Time (g_c+I1), s	15.0	21.5	9.6	24.2
Green Ext Time (p_c), s	2.7	0.0	3.3	7.0

Intersection Summary	
HCM 6th Ctrl Delay	32.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBT] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	783	20	16	657	11	8
Future Vol, veh/h	783	20	16	657	11	8
Conflicting Peds, #/hr	0	0	0	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	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	2	1	1
Mvmt Flow	799	20	16	670	11	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	819	0	1176	410
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	367	-
Critical Hdwy	-	-	4.12	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	-	-	2.21	-	3.51	3.31
Pot Cap-1 Maneuver	-	-	812	-	186	594
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	674	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	812	-	180	594
Mov Cap-2 Maneuver	-	-	-	-	180	-
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	653	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	20.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	255	-	-	812	-
HCM Lane V/C Ratio	0.076	-	-	0.02	-
HCM Control Delay (s)	20.3	-	-	9.5	0.1
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	728	63	152	617	56	154
Future Volume (veh/h)	728	63	152	617	56	154
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		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	1885	1885	1885	1870	1841	1885
Adj Flow Rate, veh/h	791	68	165	671	61	167
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	2	4	1
Cap, veh/h	1843	158	345	1258	310	282
Arrive On Green	0.55	0.55	0.55	0.55	0.18	0.18
Sat Flow, veh/h	3424	286	340	2357	1753	1598
Grp Volume(v), veh/h	425	434	364	472	61	167
Grp Sat Flow(s),veh/h/ln	1791	1825	995	1617	1753	1598
Q Serve(g_s), s	4.6	4.6	4.1	6.1	1.0	3.2
Cycle Q Clear(g_c), s	4.6	4.6	8.7	6.1	1.0	3.2
Prop In Lane		0.16	0.45		1.00	1.00
Lane Grp Cap(c), veh/h	991	1010	707	895	310	282
V/C Ratio(X)	0.43	0.43	0.52	0.53	0.20	0.59
Avail Cap(c_a), veh/h	2925	2981	1790	2641	1392	1269
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	4.4	4.4	4.9	4.7	11.7	12.6
Incr Delay (d2), s/veh	0.3	0.3	0.6	0.5	0.3	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.7	0.6	0.8	0.3	1.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.7	4.7	5.5	5.2	12.0	14.6
LnGrp LOS	A	A	A	A	B	B
Approach Vol, veh/h	859			836	228	
Approach Delay, s/veh	4.7			5.3	13.9	
Approach LOS	A			A	B	

Timer - Assigned Phs	2	4	8
Phs Duration (G+Y+Rc), s	10.4	23.0	23.0
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	26.5	54.5	54.5
Max Q Clear Time (g_c+I1), s	5.2	6.6	10.7
Green Ext Time (p_c), s	0.7	6.3	7.7

Intersection Summary	
HCM 6th Ctrl Delay	6.0
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	855	27	10	741	28	40
Future Vol, veh/h	855	27	10	741	28	40
Conflicting Peds, #/hr	0	0	0	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, %	1	1	1	2	1	1
Mvmt Flow	929	29	11	805	30	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	958	0	1369	479
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	425	-
Critical Hdwy	-	-	4.12	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	-	-	2.21	-	3.51	3.31
Pot Cap-1 Maneuver	-	-	720	-	139	535
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	630	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	720	-	135	535
Mov Cap-2 Maneuver	-	-	-	-	135	-
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	612	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	26.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	241	-	-	720	-
HCM Lane V/C Ratio	0.307	-	-	0.015	-
HCM Control Delay (s)	26.4	-	-	10.1	0.1
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	1.3	-	-	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	50	741	5	135	1252
Future Vol, veh/h	5	50	741	5	135	1252
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	250	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	54	805	5	147	1361

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2460	805	0	0	810	0
Stage 1	805	-	-	-	-	-
Stage 2	1655	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	34	384	-	-	820	-
Stage 1	442	-	-	-	-	-
Stage 2	172	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	28	384	-	-	820	-
Mov Cap-2 Maneuver	28	-	-	-	-	-
Stage 1	442	-	-	-	-	-
Stage 2	141	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	29.2	0	1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	28	384	820	-
HCM Lane V/C Ratio	-	-	0.194	0.142	0.179	-
HCM Control Delay (s)	-	-	162.3	15.9	10.3	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	0.6	0.5	0.6	-

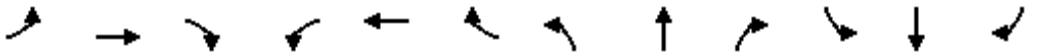
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	0	1	705	1092	117
Future Vol, veh/h	11	0	1	705	1092	117
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	75	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	11	0	1	719	1114	119

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1895	1174	1233	0	-	0
Stage 1	1174	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	77	235	569	-	-	-
Stage 1	295	-	-	-	-	-
Stage 2	483	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	77	235	569	-	-	-
Mov Cap-2 Maneuver	77	-	-	-	-	-
Stage 1	294	-	-	-	-	-
Stage 2	483	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	59.6	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	569	-	77	-	-	-
HCM Lane V/C Ratio	0.002	-	0.146	-	-	-
HCM Control Delay (s)	11.3	0	59.6	0	-	-
HCM Lane LOS	B	A	F	A	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	54	45	33	40	19	50	492	28	13	957	166
Future Volume (veh/h)	108	54	45	33	40	19	50	492	28	13	957	166
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.98		0.94	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	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	117	59	49	36	43	21	54	535	30	14	1040	180
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, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	259	104	86	204	82	40	218	1196	989	531	1159	958
Arrive On Green	0.07	0.11	0.11	0.03	0.07	0.07	0.04	0.64	0.64	0.02	0.61	0.61
Sat Flow, veh/h	1795	931	774	1795	1170	572	1781	1870	1547	1795	1885	1559
Grp Volume(v), veh/h	117	0	108	36	0	64	54	535	30	14	1040	180
Grp Sat Flow(s),veh/h/ln	1795	0	1705	1795	0	1742	1781	1870	1547	1795	1885	1559
Q Serve(g_s), s	5.3	0.0	5.4	1.7	0.0	3.2	1.0	13.0	0.6	0.3	42.7	4.5
Cycle Q Clear(g_c), s	5.3	0.0	5.4	1.7	0.0	3.2	1.0	13.0	0.6	0.3	42.7	4.5
Prop In Lane	1.00		0.45	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	259	0	190	204	0	122	218	1196	989	531	1159	958
V/C Ratio(X)	0.45	0.00	0.57	0.18	0.00	0.53	0.25	0.45	0.03	0.03	0.90	0.19
Avail Cap(c_a), veh/h	259	0	379	245	0	354	243	1495	1237	601	1507	1246
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	1.00	1.00
Uniform Delay (d), s/veh	34.3	0.0	38.0	37.0	0.0	40.4	17.0	8.2	6.0	6.8	14.9	7.6
Incr Delay (d2), s/veh	1.2	0.0	2.7	0.4	0.0	3.5	0.6	0.3	0.0	0.0	6.2	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	2.3	0.7	0.0	1.5	0.6	4.5	0.2	0.1	17.1	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.5	0.0	40.6	37.4	0.0	43.9	17.6	8.5	6.0	6.9	21.1	7.6
LnGrp LOS	D	A	D	D	A	D	B	A	A	A	C	A
Approach Vol, veh/h		225			100			619			1234	
Approach Delay, s/veh		38.0			41.6			9.1			19.0	
Approach LOS		D			D			A			B	

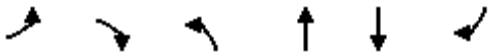
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	62.1	7.5	14.5	8.2	59.9	11.2	10.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	72.0	5.0	20.0	5.0	72.0	6.7	18.3
Max Q Clear Time (g_c+I1), s	2.3	15.0	3.7	7.4	3.0	44.7	7.3	5.2
Green Ext Time (p_c), s	0.0	3.9	0.0	0.4	0.0	10.7	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	19.2
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	338	295	152	276	60	142	535	72	104	994	143
Future Volume (veh/h)	170	338	295	152	276	60	142	535	72	104	994	143
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	15	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	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	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1786	1772	1786	1786	1758	1786	1772	1786	1758	1730	1786	1786
Adj Flow Rate, veh/h	179	356	311	160	291	63	149	563	76	109	1046	151
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	1	1	3	1	2	1	3	5	1	1
Cap, veh/h	195	408	342	194	320	69	559	1004	135	402	1258	145
Arrive On Green	0.07	0.23	0.23	0.07	0.23	0.23	0.34	0.67	0.67	0.24	0.41	0.41
Sat Flow, veh/h	1701	1772	1485	1701	1395	302	3274	2994	403	1647	2969	428
Grp Volume(v), veh/h	179	356	311	160	0	354	149	318	321	109	597	600
Grp Sat Flow(s),veh/h/ln	1701	1772	1485	1701	0	1697	1637	1697	1700	1647	1697	1701
Q Serve(g_s), s	10.7	29.0	21.4	10.5	0.0	30.5	4.9	14.8	15.0	8.0	48.2	48.3
Cycle Q Clear(g_c), s	10.7	29.0	21.4	10.5	0.0	30.5	4.9	14.8	15.0	8.0	48.2	48.3
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.24	1.00		0.25
Lane Grp Cap(c), veh/h	195	408	342	194	0	389	559	569	570	402	693	701
V/C Ratio(X)	0.92	0.87	0.91	0.82	0.00	0.91	0.27	0.56	0.56	0.27	0.86	0.86
Avail Cap(c_a), veh/h	195	587	492	194	0	560	559	569	570	402	693	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.98	0.98	0.98	0.31	0.31	0.31
Uniform Delay (d), s/veh	47.8	55.6	27.5	45.0	0.0	56.3	42.6	18.9	18.9	45.9	41.7	41.5
Incr Delay (d2), s/veh	42.3	9.8	15.9	24.0	0.0	14.6	0.2	3.9	3.9	0.1	4.6	4.4
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	6.1	5.7
%ile BackOfQ(50%),veh/ln	4.1	14.0	9.1	5.9	0.0	14.6	1.9	4.9	4.9	3.3	23.6	23.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.1	65.4	43.4	69.0	0.0	70.9	42.8	22.7	22.8	46.0	52.4	51.6
LnGrp LOS	F	E	D	E	A	E	D	C	C	D	D	D
Approach Vol, veh/h		846			514			788			1306	
Approach Delay, s/veh		62.5			70.3			26.5			51.5	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	41.1	54.8	15.0	39.1	30.1	65.8	15.2	38.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	21.5	50.3	10.5	49.7	10.5	61.3	10.7	49.5
Max Q Clear Time (g_c+I1), s	10.0	17.0	12.5	31.0	6.9	50.3	12.7	32.5
Green Ext Time (p_c), s	0.2	4.2	0.0	3.1	0.1	5.7	0.0	1.9

Intersection Summary	
HCM 6th Ctrl Delay	51.3
HCM 6th LOS	D



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	62	215	116	675	1172	203
Future Volume (veh/h)	62	215	116	675	1172	203
Initial Q (Qb), veh	0	0	0	0	10	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.98
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	1885	1870	1786	1870
Adj Flow Rate, veh/h	66	229	123	718	1247	216
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	1	2	1	2
Cap, veh/h	282	251	336	2779	1872	310
Arrive On Green	0.16	0.16	0.03	0.78	0.96	0.96
Sat Flow, veh/h	1781	1585	1795	3647	3034	445
Grp Volume(v), veh/h	66	229	123	718	641	822
Grp Sat Flow(s),veh/h/ln	1781	1585	1795	1777	1339	1693
Q Serve(g_s), s	4.9	21.3	2.6	8.3	8.7	9.0
Cycle Q Clear(g_c), s	4.9	21.3	2.6	8.3	8.7	9.0
Prop In Lane	1.00	1.00	1.00			0.26
Lane Grp Cap(c), veh/h	282	251	336	2779	961	1217
V/C Ratio(X)	0.23	0.91	0.37	0.26	0.67	0.68
Avail Cap(c_a), veh/h	327	291	534	2779	963	1217
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.64	0.64
Uniform Delay (d), s/veh	55.2	62.1	8.0	4.5	1.4	1.3
Incr Delay (d2), s/veh	0.4	29.1	0.7	0.2	2.4	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.6	0.4
%ile BackOfQ(50%),veh/ln	2.3	19.6	1.2	2.8	1.8	2.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.6	91.2	8.7	4.7	4.4	3.7
LnGrp LOS	E	F	A	A	A	A
Approach Vol, veh/h	295			841	1463	
Approach Delay, s/veh	83.2			5.3	4.0	
Approach LOS	F			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		121.8		28.2	9.5	112.3
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		113.5		27.5	20.5	88.5
Max Q Clear Time (g_c+I1), s		10.3		23.3	4.6	11.0
Green Ext Time (p_c), s		5.7		0.4	0.3	16.4

Intersection Summary		
HCM 6th Ctrl Delay		13.4
HCM 6th LOS		B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	386	191	1016	775	184	575
Future Volume (veh/h)	386	191	1016	775	184	575
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		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	1885	1870	1856	1841	1885
Adj Flow Rate, veh/h	420	208	1104	842	200	625
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	1	2	3	4	1
Cap, veh/h	767	334	1032	1082	489	784
Arrive On Green	0.22	0.22	0.30	0.58	0.28	0.28
Sat Flow, veh/h	3647	1547	3456	1856	1753	2812
Grp Volume(v), veh/h	420	208	1104	842	200	625
Grp Sat Flow(s),veh/h/ln	1777	1547	1728	1856	1753	1406
Q Serve(g_s), s	6.9	8.0	19.5	22.6	6.1	13.5
Cycle Q Clear(g_c), s	6.9	8.0	19.5	22.6	6.1	13.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	767	334	1032	1082	489	784
V/C Ratio(X)	0.55	0.62	1.07	0.78	0.41	0.80
Avail Cap(c_a), veh/h	1579	687	1032	1506	752	1206
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	22.8	23.2	22.9	10.4	19.2	21.8
Incr Delay (d2), s/veh	0.6	1.9	48.6	1.8	0.5	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.9	14.0	7.4	2.3	4.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.4	25.1	71.5	12.1	19.7	24.0
LnGrp LOS	C	C	F	B	B	C
Approach Vol, veh/h	628			1946	825	
Approach Delay, s/veh	24.0			45.8	23.0	
Approach LOS	C			D	C	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		22.7	24.0	18.6		42.6
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		28.0	19.5	29.0		53.0
Max Q Clear Time (g_c+I1), s		15.5	21.5	10.0		24.6
Green Ext Time (p_c), s		2.7	0.0	3.3		7.0

Intersection Summary	
HCM 6th Ctrl Delay	36.2
HCM 6th LOS	D

Notes

Unsignalized Delay for [WBT] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	799	20	17	667	11	9
Future Vol, veh/h	799	20	17	667	11	9
Conflicting Peds, #/hr	0	0	0	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	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	2	1	1
Mvmt Flow	815	20	17	681	11	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	835	0	1200	418
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	375	-
Critical Hdwy	-	-	4.12	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	-	-	2.21	-	3.51	3.31
Pot Cap-1 Maneuver	-	-	801	-	179	587
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	668	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	801	-	173	587
Mov Cap-2 Maneuver	-	-	-	-	173	-
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	645	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	20.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	253	-	-	801	-
HCM Lane V/C Ratio	0.081	-	-	0.022	-
HCM Control Delay (s)	20.5	-	-	9.6	0.2
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	745	63	153	628	56	155
Future Volume (veh/h)	745	63	153	628	56	155
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		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	1885	1885	1885	1870	1841	1885
Adj Flow Rate, veh/h	810	68	166	683	61	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	2	4	1
Cap, veh/h	1871	157	341	1266	308	281
Arrive On Green	0.56	0.56	0.56	0.56	0.18	0.18
Sat Flow, veh/h	3431	280	336	2344	1753	1598
Grp Volume(v), veh/h	435	443	367	482	61	168
Grp Sat Flow(s),veh/h/ln	1791	1826	977	1617	1753	1598
Q Serve(g_s), s	4.8	4.8	4.4	6.4	1.0	3.3
Cycle Q Clear(g_c), s	4.8	4.8	9.2	6.4	1.0	3.3
Prop In Lane		0.15	0.45		1.00	1.00
Lane Grp Cap(c), veh/h	1004	1024	701	907	308	281
V/C Ratio(X)	0.43	0.43	0.52	0.53	0.20	0.60
Avail Cap(c_a), veh/h	2858	2915	1727	2581	1360	1240
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	4.4	4.4	4.9	4.7	12.0	13.0
Incr Delay (d2), s/veh	0.3	0.3	0.6	0.5	0.3	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.7	0.6	0.9	0.4	1.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.6	4.6	5.5	5.2	12.3	15.0
LnGrp LOS	A	A	A	A	B	B
Approach Vol, veh/h	878			849	229	
Approach Delay, s/veh	4.6			5.3	14.3	
Approach LOS	A			A	B	

Timer - Assigned Phs	2	4	8
Phs Duration (G+Y+Rc), s	10.5	23.6	23.6
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	26.5	54.5	54.5
Max Q Clear Time (g_c+I1), s	5.3	6.8	11.2
Green Ext Time (p_c), s	0.7	6.5	7.9

Intersection Summary	
HCM 6th Ctrl Delay	6.1
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	873	27	10	753	28	40
Future Vol, veh/h	873	27	10	753	28	40
Conflicting Peds, #/hr	0	0	0	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, %	1	1	1	2	1	1
Mvmt Flow	949	29	11	818	30	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	978	0	1395	489
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	431	-
Critical Hdwy	-	-	4.12	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	-	-	2.21	-	3.51	3.31
Pot Cap-1 Maneuver	-	-	707	-	134	528
Stage 1	-	-	-	-	333	-
Stage 2	-	-	-	-	626	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	707	-	130	528
Mov Cap-2 Maneuver	-	-	-	-	130	-
Stage 1	-	-	-	-	333	-
Stage 2	-	-	-	-	608	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	27.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	234	-	-	707	-
HCM Lane V/C Ratio	0.316	-	-	0.015	-
HCM Control Delay (s)	27.3	-	-	10.2	0.1
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	1.3	-	-	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	51	768	5	136	1271
Future Vol, veh/h	5	51	768	5	136	1271
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	250	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	55	835	5	148	1382

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2513	835	0	0	840	0
Stage 1	835	-	-	-	-	-
Stage 2	1678	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	31	369	-	-	799	-
Stage 1	428	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	25	369	-	-	799	-
Mov Cap-2 Maneuver	25	-	-	-	-	-
Stage 1	428	-	-	-	-	-
Stage 2	136	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.6	0	1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	25	369	799	-
HCM Lane V/C Ratio	-	-	0.217	0.15	0.185	-
HCM Control Delay (s)	-	-	185.3	16.5	10.5	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	0.7	0.5	0.7	-

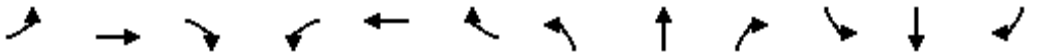
Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	0	1	730	1109	118
Future Vol, veh/h	12	0	1	730	1109	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	75	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	12	0	1	745	1132	120

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1939	1192	1252	0	-	0
Stage 1	1192	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	72	229	559	-	-	-
Stage 1	289	-	-	-	-	-
Stage 2	470	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	72	229	559	-	-	-
Mov Cap-2 Maneuver	72	-	-	-	-	-
Stage 1	288	-	-	-	-	-
Stage 2	470	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	65	0	0
HCM LOS	F		

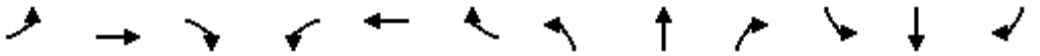
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	559	-	72	-	-	-
HCM Lane V/C Ratio	0.002	-	0.17	-	-	-
HCM Control Delay (s)	11.5	0	65	0	-	-
HCM Lane LOS	B	A	F	A	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	54	45	33	40	20	50	507	28	14	967	172
Future Volume (veh/h)	117	54	45	33	40	20	50	507	28	14	967	172
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.98		0.94	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	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	127	59	49	36	43	22	54	551	30	15	1051	187
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, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	258	105	87	204	80	41	213	1200	993	523	1166	964
Arrive On Green	0.08	0.11	0.11	0.03	0.07	0.07	0.04	0.64	0.64	0.02	0.62	0.62
Sat Flow, veh/h	1795	931	774	1795	1150	588	1781	1870	1547	1795	1885	1559
Grp Volume(v), veh/h	127	0	108	36	0	65	54	551	30	15	1051	187
Grp Sat Flow(s),veh/h/ln	1795	0	1705	1795	0	1738	1781	1870	1547	1795	1885	1559
Q Serve(g_s), s	5.9	0.0	5.5	1.7	0.0	3.3	1.0	13.7	0.7	0.3	44.2	4.8
Cycle Q Clear(g_c), s	5.9	0.0	5.5	1.7	0.0	3.3	1.0	13.7	0.7	0.3	44.2	4.8
Prop In Lane	1.00		0.45	1.00		0.34	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	258	0	192	204	0	122	213	1200	993	523	1166	964
V/C Ratio(X)	0.49	0.00	0.56	0.18	0.00	0.53	0.25	0.46	0.03	0.03	0.90	0.19
Avail Cap(c_a), veh/h	258	0	371	243	0	342	237	1466	1212	589	1477	1222
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	1.00	1.00
Uniform Delay (d), s/veh	35.0	0.0	38.6	37.8	0.0	41.3	17.6	8.4	6.0	6.9	15.1	7.6
Incr Delay (d2), s/veh	1.4	0.0	2.6	0.4	0.0	3.6	0.6	0.3	0.0	0.0	6.7	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	2.4	0.8	0.0	1.5	0.6	4.8	0.2	0.1	17.9	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.4	0.0	41.2	38.2	0.0	44.9	18.2	8.6	6.0	6.9	21.9	7.7
LnGrp LOS	D	A	D	D	A	D	B	A	A	A	C	A
Approach Vol, veh/h		235			101			635			1253	
Approach Delay, s/veh		38.6			42.5			9.3			19.6	
Approach LOS		D			D			A			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	63.5	7.5	14.8	8.2	61.3	11.4	10.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	72.0	5.0	20.0	5.0	72.0	6.9	18.1
Max Q Clear Time (g_c+I1), s	2.3	15.7	3.7	7.5	3.0	46.2	7.9	5.3
Green Ext Time (p_c), s	0.0	4.1	0.0	0.4	0.0	10.6	0.0	0.2

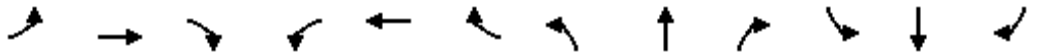
Intersection Summary	
HCM 6th Ctrl Delay	19.7
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	356	295	152	282	67	148	543	72	128	994	143
Future Volume (veh/h)	170	356	295	152	282	67	148	543	72	128	994	143
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	15	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1786	1772	1786	1786	1758	1786	1772	1786	1758	1730	1786	1786
Adj Flow Rate, veh/h	179	375	311	160	297	71	156	572	76	135	1046	151
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	1	1	3	1	2	1	3	5	1	1
Cap, veh/h	195	424	356	192	325	78	530	1008	134	388	1258	145
Arrive On Green	0.07	0.24	0.24	0.07	0.24	0.24	0.16	0.34	0.34	0.24	0.41	0.41
Sat Flow, veh/h	1701	1772	1486	1701	1365	326	3274	3005	398	1647	2969	428
Grp Volume(v), veh/h	179	375	311	160	0	368	156	322	326	135	597	600
Grp Sat Flow(s),veh/h/ln	1701	1772	1486	1701	0	1692	1637	1697	1706	1647	1697	1701
Q Serve(g_s), s	10.7	30.6	21.4	10.5	0.0	31.8	6.3	23.4	23.5	10.2	48.2	48.3
Cycle Q Clear(g_c), s	10.7	30.6	21.4	10.5	0.0	31.8	6.3	23.4	23.5	10.2	48.2	48.3
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.23	1.00		0.25
Lane Grp Cap(c), veh/h	195	424	356	192	0	403	530	569	572	388	693	701
V/C Ratio(X)	0.92	0.88	0.87	0.83	0.00	0.91	0.29	0.57	0.57	0.35	0.86	0.86
Avail Cap(c_a), veh/h	195	587	492	192	0	558	530	569	572	388	693	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.97	0.97	0.97	0.29	0.29	0.29
Uniform Delay (d), s/veh	46.9	55.0	27.5	44.1	0.0	55.7	55.3	40.9	41.0	47.8	41.7	41.5
Incr Delay (d2), s/veh	42.4	11.5	12.3	25.4	0.0	15.7	0.3	3.9	4.0	0.2	4.4	4.2
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	6.1	5.7
%ile BackOfQ(50%),veh/ln	4.1	14.9	8.8	5.9	0.0	15.2	2.6	10.4	10.5	4.2	23.5	23.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	89.3	66.6	39.8	69.5	0.0	71.4	55.6	44.8	44.9	47.9	52.1	51.4
LnGrp LOS	F	E	D	E	A	E	E	D	D	D	D	D
Approach Vol, veh/h		865			528			804			1332	
Approach Delay, s/veh		61.6			70.8			47.0			51.3	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	39.8	54.8	15.0	40.4	28.8	65.8	15.2	40.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	21.5	50.3	10.5	49.7	10.5	61.3	10.7	49.5
Max Q Clear Time (g_c+I1), s	12.2	25.5	12.5	32.6	8.3	50.3	12.7	33.8
Green Ext Time (p_c), s	0.2	4.0	0.0	3.1	0.1	5.7	0.0	1.9

Intersection Summary	
HCM 6th Ctrl Delay	55.8
HCM 6th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	0	215	23	0	18	116	671	32	0	1172	203
Future Volume (veh/h)	62	0	215	23	0	18	116	671	32	0	1172	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	10	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	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	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870	1870	1870	1870	1885	1870	1870	0	1786	1870
Adj Flow Rate, veh/h	66	0	229	25	0	20	123	714	35	0	1247	216
Peak Hour Factor	0.94	0.92	0.94	0.92	0.92	0.92	0.94	0.94	0.92	0.92	0.94	0.94
Percent Heavy Veh, %	2	0	2	2	2	2	1	2	2	0	1	2
Cap, veh/h	84	0	0	33	0	0	252	2927	143	0	2063	345
Arrive On Green	0.05	0.00	0.00	0.03	0.00	0.03	0.03	0.85	0.85	0.00	0.79	0.79
Sat Flow, veh/h	1781	66		0	0	0	1795	3448	169	0	3034	445
Grp Volume(v), veh/h	66	96.2		45	0	0	123	368	381	0	641	822
Grp Sat Flow(s),veh/h/ln	1781	F		0	0	0	1795	1777	1840	0	1339	1693
Q Serve(g_s), s	6.3			0.0	0.0	0.0	2.1	6.8	6.8	0.0	32.6	33.4
Cycle Q Clear(g_c), s	6.3			0.1	0.0	0.0	2.1	6.8	6.8	0.0	32.6	33.4
Prop In Lane	1.00			0.56		0.44	1.00		0.09	0.00		0.26
Lane Grp Cap(c), veh/h	84			33	0	0	252	1508	1562	0	1061	1344
V/C Ratio(X)	0.79			1.38	0.00	0.00	0.49	0.24	0.24	0.00	0.60	0.61
Avail Cap(c_a), veh/h	285			136	0	0	475	1508	1562	0	1063	1344
HCM Platoon Ratio	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00			1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.63	0.63
Uniform Delay (d), s/veh	81.1			81.7	0.0	0.0	30.2	2.5	2.5	0.0	7.7	7.6
Incr Delay (d2), s/veh	15.1			207.7	0.0	0.0	1.5	0.4	0.4	0.0	1.6	1.3
Initial Q Delay(d3),s/veh	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3
%ile BackOfQ(50%),veh/ln	3.3			3.3	0.0	0.0	2.9	2.1	2.1	0.0	10.3	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	96.2			289.5	0.0	0.0	31.7	2.9	2.8	0.0	9.7	9.2
LnGrp LOS	F			F	A	A	C	A	A	A	A	A
Approach Vol, veh/h					45			872			1463	
Approach Delay, s/veh					289.5			6.9			9.4	
Approach LOS					F			A			A	

Timer - Assigned Phs		2			5	6	7	8				
Phs Duration (G+Y+Rc), s		150.5			9.5	141.0	12.6	8.9				
Change Period (Y+Rc), s		4.5			4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s		113.5			20.5	88.5	27.5	18.0				
Max Q Clear Time (g_c+I1), s		8.8			4.1	35.4	8.3	2.1				
Green Ext Time (p_c), s		5.2			0.3	15.6	0.1	0.1				

Intersection Summary												
HCM 6th Ctrl Delay			16.0									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	512	44	5	487	14	4
Future Vol, veh/h	512	44	5	487	14	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	100	-	0	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	557	48	5	529	15	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	605	0	1096	557
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	539	-
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	-	-	973	-	236	530
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	585	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	973	-	235	530
Mov Cap-2 Maneuver	-	-	-	-	371	-
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	582	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	371	530	-	-	973	-
HCM Lane V/C Ratio	0.041	0.008	-	-	0.006	-
HCM Control Delay (s)	15.1	11.8	-	-	8.7	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

EAST TOWN CROSSING
TRAFFIC IMPACT ANALYSIS

APPENDIX

QUEUING

Intersection: 8: Shaw Rd & E Pioneer

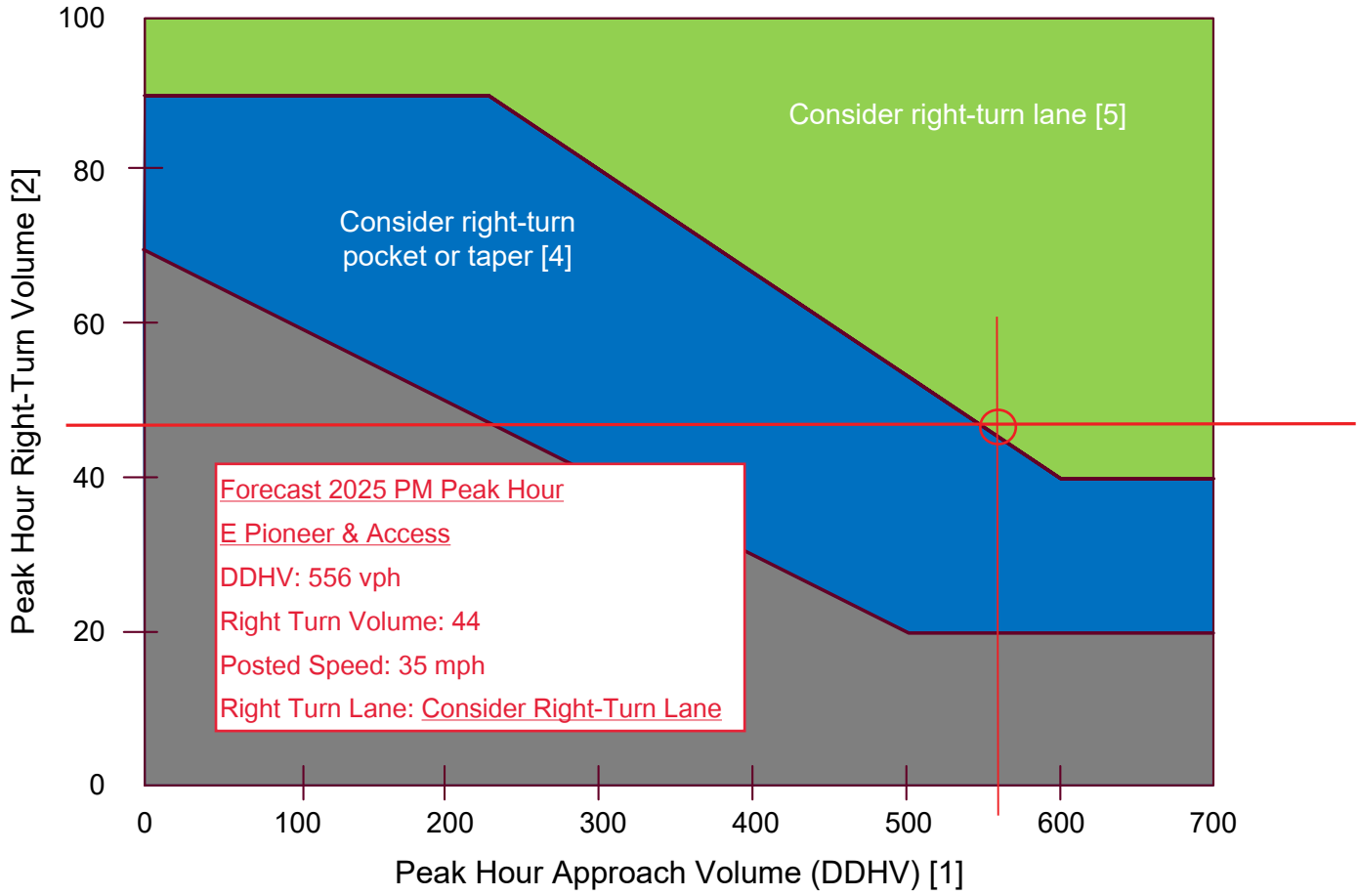
Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	L	T	TR	L	T	TR
Maximum Queue (ft)	224	417	135	274	533	45	64	295	313	134	406	487
Average Queue (ft)	187	306	69	190	356	28	41	188	204	90	294	352
95th Queue (ft)	261	437	125	312	598	42	66	279	329	151	408	473
Link Distance (ft)		647	647		530			303	303		3410	3410
Upstream Blk Time (%)					1			1	1			
Queuing Penalty (veh)					4			2	4			
Storage Bay Dist (ft)	200			250		275	275			475		
Storage Blk Time (%)	0	24		0	27			4				
Queuing Penalty (veh)	0	43		0	43			6				

EAST TOWN CROSSING
TRAFFIC IMPACT ANALYSIS

APPENDIX

RIGHT TURN WARRANT

Exhibit 1310-11 Right-Turn Lane Guidelines



Notes:

[1] For two-lane highways, use the peak hour DDHV (through + right-turn). For multilane, highways (posted speed 45 mph or above), use the right-lane peak hour approach volume (through + right-turn).

[2] When all three of the following conditions are met, reduce the right-turn DDHV by 20:

- The posted speed is 45 mph or below
- The right-turn volume is greater than 40 VPH
- The peak hour approach volume (DDHV) is less than 300 VPH

[3] For right-turn corner design, see Exhibit 1310-6.

[4] For right-turn pocket or taper design, see Exhibit 1310-12.

[5] For right-turn lane design, see Exhibit 1310-13.

East Town Crossing
Traffic Impact Analysis
PO Box 397 Puyallup, WA 98371
(253) 770 1401 heathtraffic.com
Heath & Associates