EXHIBIT E2

Traffic Impact Analysis

Bayan Trails

Olympia, WA

November 2014

SCJ ALLIANCE
CONSULTING SERVICES

Traffic Impact Analysis

Project Information

Project: **Bayan Trails**

Prepared for: **Golden Alon Development**
PO Box 1068
Olympia, WA 98507

Reviewing Agency

Jurisdiction: City of Olympia

Project Representative

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Project Reference: SCJ #1541.01
Path: N:\Projects\1541 Golden Alon Development\1541.01 Bayan Trails\Traffic Scoping\Report\R2014-1017 Bayan Trails TIA.docx

CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

Prepared by George Smith, Senior Transportation Planner

Approved by Eric Johnston, PE, Principal

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1. INTRODUCTION

1.1 Project Overview

Golden Alon Development is proposing construction of *Bayan Trails* development, to be located south of 6th Avenue NE and west of Sleater-Kinney Road**.** The project will consist of 168 senior apartments with a community building and pool building, and 70 townhomes with no age restriction. **Figure 1** illustrates the Site Vicinity and the transportation network serving the project area.

1.2 Study Context

This report documents the results of a Traffic Impact Analysis of existing and future traffic conditions. The study was prepared according to City of Olympia guidelines as part of the required development review and permit procedures for the proposed project. The following intersections in the study area were analyzed:

1. Sleater-Kinney Road/6th Avenue NE
2. Sleater-Kinney Road/Martin Way
3. Sleater-Kinney Road/Kasey Keller Drive
4. Sleater-Kinney Road/Site Driveways

The project is anticipated to be built over six phases. Phase 1 is expected to be completed by 2016, with the remaining portions of the development constructed incrementally over the next eight to ten years based on market conditions.

The scope of work for this study was determined through a scoping process involving representatives of the City of Olympia, the project developer, and SCJ Alliance.

EXHIBIT E2

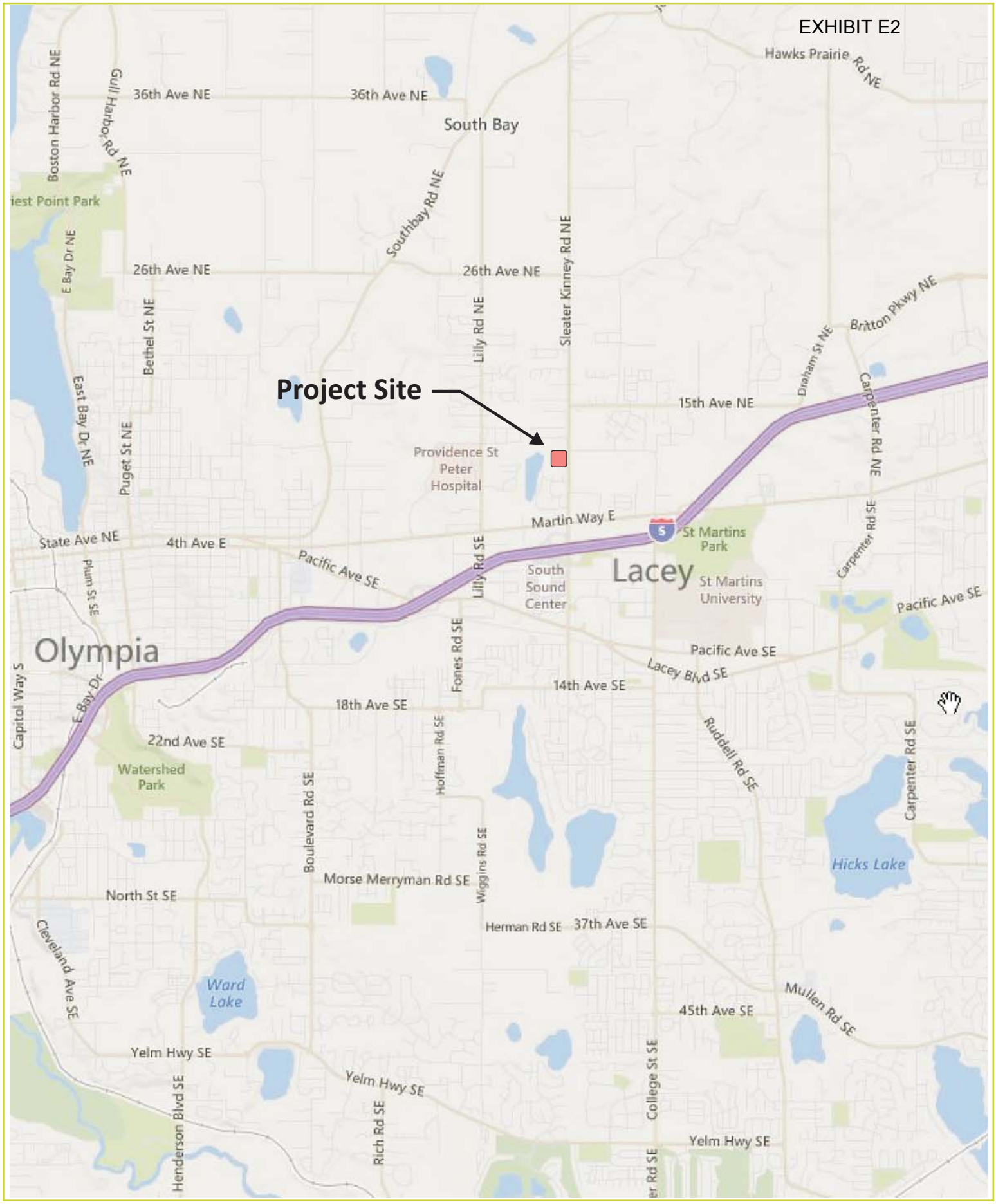

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Figure 1
Site Vicinity Map

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2. PROJECT DESCRIPTION

Golden Alon Development is proposing construction of *Bayan Trails* development, to be located south of 6th Avenue NE and west of Sleater-Kinney Road. The proposed project will consist of four multi-family buildings with 168 senior apartments, 70 townhome units, with no age restriction, and a recreational facility. The properties north and south of the site are single family residences. North Thurston High School is located east of the project. The project is to be built over multiple phases as described below:

Phase 1 - Senior Housing Unit A (42 units) and the easterly portion of the 6th Avenue NE Extension
Phase 2 - Senior Housing Unit B (42 units), Building E (Community Building) and the remainder of the 6th Avenue NE Extension
Phase 3 - Senior Housing Units C and D (84 units), Building F (Pool Building) and the remainder of the loop roadway system
Phase 4 through 6 - Townhome Units 1 through 10

The first phase of the project is expected to be completed by 2016. The remaining portions of the development will be constructed incrementally over the next 8 to 10 years based on prevailing market conditions.

The development will construct three new public roadway sections to serve the subject property:

6th Avenue NE Extension will be a two-lane east-west local roadway that will be constructed between Sleater-Kinney Road and the west edge of the development. This roadway will provide two driveway cuts into the *Bayan Trails* development.

"Road B" will be an internal north-south roadway constructed along the west edge of the project between 6th Avenue NE Extension and "Road C." The roadway will provide angle parking along the west edge.

"Road C" will be an internal east-west roadway that will extend from Road B to Sleater-Kinney Road. The roadway will provide multiple access points to parking areas within the development.

The site may be constructed to allow a full vehicle connection from Road B to the existing San Mar Drive NE at the southwest corner of the property. While this connection may offer local circulation options, it is not expected to be used as a primary entrance/exit for the proposed *Bayan Trails* development. The Preliminary Site Plan with project access points is shown in **Figure 2**.

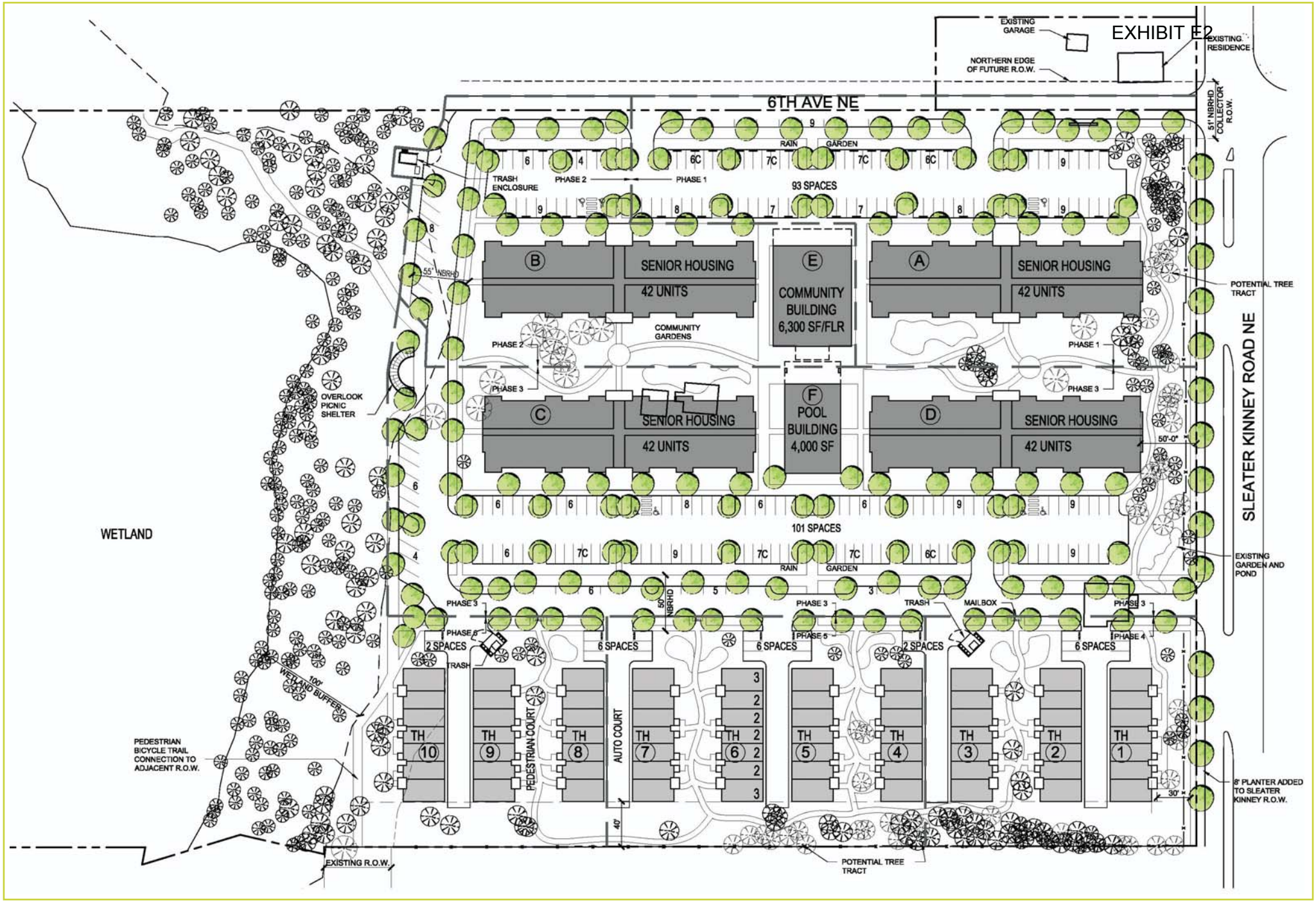

Figure 2
Preliminary Site Plan

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3. BACKGROUND INFORMATION

3.1 Area Land Uses

The project site is located west of North Thurston High School across Sleater-Kinney Road. The properties to the north and south are residential neighborhoods, zoned 4-8 units per acre. There are wetlands immediately west of the project, as well as the Chehalis Western Trail. The subject property is zoned residential multifamily 18 units per acre.

3.2 Roadway Inventory

A comprehensive roadway survey was conducted to identify pre-existing conditions of the primary traffic facilities serving the proposed *Bayan Trails* development.

3.2.1 6th Avenue NE

6th Avenue NE is classified as collector roadway by the City of Lacey with a single lane in each direction and a center turn lane. This roadway provides sidewalks on both sides of the roadway with a posted speed limit of 25 mph and a school zone speed limit of 20 mph. 6th Avenue NE will be extended west and provide site access to this development.

3.2.2 Sleater-Kinney Road

Sleater-Kinney Road is classified as a major collector roadway by the City of Olympia. In the project vicinity this is a divided roadway with one southbound lane and two northbound lanes, with turn lanes at the intersections. This roadway provides sidewalks and bike lanes on both sides with a posted speed limit of 25 mph and a school zone speed limit of 20 mph.

3.2.3 Martin Way E

Martin Way E is classified as an arterial by the City of Olympia. In the project vicinity, the roadway provides two lanes in each direction and a center turn lane, sidewalks and bicycle lanes. The posted speed limit is 35 mph. Martin Way is a commercial corridor providing direct driveway access to many businesses in the vicinity.

3.2.4 Kasey Keller Drive NE

Kasey Keller Drive NE, in the project vicinity, has one lane in each direction with on-street parking and a sidewalk on one side of the roadway. The roadway runs north-south between Safeway and Home Depot at Martin Way and then turns east-west along the back of the commercial development to Sleater-Kinney Road NE.

3.2.5 San Mar Drive NE

San Mar Drive NE is a residential roadway that currently extends from Sleater-Kinney Road northwestward to Alonna Drive NE. It has one lane in each direction. San Mar Drive NE could be extended north to connect to the extended 6th Avenue NE roadway. This new section of San Mar Drive would have one lane in each direction. This extension would connect the existing San Mar Villas development to *Bayan Trails* development.

3.3 Traffic Volume Data

The City of Olympia and Traffic Count Consultants Inc., a traffic data collection firm, provided evening peak period turning movement counts. The counts were conducted between 4:00 pm and 6:00 pm at the following locations on the dates listed:

- Martin Way E/Sleater-Kinney Road (May 9, 2013)
- Kasey Keller Drive NE/Sleater-Kinney Road NE (October 8, 2014)
- 6th Avenue NE/Sleater-Kinney Road NE (October 8, 2014)

The traffic volume count worksheets are provided in **Appendix A**. The count collected in 2013 was increased by 2% to represent base year 2014 conditions. Per direction from the City of Olympia, the two-hour peak average traffic volumes were used for this analysis. The Existing 2014 PM Peak Period Traffic Volumes in the study area are shown on **Figure 3**.

3.4 Public Transportation

Intercity Transit (IT) does not currently serve the project site. However, there is a bus stop approximately one half mile south of the site (with routes 60, 62A and 62B), the Lacey Transit Center is roughly one mile from the site and the Martin Way Park-n-Ride is approximately 1.2 miles to the southeast.

3.5 Roadway Collision Analysis

Washington State Department of Transportation provided collision data for Sleater-Kinney Road in the vicinity of the *Bayan Trails* project. The data includes all reported collisions occurring over the most current complete five-year span of January 1, 2009 through December 31, 2013. A collision frequency rate per Millions of Entering Vehicles (MEV) was calculated for the study intersections based on the following formula:

$$\text{Collision Rate} = \frac{1{,}000{,}000 \times \text{Total Collisions}}{365 \times \text{Number of Years} \times \text{Average Daily Entering Traffic}}$$

The average daily traffic entering the 6th Avenue NE/Sleater-Kinney Road NE intersection was estimated by adding the entering PM peak hour turning movements and multiplying by a factor of 10. The total daily entering traffic was estimated as 14,430. No collision rate was calculated for Kasey Keller Drive NE/Sleater-Kinney Road NE because there were no reported collisions.

We have summarized the collision data for the 6th Avenue NE and Kasey Keller Drive NE intersections on Sleater-Kinney Road NE in **Table 1**.

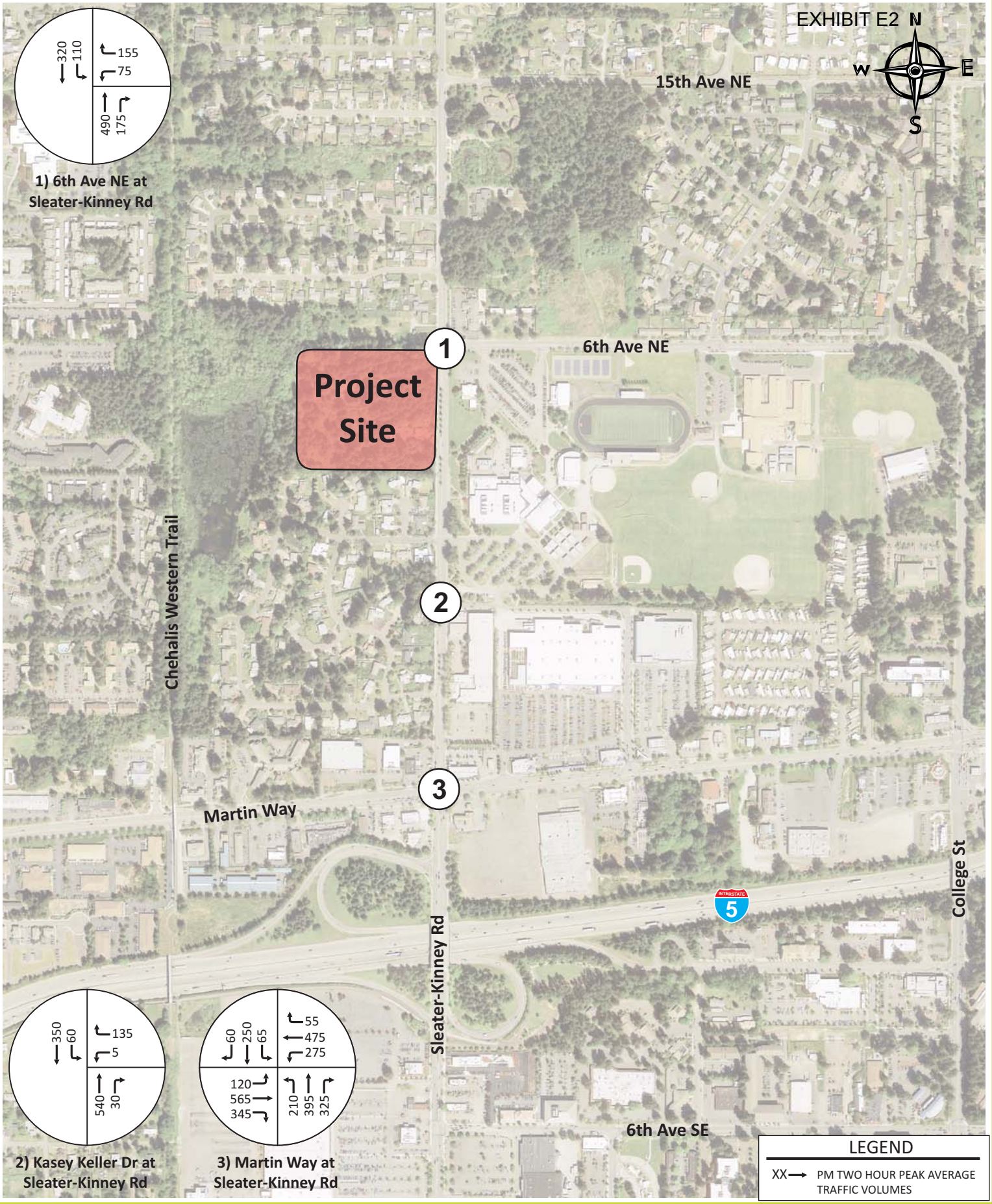

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Figure 3
Existing 2014 PM Peak Period Traffic Volumes

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Table 1. Collision Summary - 01/01/2009 through 12/31/2013

Intersection	Total Number of Reported Collision	Number of Injury Collisions	Number Involving Pedestrians	Average Collisions per Year	Collisions per MEV
6th Avenue NE/ Sleater-Kinney Road NE	12	2	0	2.4	0.46
Kasey Keller Drive NE/ Sleater-Kinney Road NE	0	0	0	0	0.0

The predominant collision type is “entering at angle” – most commonly involving a vehicle turning left from westbound 6th Avenue NE to southbound Sleater-Kinney Road NE. The annual average of 2.4 collisions per year and collision rate per MEV of 0.46 are both low and do not indicate a collision problem. The individual reported collisions on Martin Way in the study area between 01/01/2009 and 12/31/2013 are provided in **Appendix B**.

4. PROJECT TRAFFIC CHARACTERSITICS

The project-related characteristics having the most effect on area traffic conditions are peak hour trip generation and the directional distribution of traffic volumes on the surrounding roadway network.

4.1 Site-Generated Traffic Volumes

Vehicle trip generation was calculated using the trip generation rates contained in the current City of Olympia Transportation Impact Fee Schedule and the current edition of the Trip Generation Report by the *Institute of Transportation Engineers* (ITE). The Senior Adult Housing-Attached land use (Land Use Code 252) and Multi-family/townhouse/duplex land use (Land Use Code 220, 221, 230) were determined to be the most applicable to this project. The PM peak hour trip rates were taken from Table 3 of the July 6, 2009 Amendments to the Transportation Impact Fee Program Update. The inbound/outbound percentages and daily trip rates were taken from the 9th edition of the Trip Generation Report.

Trip generation estimates were prepared for two development horizons: Phase 1 and 2, which includes 84 senior housing units and correlates to the maximum proposed traffic potential prior to constructing a second access point; and Full Build which includes the entire senior housing and townhomes development.

The trip generation rates for this analysis are shown in **Table 2**:

Table 2. Trip Generation Characteristics

Land Use (LU)	Unit	Daily Trip Rate	PM Peak Hour Trip Rates		
			Basic Trip Rate	% Enter	% Exit
Multi-Family/Townhouse/Duplex (LU 220, 221, 230)	Dwelling Unit	6.65	0.62	65%	35%
Senior Housing and Accessory Dwelling (LU252)	Dwelling Unit	3.44	0.31	54%	46%

Project trip generation for Phase 1 and 2 is summarized in **Table 3**, and full build in **Table 4**

Table 3. Project Trip Generation - Phase 1 and 2

		Trip Generation				
		Weekday Daily	Basic PM Peak Hour	New PM Peak Hour Trips		
Land Use (LU Code)	Unit (DU)	Trips	Trips	Total	Enter	Exit
Senior Housing and Accessory Dwelling (LU 252)	84	290	26	26	14	12

Table 4. Project Trip Generation - Full Build

		Trip Generation				
			Basic PM Peak Hour	New PM Peak Hour Trips		
Land Use (LU Code)	Unit (DU)	Weekday Daily Trips	Trips	Total	Enter	Exit
Multi-Family/ Townhouse/Duplex (LU 220, 221, 230)	70	466	43	43	28	15
Senior Housing and Accessory Dwelling (LU 252)	168	578	52	52	28	24
Total	238	1044	95	95	56	39

4.2 Site Traffic Distribution

The vehicle directional trip distribution to and from the site will be based primarily on:

- The area street system characteristics
- Current travel patterns on the area roadways
- The proposed access system for the project
- Locations of residential areas and shopping/commercial centers.

The directional distribution of traffic to and from the proposed project was estimated using the regional transportation model. The Thurston Regional Planning Council (TRPC) created the area-wide transportation model with cooperation from local jurisdictions within the county. The model, developed using the Emme/3 software package, has been calibrated to represent the existing vehicle travel patterns throughout the entire county.

The proposed *Bayan Trails* property is located within Traffic Analysis Zone (TAZ) number 166 of the regional transportation model. A distribution analysis was performed for this project by conducting a "Select Zone Analysis" for TAZ 166. This feature of the Emme/3 software package allows all of the traffic into and out of a particular zone to be isolated and shown separately from the rest of the traffic on the network. This graphically shows the percentage of vehicles currently using each of the available routes into and out of the area (Sleater-Kinney Road, Martin Way, 15th Avenue NE, etc.). From this information, regional distribution percentages were calculated for future traffic from the proposed *Bayan Trails* project. The resultant traffic distribution percentages and site traffic distributions on the existing roadway network are shown for Phase 1 and 2 on **Figure 4. Figure 5** shows the project site traffic distribution and assignment for Full Build.

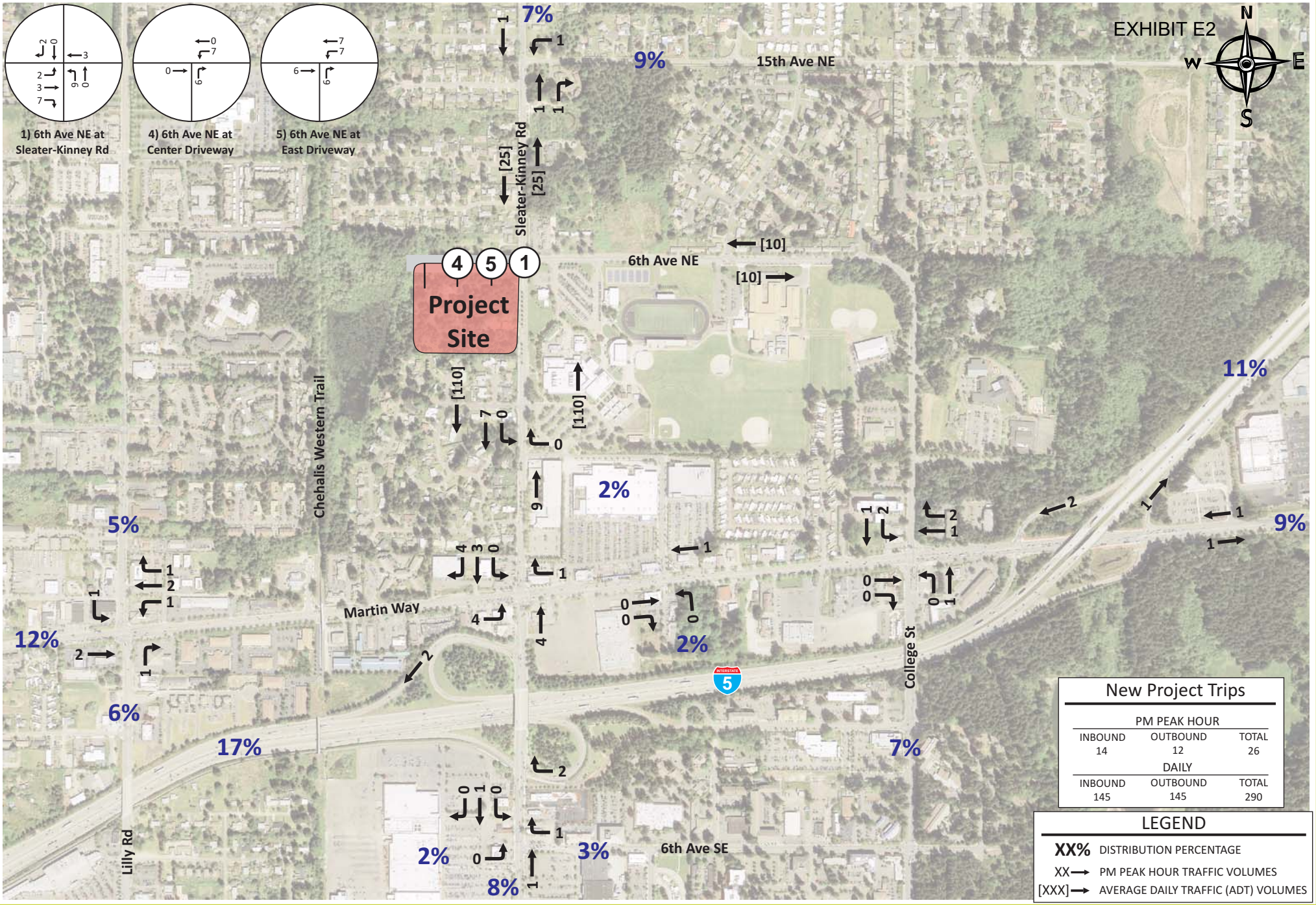

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Figure 4
Phase 1 & Phase 2 Site-Generated Traffic Volumes

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Olympia, Washington
Traffic Impact Analysis

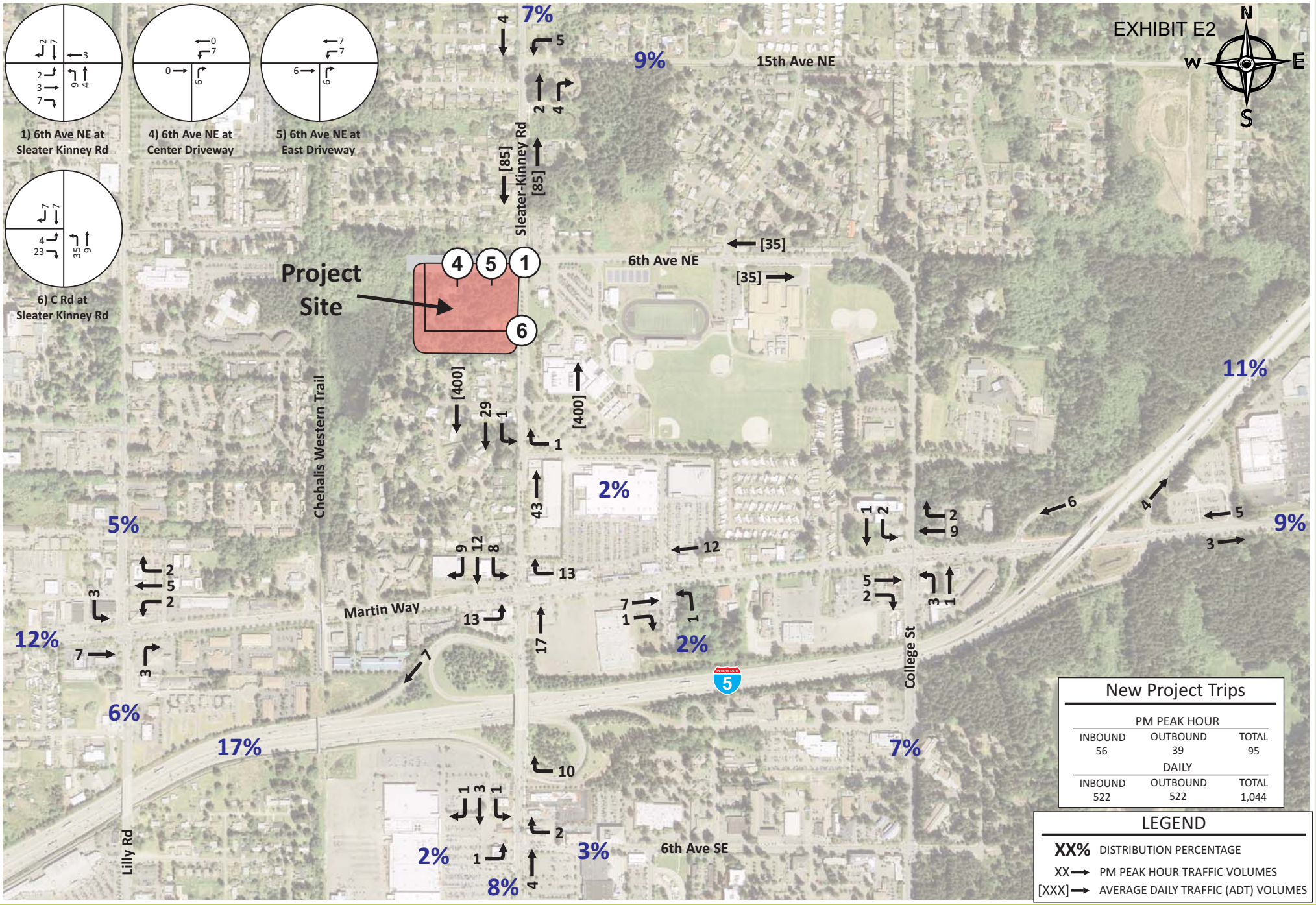

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Figure 5
Full Build Site-Generated Traffic Volumes

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Traffic Impact Analysis

5. FUTURE TRAFFIC CONDTIONS

5.1 Roadway Improvements

In the project area, one improvement has been identified that will affect traffic flows in the area; the City of Lacey six-year Transportation Improvement Plan (TIP) identifies plans to construct the College Street Extension from 6th Avenue NE to 15th Avenue NE. This connection, when completed, is expected to reduce traffic on 6th Avenue NE and Sleater-Kinney Road and reduce overall vehicle miles traveled by providing a more direct route between Martin Way and 15th Avenue.

The City of Olympia Comprehensive Transportation Plan identifies intersection improvement projects at Sleater-Kinney Road/Martin Way (add turn lanes) and Sleater-Kinney Road NE/6th Avenue NE (construct traffic signal or modern roundabout) but they are not scheduled for construction within the next 6 years.

5.2 Future Traffic Volumes

Future traffic volume projections for the study area include traffic generated by pipeline developments and background growth.

5.2.1 Pipeline Development Projects

A pipeline development project is defined as a development in the project area that is either under construction, approved for construction or in the permitting process. For this study the City of Olympia identified one project to include: the Hampton Inns hotel is a 139-room hotel that will be constructed south of the Kasey Keller Drive/Martin Way E intersection. Traffic from the hotel project was included in the traffic volume forecast for this study.

5.2.2 Background Traffic Growth

In addition to the traffic from the identified pipeline development, it is anticipated that background growth will occur within the study area and affect traffic volumes. The *Bayan Trails* project has two development horizon years being analyzed in this study. At the direction of City of Olympia staff two different background growth calculations were employed for the two horizon years, as described below:

5.2.2.1 2016 Horizon

To estimate background growth trends for the near-term a 2% annual growth rate was added to existing volumes to represent 2016 conditions. Use of the 2% growth rate was recommended by the City of Olympia to approximate typical local traffic growth trends.

5.2.2.2 2022 Horizon

The 2022 horizon will include the influence of regional growth trends and area transportation improvements. To estimate background traffic growth for this horizon the City of Olympia recommended using the TRPC regional travel demand model. The TRPC model has a 2009 base year and 2035 forecast year. Traffic volume growth between the 2009 and 2035 horizons was calculated for the study intersections. Six years of incremental growth was added to the 2016 forecasts to represent 2022 background volumes. Specifically, the volume forecast reflects the influence of the planned College Street Extension which will reduce traffic demand on 6th Avenue NE.

The total traffic volume assignments used for this study include the sum of all of the growth factors described above. **Figure 6** shows the Projected 2016 PM Peak Period Traffic Volumes without *Bayan*

Trails, **Figure 7** represents the Projected 2016 Projected PM Peak Period Traffic Volumes With Phase 1 and 2 of *Bayan Trails*. **Figure 8** shows the Projected 2022 PM Peak Period Traffic Volumes With Phase 1 and 2 of *Bayan Trails* and **Figure 9** shows the Projected 2022 PM Peak Period Traffic Volumes With Full-Build of *Bayan Trails*.

The traffic volume calculations are provided in **Appendix C**.

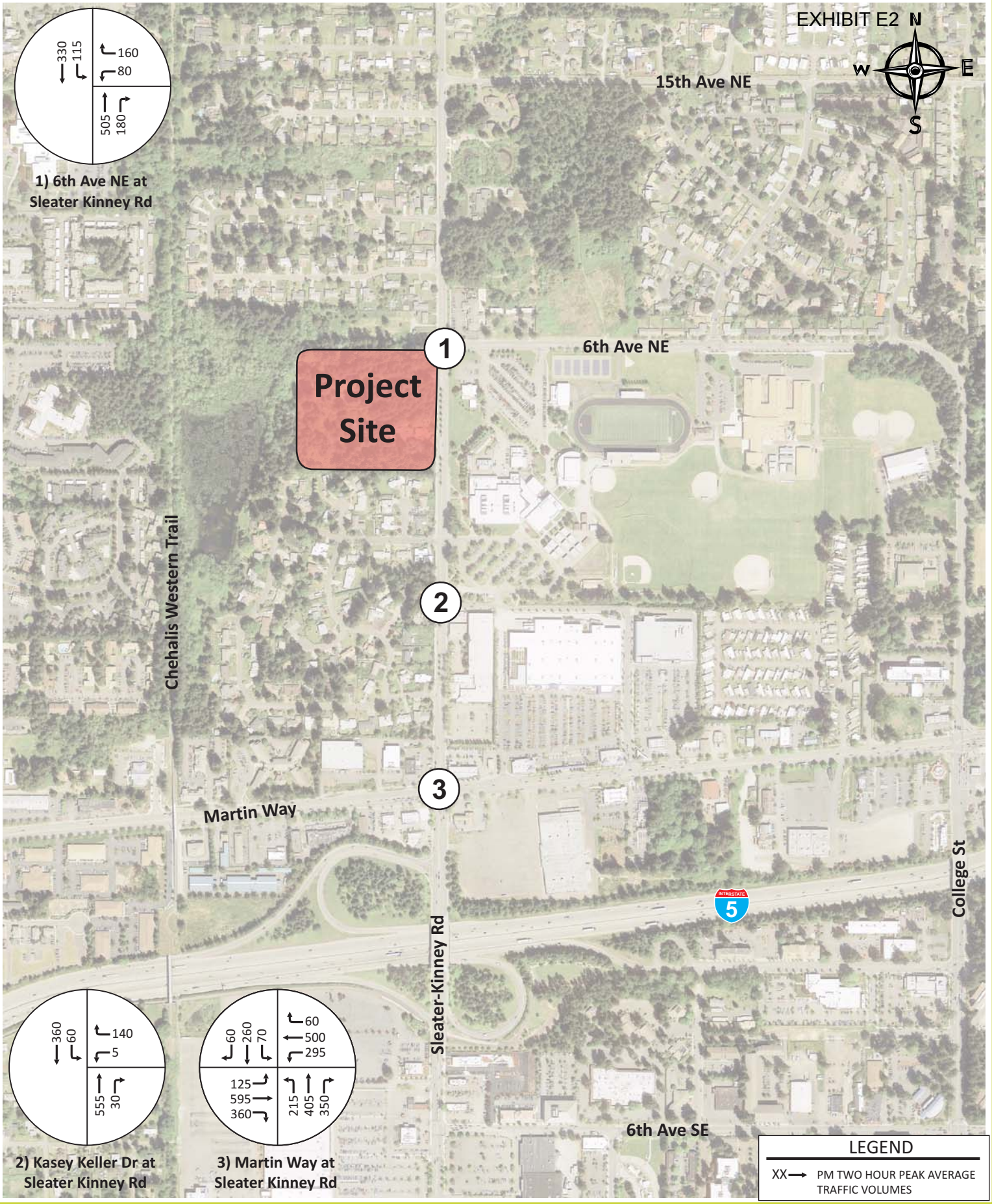

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Figure 6
Projected 2016 PM Peak Period
Traffic Volumes Without Project

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Olympia, Washington
Traffic Impact Analysis

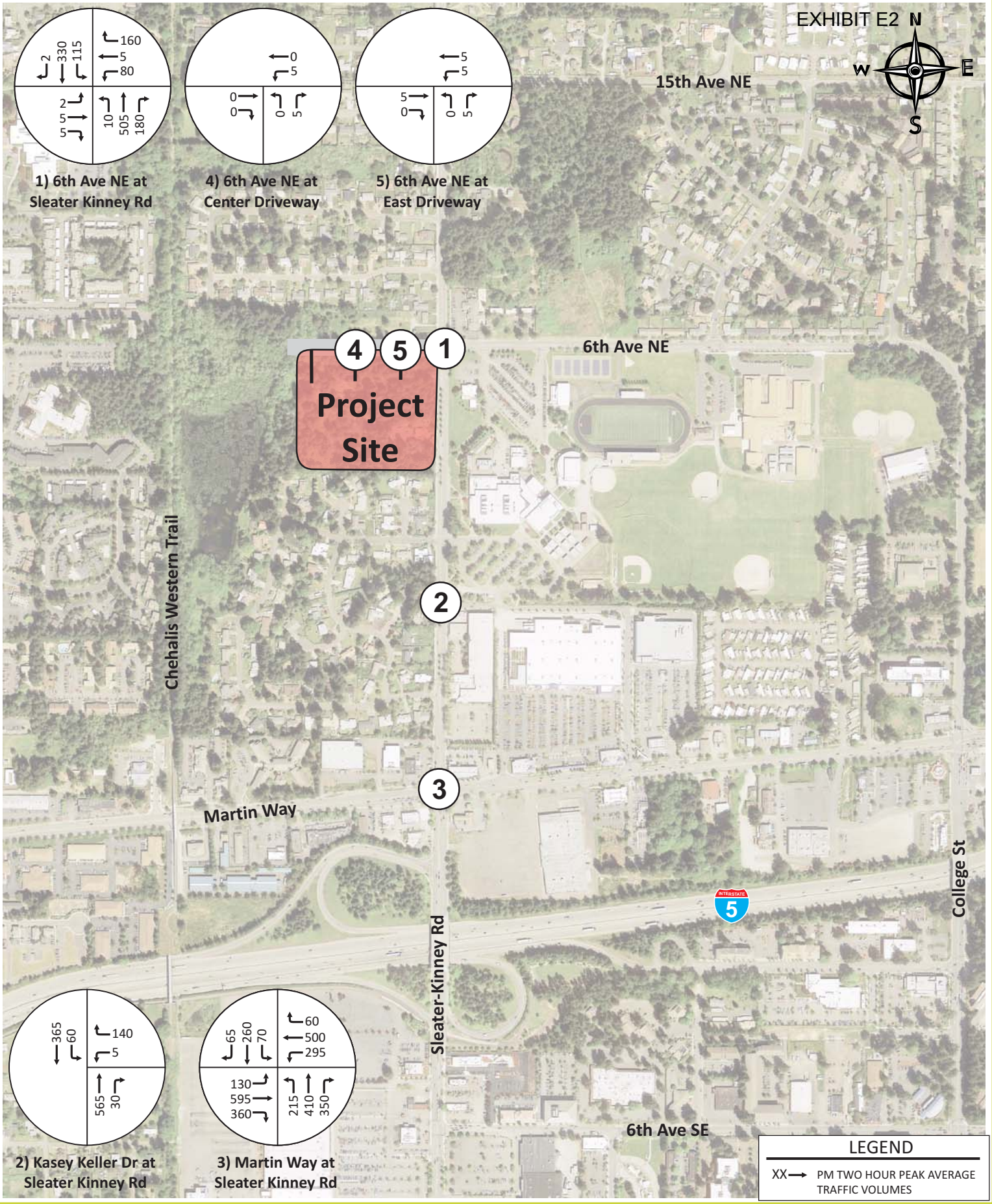

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Figure 7
Projected 2016 PM Peak Period
Traffic Volumes With Phases 1 and 2

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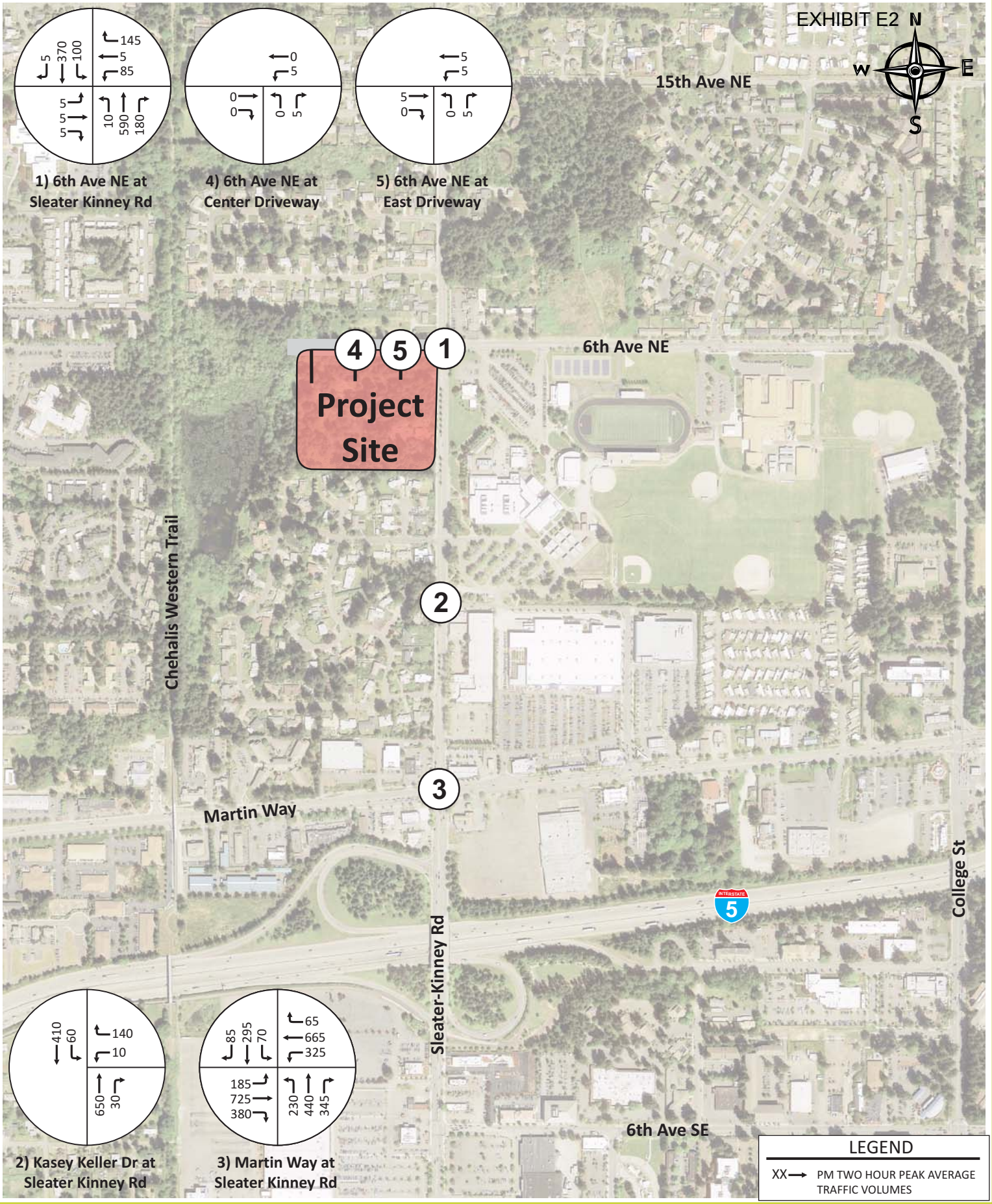

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Figure 8
Projected 2022 PM Peak Period
Traffic Volumes With Phases 1 & 2

Bayan Trails
Olympia, Washington
Traffic Impact Analysis

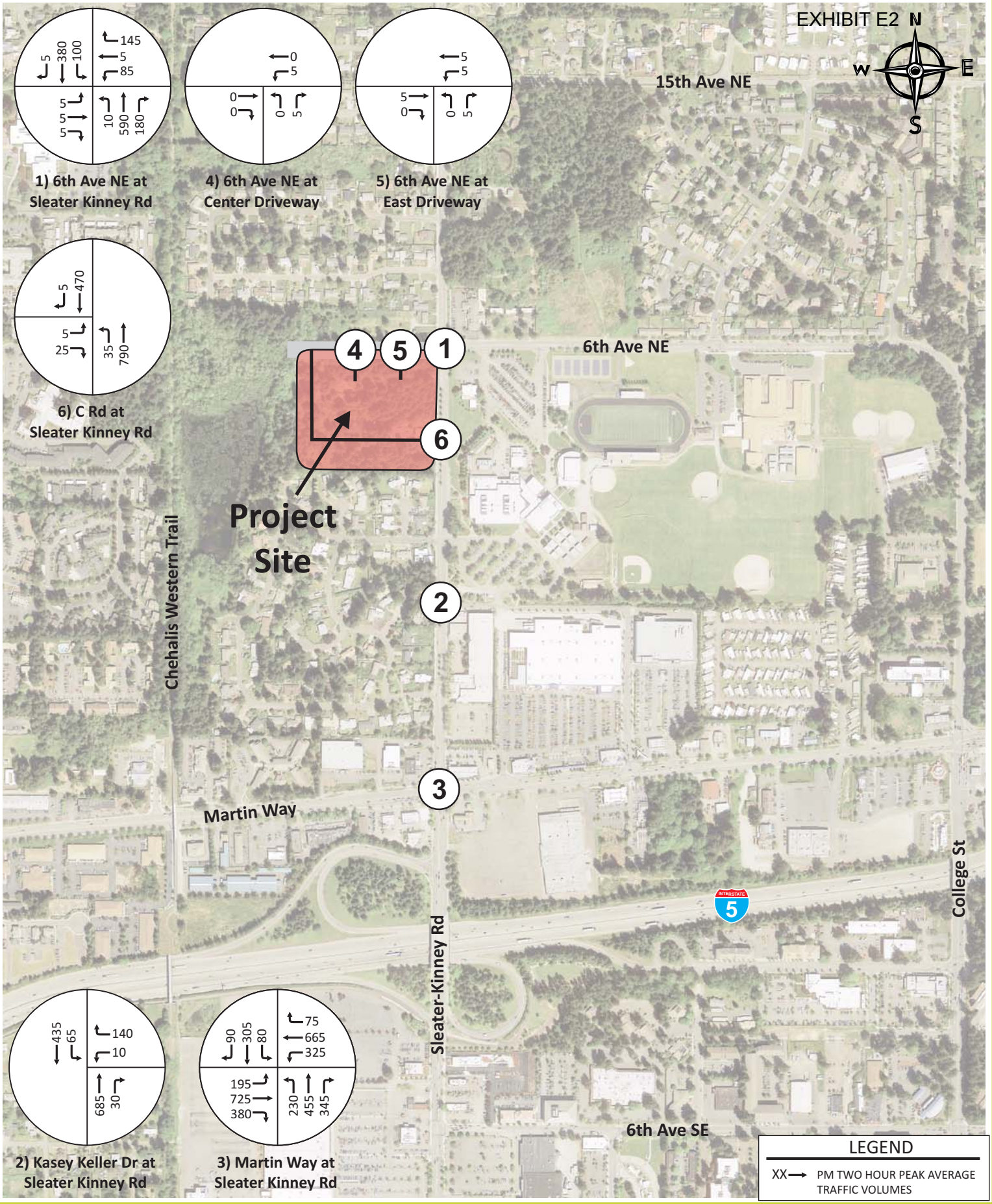

Figure 9
Projected 2022 PM Peak Period Traffic Volumes With Full Build

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Olympia, Washington
Traffic Impact Analysis

6. TRAFFIC OPERATIONS ANALYSIS

Traffic analyses were conducted to identify any existing deficiencies within the study area and for the project completion horizon year.

The acknowledged source for determining overall capacity for arterial segments and independent intersections is the current edition of the Highway Capacity Manual (HCM). Capacity analyses were completed for the project horizon year PM two hour peak average traffic volume scenarios for all intersections.

Intersection analysis was performed using version 8 of the Synchro/SimTraffic software package. This software implements the methods of the 2010 HCM. Capacity analysis results are described in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). The City of Olympia has adopted a minimum LOS D standard, however, in the project vicinity Martin Way is a LOS exception area where LOS E is acceptable.

6.1 Level of Service Criteria

Level of service calculations for intersections determine the amount of "control delay" (in seconds) that drivers will experience while proceeding through an intersection. Control delay includes all deceleration delay, stopped delay and acceleration delay caused by the traffic control device. The LOS is directly related to the amount of delay experienced. The overall LOS grade represents the weighted average of all movements at the intersection.

For intersections under Two-Way-Stop-Control (TWSC), the LOS/delay criteria are different than for signalized intersections because driver expectation is that a signalized intersection is designed to carry higher traffic volumes and experience greater delay. **Tables 5** and **Table 6** show the Level of Service criteria for signalized and stop sign-controlled intersections.

Table 5. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)
A	≤10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

Table 6. Level of Service Criteria for Stop Sign-Controlled Intersections

Level of Service	Average Control Delay (seconds/vehicle)
A	≤10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

6.2 Operational Analysis Summary

The analysis was conducted for the following traffic volume scenarios:

- Existing 2014 traffic volumes
- Projected 2016 traffic volumes without the Bayan Trails project
- Projected 2016 traffic volumes with Phase 1 and 2 of the Bayan Trails project
- Projected 2022 traffic volumes with Phase 1 and 2 of the Bayan Trails project
- Projected 2022 traffic volumes with Full-Build of the Bayan Trails project

The following is a description of each study intersection.

6.2.1 6th Avenue NE/Sleater-Kinney Road

This is a tee intersection with stop control for the westbound approach. The northbound approach has a through lane and a right-turn lane. The westbound approach provides a right-turn and left-turn lane while the southbound approach has a left-turn lane and a through lane. There are striped crosswalks on the northbound approach and westbound approach. During the current 2014 PM peak period the minor approach left-turn operates at a LOS E condition and the overall intersection operates at a LOS A.

The proposed development will construct an eastbound approach at this intersection as the access to *Bayan Trails*. The new 6th Avenue NE Extension will be a public roadway and will provide a single lane in each direction. The northbound approach on Sleater-Kinney Road will be reconfigured to provide a left-turn lane and the westbound approach will be striped to provide a right-turn lane and a shared through-left lane. During the 2016 horizon the westbound through-left lane will operate at a LOS F and the eastbound approach will operate at a LOS E with the overall intersection remaining at a LOS A condition. By the 2022 horizon the intersection will operate at a LOS F for the minor street approaches and a LOS A for the overall intersection.

The project developer will design and construct all of the improvements associated with adding the fourth leg of this intersection, including constructing the new roadway extension, removing a portion of the landscape median on Sleater-Kinney Road and striping a NB left-turn lane, and re-striping the

westbound approach as a right-turn lane and shared through-left lane. **No additional improvements are needed at this intersection.**

6.2.2 Kasey Keller Drive NE/Sleater-Kinney Road NE

This is a tee intersection with stop sign-control for the westbound approach. On the northbound Sleater-Kinney Road approach there are two through lanes with right-turns made from the curbside lane. The southbound approach has a left-turn lane and a through lane. The westbound approach has a single shared lane for right and left turns.

During the 2014 PM peak period, the intersection operates at a LOS B for the minor approach and an overall LOS A. For all analysis scenarios the intersection will operate at a LOS C or better for the minor approach and LOS A for the overall intersection average.

No improvements are needed at this intersection.

6.2.3 Martin Way E/Sleater-Kinney Road

This is a four-leg intersection under traffic signal control. The eastbound and westbound approaches each have a left-turn lane, two through lanes and a right-turn lane. The northbound approach provides a left-turn lane, a shared through-left lane, a through lane and a right-turn lane. The southbound approach has a left-turn lane, a shared through-left and a shared through-right lane.

During the 2014 PM peak period, the intersection operates at a LOS C condition overall. By the 2016 horizon the intersection will drop one service level to LOS D. The intersection will remain at LOS D through the 2022 horizon.

No improvements are needed at this intersection.

6.2.4 Road C/Sleater-Kinney Road NE

"Road C" will be constructed by the *Bayan Trails* project as the south access to the development as part of Phase 3. Prior to Phase 3 the 6th Avenue Extension will serve as the only access to the development. Road C will be a public roadway and will provide a single lane in each direction. The intersection at Sleater-Kinney Road will be a "tee" intersection with stop sign-control for the eastbound approach. The northbound approach will have a left-turn lane and a through lane. The southbound approach will have a single shared through-right lane and the eastbound approach will have a single shared lane. At full project occupancy the intersection will operate at a LOS B for the minor approach and an overall intersection LOS A.

6.2.5 Site Driveways on 6th Avenue NE

There will be two driveways on the 6th Avenue NE Extension into the project parking areas. Each of these intersections will have single lane approaches and will operate at LOS A during the PM peak period for all traffic volume analysis scenarios.

Table 7 provides a summary of the level of service analysis for the study intersections. The capacity analysis worksheets are provided in **Appendix D**.

6.2.6 Potential Connection to San Mar Drive

The project site may be required to provide a north-south roadway connection between the southern end of Road B and the existing San Mar Drive. The roadway connection would provide a local circulation

option that could provide benefit to drivers wishing to travel between the existing San Mar neighborhood and the proposed *Bayan Trails*. The connection would also provide an emergency route if either Road B or San Mar Drive were temporary blocked. However, it is not expected that residents of *Bayan Trails* would typically use San Mar Drive to enter or exit the *Bayan Trails* development and the connection would not have an appreciable effect on the PM peak period traffic forecast used for the analysis in this report.

Table 7. Level of Service (LOS) Summary – PM Peak Period

		Existing 2014 Volumes	Projected 2016		Projected 2022	
			Without Project	With Phase 1 and 2	With Phase 1 and 2	With Full-Build
Intersection	**Control Type**	**LOS (Delay)**	**LOS (Delay)**	**LOS (Delay)**	**LOS (Delay)**	**LOS (Delay)**
6th Avenue NE/Sleater-Kinney Road NE	TWSC	A (4.9)	A (5.5)	A (8.1)	A (7.1)	A (7.6)
Kasey Keller Drive NE/ Sleater-Kinney Road NE	TWSC	A (2.1)	A (2.2)	A (2.2)	A (2.2)	A (2.2)
Martin Way E/Sleater-Kinney Road NE	SIG	C (33.6)	D (36.6)	D (36.9)	D (43.9)	D (44.4)
Road C/ Sleater-Kinney Road	TWSC	Not Applicable				A (0.5)
East Site Driveway/ 6th Avenue NE	TWSC	Not Applicable		A (3.9)	A (3.9)	A (3.9)
Center Site Driveway/ 6th Avenue NE	TWSC	Not Applicable		A (0.0)	A (0.0)	A (0.0)

NOTE: TWSC = Two-Way Stop-Controlled; Stop-sign on the minor approach(es).
SIG = Traffic signal control

6.3 Vehicle queuing

The vehicle queue is the number of stopped vehicles waiting to travel through an intersection. The queue length includes all vehicles that stop at an intersection even after vehicles at the front begin to move forward. The 95th percentile queue value reflects the "peak typical" queue that occurs during the analysis period, discarding the highest 5 percent of queue occurrences. The queue study was performed using the SimTraffic microsimulation program. The average of five simulations was calculated. The SimTraffic queue analysis worksheets are in Appendix D.

The queue analysis was prepared for the 6th Avenue NE and Road C intersections with Sleater-Kinney Road to estimate the northbound to westbound left-turn lane storage requirements. The queue analysis was based on projected 2022 traffic volume forecast and also includes the projected traffic demand of potential future development of the property adjacent to *Bayan Trails* north of 6th Avenue NE (referred to as the Meconi's property). The likely development potential of the Meconi's property was estimated to include 36 apartment units. The 36 unit apartment traffic potential was added to the 2022 PM peak period volumes for the queue study.

Based on this queue analysis the northbound left-turn lane on Sleater-Kinney Road at 6th Avenue has a projected 95th percentile queue of 29 feet. The northbound left-turn lane at Road C has a projected 95th percentile queue of 38 feet.

7. MITIGATION

The proposed *Bayan Trails* development will have a measurable impact on the area roadways and intersections. The following is a list of specific improvements to accommodate the traffic generated by the proposed development.

7.1 Construct New Roadway Sections

The project will construct a network of public roadways to accommodate site traffic circulation. The roadways include 6th Avenue Extension, Road B and Road C. The roadways will be constructed incrementally as need to provide access to areas within the development. The roads will be designed to City of Olympia standards and will require approval of the City of Olympia prior to construction.

7.2 Construct Improvements at New Intersections

The construction of the 6th Avenue NE Extension will require intersection channelization improvements to the 6th Avenue NE/Sleater-Kinney Road NE intersection. The improvements will include removing the short section of raised median on Sleater-Kinney Road south of 6th Avenue NE to allow for the NB left-turn lane and restriping the WB approach to change the left-turn lane to a through-left lane.

The construction of the Road C/Sleater-Kinney Road NE intersection will require removing a short section of raised median on Sleater-Kinney Road to allow for the NB left-turn lane.

7.3 Pay City of Olympia Transportation Mitigation Fee

The City of Olympia collects for area roadway improvements through the Transportation Impact Fee (TIF) program. The TIF contribution is calculated by ordinance on "per unit" basis. The *Bayan Trails* development will pay impact fees incrementally per housing unit and housing type (age-restricted or age unrestricted) as the site is developed.

7.4 Pay City of Lacey Transportation Mitigation Fee

The City of Lacey collects traffic mitigation fees through the SEPA process for traffic impacts to the Lacey roadway system. The fees are calculated on a per-trip basis for PM peak hour development traffic entering roadways that the City has identified on the mitigation fee project list. If a City of Lacey transportation mitigation fee is required, it will be paid incrementally as units develop within the project.

8. CONCLUSIONS

Golden Alon Development is proposing construction of *Bayan Trails* development, to be located south of 6th Avenue NE and west of Sleater-Kinney Road**.** The project will consist of 168 senior apartments with a community building and pool building, and 70 townhomes with no age restriction. The project is projected to be built over six phases. Phase 1 is expected to be completed by 2016, with the remaining portions of the development constructed incrementally over the next eight to ten years based on prevailing market conditions

This report documents the results of a Traffic Impact Analysis of existing and future traffic conditions. The study was prepared according to City of Olympia guidelines as part of the required development review and permit procedures for the proposed project. The scope of work for this study was determined through a scoping process involving representatives of the City of Olympia, the project developer, and SCJ Alliance.

The analysis described in this report shows that with proposed traffic mitigation, the area roadways can accommodate the traffic generated by the proposed development. The recommended traffic mitigation is identified in section 7 of this report.

APPENDIX A
TURNING MOVEMENT COUNTS

Prepared for: **SCJ Alliance**

Traffic Count Consultants, Inc.

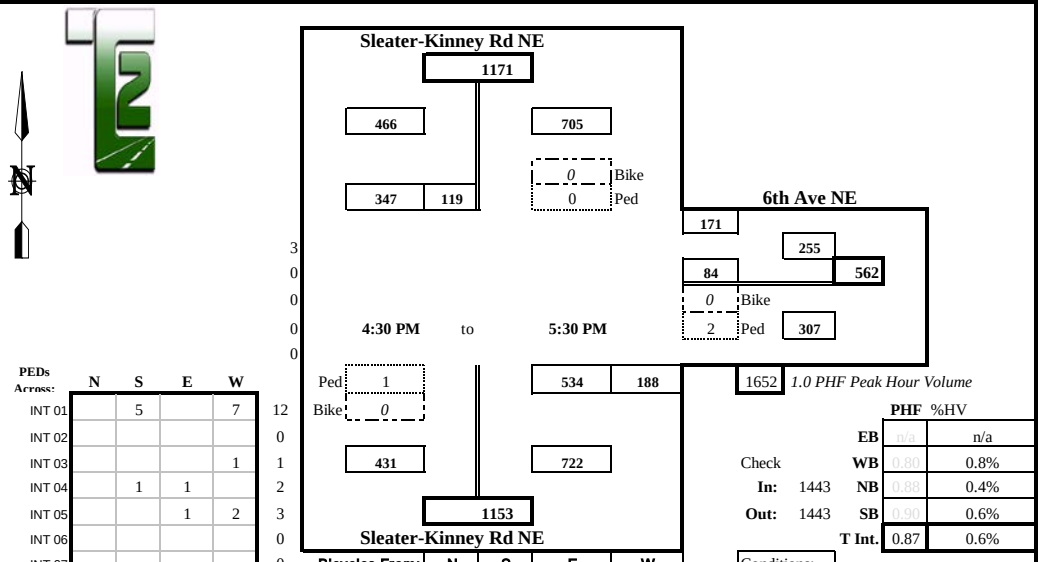
Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Sleater-Kinnery Rd NE & 6th Ave NE **Date of Count:** Wed 10/08/2014

Location: Olympia, Washington **Checked By:** Jess

Time Interval	From North on (SB) Sleater-Kinney Rd NE				From South on (NB) Sleater-Kinney Rd NE				From East on (WB) 6th Ave NE				From West on (EB) 0				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	17	70	0	1	0	116	22	0	15	0	50	0	0	0	0	290
4:30 P	3	27	84	0	2	0	121	34	0	25	0	36	0	0	0	0	327
4:45 P	2	25	96	0	0	0	128	55	1	18	0	27	0	0	0	0	349
5:00 P	1	27	74	0	0	0	129	32	0	20	0	53	0	0	0	0	335
5:15 P	0	34	81	0	1	0	130	44	1	15	0	42	0	0	0	0	346
5:30 P	0	33	96	0	2	0	147	57	0	31	0	49	0	0	0	0	413
5:45 P	0	27	84	0	0	0	131	25	0	20	0	45	0	0	0	0	332
6:00 P	0	33	77	0	1	0	97	31	0	19	0	30	0	0	0	0	287
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	6	223	662	0	7	0	999	300	2	163	0	332	0	0	0	0	2679
	Peak Hour: 4:30 PM to 5:30 PM																
Total	3	119	347	0	3	0	534	188	2	84	0	171	0	0	0	0	1443
Approach	466				722				255				0				1443
%HV	0.6%				0.4%				0.8%				n/a				0.6%
PHF	0.90				0.88				0.80				n/a				0.87



1652 *1.0 PHF Peak Hour Volume*

		PHF	%HV
	EB	n/a	n/a
Check	WB	0.80	0.8%
In: 1443	NB	0.88	0.4%
Out: 1443	SB	0.90	0.6%
	T Int.	0.87	0.6%

Conditions:

PEDs Across:	N	S	E	W	
INT 01		5		7	12
INT 02					0
INT 03				1	1
INT 04		1	1		2
INT 05			1	2	3
INT 06					0
INT 07					0
INT 08				2	2
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	6	2	12	20

Bicycles From:	N	S	E	W	
INT 01					0
INT 02					0
INT 03					0
INT 04					0
INT 05					0
INT 06					0
INT 07					0
INT 08	2		2		4
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	2	0	2	0	4

Special Notes

SCJ14104M_02p

Prepared for: **SCJ Alliance**

Traffic Count Consultants, Inc.

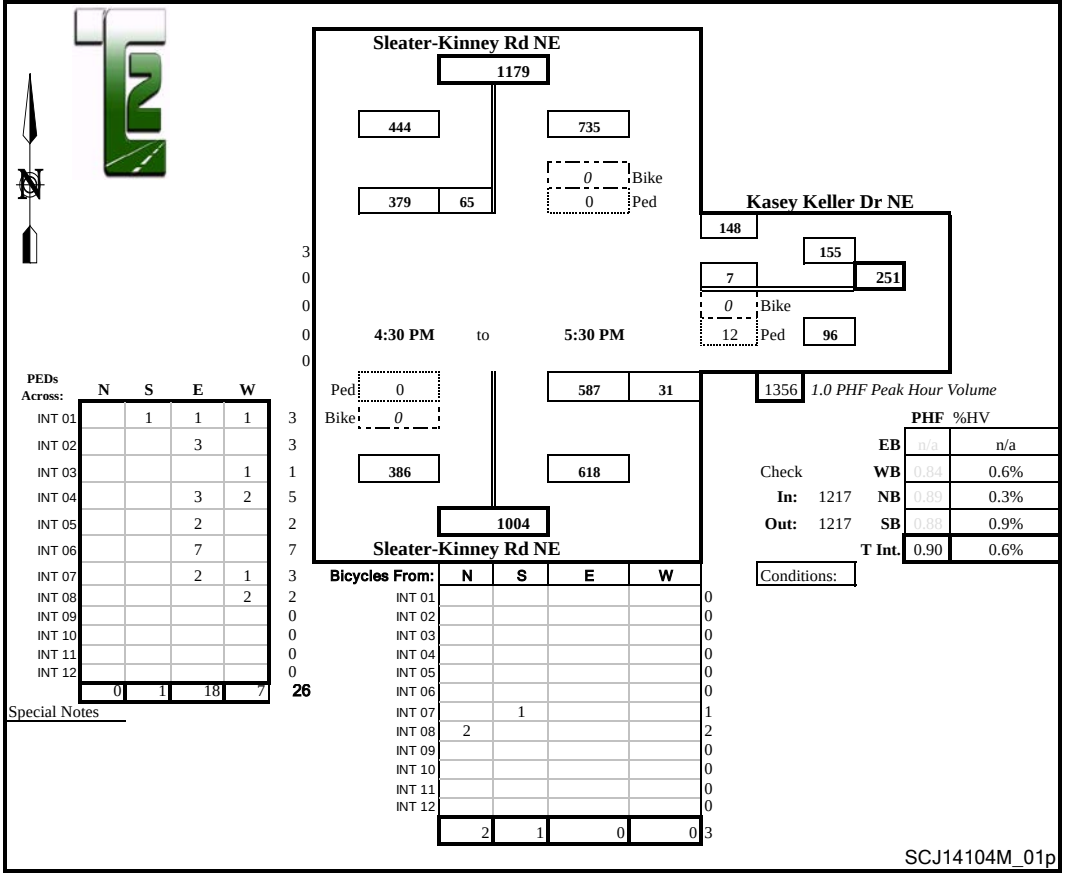
Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Sleater-Kinney Rd NE & Kasey Keller Dr NE **Date of Count:** Wed 10/08/2014

Location: Olympia, Washington **Checked By:** Jess

Time Interval Ending at	From North on (SB) Sleater-Kinney Rd NE				From South on (NB) Sleater-Kinney Rd NE				From East on (WB) Kasey Keller Dr NE				From West on (EB) 0				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	18	72	0	0	0	113	9	1	0	0	30	0	0	0	0	242
4:30 P	3	16	92	0	3	0	116	10	0	2	0	34	0	0	0	0	270
4:45 P	3	15	101	0	0	0	139	7	0	1	0	45	0	0	0	0	308
5:00 P	1	11	85	0	0	0	131	9	0	2	0	39	0	0	0	0	277
5:15 P	0	17	89	0	2	0	150	9	0	3	0	25	0	0	0	0	293
5:30 P	0	22	104	0	0	0	167	6	1	1	0	39	0	0	0	0	339
5:45 P	0	13	86	0	0	0	122	2	0	3	0	34	0	0	0	0	260
6:00 P	0	17	80	0	1	0	92	4	0	3	0	30	0	0	0	0	226
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	7	129	709	0	6	0	1030	56	2	15	0	276	0	0	0	0	2215
Peak Hour: 4:30 PM to 5:30 PM																	
Total	4	65	379	0	2	0	587	31	1	7	0	148	0	0	0	0	1217
Approach	444				618				155				0				1217
%HV	0.9%				0.3%				0.6%				n/a				0.6%
PHF	0.88				0.89				0.84				n/a				0.90



PEDs Across:	N	S	E	W	
INT 01		1	1	1	3
INT 02			3		3
INT 03				1	1
INT 04			3	2	5
INT 05			2		2
INT 06			7		7
INT 07			2	1	3
INT 08				2	2
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	1	18	7	26

Bicycles From:	N	S	E	W	
INT 01					0
INT 02					0
INT 03					0
INT 04					0
INT 05					0
INT 06					0
INT 07		1			1
INT 08	2				2
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	2	1	0	0	3

Special Notes

SCJ14104M_01p

EXHIBIT E2

City of Olympia

Public Works Department
Transportation Line of Business

Sleater-Kinney Road
Martin Way
Weather: Sunny, Warm
Counted by: John L

File Name : Martin-SleaterKinney
Site Code : 00000024
Start Date : 5/9/2013
Page No : 1

Groups Printed- Cars - Bikes - Trucks Buses

	Sleater-Kinney Road From North					Martin Way From East					Sleater-Kinney Road From South					Martin Way From West							
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	23	60	11	1	94	20	72	22	2	114	25	61	17	0	103	21	45	18	0	84	3	395	398
07:15 AM	22	103	16	0	141	9	106	34	3	149	28	62	37	1	127	17	44	14	0	75	4	492	496
07:30 AM	19	92	19	0	130	10	172	47	0	229	25	38	46	0	109	24	64	14	1	102	1	570	571
07:45 AM	30	99	4	0	133	15	249	55	0	319	31	53	84	0	168	30	84	18	0	132	0	752	752
Total	94	354	50	1	498	54	599	158	5	811	109	214	184	1	507	92	237	64	1	393	8	2209	2217
08:00 AM	21	75	24	3	120	11	214	47	0	272	38	50	60	0	148	32	67	23	0	122	3	662	665
08:15 AM	30	117	7	1	154	12	163	38	2	213	48	38	33	2	119	25	67	13	2	105	7	591	598
08:30 AM	17	81	18	0	116	16	171	35	2	222	32	34	34	0	100	32	68	10	0	110	2	548	550
08:45 AM	13	75	18	0	106	13	176	38	2	227	28	36	28	1	92	31	74	14	2	119	5	544	549
Total	81	348	67	4	496	52	724	158	6	934	146	158	155	3	459	120	276	60	4	456	17	2345	2362
11:00 AM	18	62	14	2	94	11	128	63	4	202	61	54	56	1	171	67	133	22	1	222	8	689	697
11:15 AM	19	57	22	1	98	10	137	67	1	214	67	56	49	4	172	68	130	22	0	220	6	704	710
11:30 AM	21	60	16	0	97	12	132	67	2	211	71	58	52	2	181	72	136	23	0	231	4	720	724
11:45 AM	14	66	24	4	104	16	110	53	5	179	96	62	63	2	221	62	162	25	1	249	12	753	765
Total	72	245	76	7	393	49	507	250	12	806	295	230	220	9	745	269	561	92	2	922	30	2866	2896
12:00 PM	15	66	18	2	99	6	101	56	2	163	66	75	62	1	203	89	118	27	9	234	14	699	713
12:15 PM	12	50	19	0	81	7	146	67	2	220	53	47	63	0	163	42	128	19	1	189	3	653	656
12:30 PM	13	48	13	2	74	13	135	82	0	230	61	59	70	0	190	71	121	21	1	213	3	707	710
12:45 PM	11	50	17	2	78	13	139	87	1	239	65	65	66	2	196	69	131	23	0	223	5	736	741
Total	51	214	67	6	332	39	521	292	5	852	245	246	261	3	752	271	498	90	11	859	25	2795	2820
04:00 PM	17	72	9	2	98	15	116	85	3	216	77	88	53	2	218	84	162	37	1	283	8	815	823
04:15 PM	20	68	16	0	104	10	116	74	1	200	79	103	59	0	241	77	137	23	1	237	2	782	784
04:30 PM	11	76	10	0	97	16	121	75	0	212	96	101	58	0	255	89	146	27	0	262	0	826	826
04:45 PM	18	75	25	0	118	15	120	69	0	204	70	93	50	0	213	84	161	32	2	277	2	812	814
Total	66	291	60	2	417	56	473	303	4	832	322	385	220	2	927	334	606	119	4	1059	12	3235	3247
05:00 PM	12	63	10	3	85	14	125	79	1	218	93	119	61	0	273	111	136	43	0	290	4	866	870
05:15 PM	23	55	27	0	105	14	142	71	1	227	89	109	56	3	254	88	160	29	1	277	5	863	868
05:30 PM	22	77	12	1	111	8	131	59	2	198	73	92	53	1	218	56	116	35	3	207	7	734	741
05:45 PM	16	73	9	0	98	8	105	54	1	167	64	82	50	2	196	50	94	33	3	177	6	638	644
Total	73	268	58	4	399	44	503	263	5	810	319	402	220	6	941	305	506	140	7	951	22	3101	3123
Grand Total	437	1720	378	24	2535	294	3327	1424	37	5045	1436	1635	1260	24	4331	1391	2684	565	29	4640	114	16551	16665
Apprch %	17.2	67.9	14.9			5.8	65.9	28.2			33.2	37.8	29.1			30	57.8	12.2					
Total %	2.6	10.4	2.3		15.3	1.8	20.1	8.6		30.5	8.7	9.9	7.6		26.2	8.4	16.2	3.4		28	0.7	99.3	
Cars	421	1685	363		2489	274	3239	1383		4926	1394	1609	1217		4244	1351	2604	543		4525	0	0	16184
% Cars	96.3	98	96	83.3	97.3	93.2	97.4	97.1	81.1	96.9	97.1	98.4	96.6	100	97.5	97.1	97	96.1	93.1	96.9	0	0	97.1
Bikes	3	0	0		7	0	8	0		15	0	2	0		2	0	12	3		17	0	0	41
% Bikes	0.7	0	0	16.7	0.3	0	0.2	0	18.9	0.3	0	0.1	0	0	0	0	0.4	0.5	6.9	0.4	0	0	0.2
Trucks Buses	13	35	15		63	20	80	41		141	42	24	43		109	40	68	19		127	0	0	440
% Trucks Buses	3	2	4	0	2.5	6.8	2.4	2.9	0	2.8	2.9	1.5	3.4	0	2.5	2.9	2.5	3.4	0	2.7	0	0	2.6

EXHIBIT E2

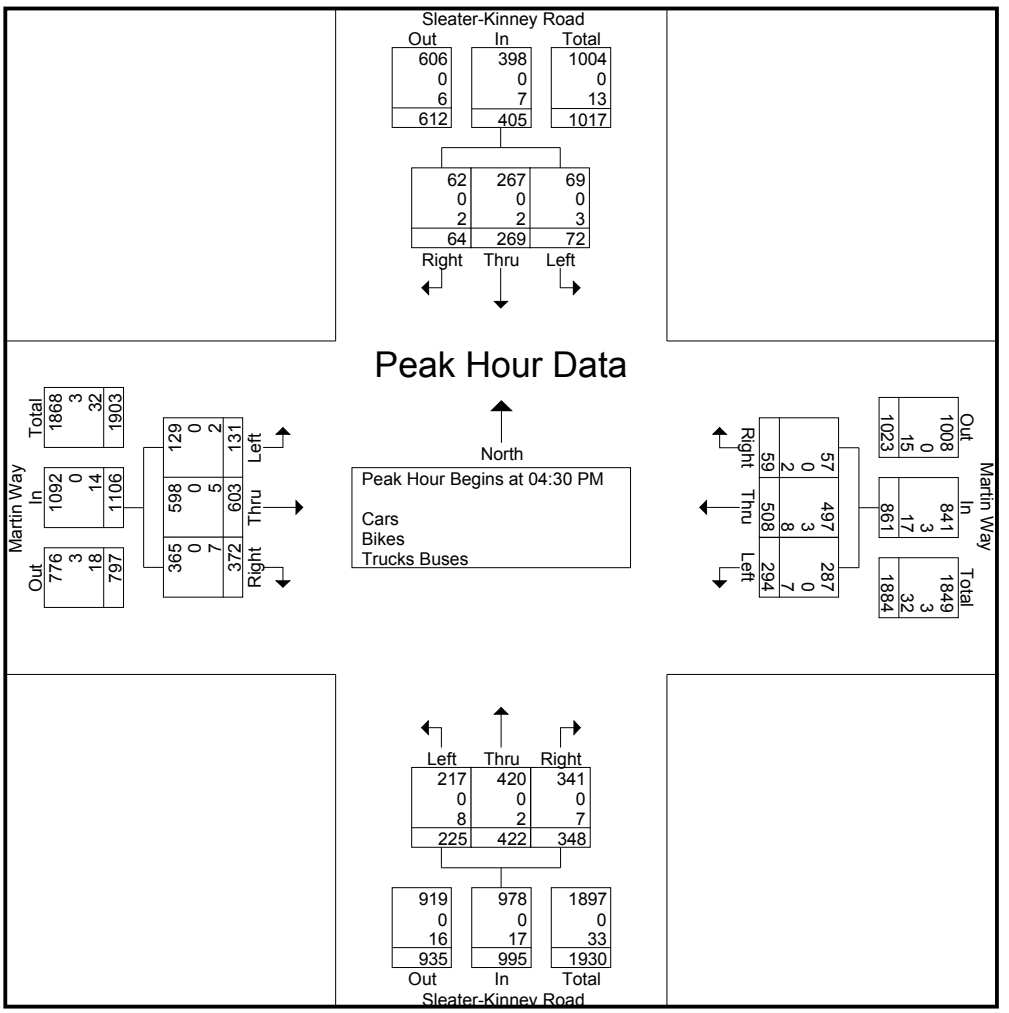
City of Olympia

Public Works Department
Transportation Line of Business

Sleater-Kinney Road
Martin Way
Weather: Sunny, Warm
Counted by: John L

File Name : Martin-SleaterKinney
Site Code : 00000024
Start Date : 5/9/2013
Page No : 5

	Sleater-Kinney Road From North				Martin Way From East				Sleater-Kinney Road From South				Martin Way From West				
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 04:30 PM																	
04:30 PM	11	76	10	97	16	121	75	212	96	101	58	255	89	146	27	262	826
04:45 PM	18	75	25	118	15	120	69	204	70	93	50	213	84	161	32	277	812
05:00 PM	12	63	10	85	14	125	79	218	93	119	61	273	111	136	43	290	866
05:15 PM	23	55	27	105	14	142	71	227	89	109	56	254	88	160	29	277	863
Total Volume	64	269	72	405	59	508	294	861	348	422	225	995	372	603	131	1106	3367
% App. Total	15.8	66.4	17.8		6.9	59	34.1		35	42.4	22.6		33.6	54.5	11.8		
PHF	.696	.885	.667	.858	.922	.894	.930	.948	.906	.887	.922	.911	.838	.936	.762	.953	.972
Cars	62	267	69	398	57	497	287	841	341	420	217	978	365	598	129	1092	3309
% Cars	96.9	99.3	95.8	98.3	96.6	97.8	97.6	97.7	98.0	99.5	96.4	98.3	98.1	99.2	98.5	98.7	98.3
Bikes	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
% Bikes	0	0	0	0	0	0.6	0	0.3	0	0	0	0	0	0	0	0	0.1
Trucks Buses	2	2	3	7	2	8	7	17	7	2	8	17	7	5	2	14	55
% Trucks Buses	3.1	0.7	4.2	1.7	3.4	1.6	2.4	2.0	2.0	0.5	3.6	1.7	1.9	0.8	1.5	1.3	1.6



APPENDIX B
COLLISION DATA

Collision Data (January 1, 2009 - December 31, 2013)

PRIMARY TRAFFICWAY	INTERSECTING TRAFFICWAY	REPORT NUMBER	DATE	# INJ	#FAT	#VEH	#PEDS	#PEDAL	VEHICLE 1 TYPE	VEHICLE 2 TYPE	ROADWAY SURFACE CONDITIONS	FIRST COLLISION TYPE / OBJECT STRUCK	VEH 1 ACTION	VEH 2 ACTION	VEH 1 COMP DIR FROM	VEH 1 COMP DIR TO	VEH 2 COMP DIR FROM	VEH 2 COMP DIR TO
6TH AVE NE	SLEATER KINNEY RD NE	E054292	5/28/2010	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	Wet	Entering at angle	Making Left Turn	Going Straight Ahead	East	South	North	South
SLEATER KINNEY RD	6 AVE	3271044	1/27/2009	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	Ice	Entering at angle	Making Right Turn	Stopped at Signal or Stop Sign	South	East	East	Vehicle Stopped
SLEATER KINNEY RD NE	6 AVE NE	3271732	2/9/2009	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	Dry	Entering at angle	Making Left Turn	Going Straight Ahead	East	South	North	South
SLEATER KINNEY RD NE	6TH AVE NE	E148322	1/14/2012	0	0	1	0	0	Passenger Car		Wet	Wood Sign Post	Going Straight Ahead		South	North		
SLEATER KINNEY RD NE	6TH AVE NE	E244187	5/14/2013	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	Dry	From same direction - both going straight - both moving - rear-end	Changing Lanes	Going Straight Ahead	South	North	South	North
SLEATER KINNEY RD NE	6TH AVE NE	E049777	4/16/2010	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	Dry	Entering at angle	Making Left Turn	Going Straight Ahead	East	South	South	North
SLEATER KINNEY RD NE	6TH AVE NE	E054011	5/27/2010	0	0	2	0	0	Passenger Car	Truck (Flatbad,Van,etc)	Dry	going straight - both moving - sideswipe	Changing Lanes	Going Straight Ahead	South	North	South	North
SLEATER KINNEY RD NE	6TH AVE NE	E285304	11/15/2013	0	0	2	0	0	Passenger Car	Passenger Car	Wet	Entering at angle	Making Left Turn	Going Straight Ahead	West	North	South	North
SLEATER KINNEY RD NE	6TH AVE NE	E050943	5/4/2010	1	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	Wet	Entering at angle	Making Left Turn	Going Straight Ahead	East	South	South	North
SLEATER KINNEY RD NE	6TH AVE NE	E285632	11/15/2013	1	0	2	0	0	Passenger Car	Passenger Car	Wet	Entering at angle	Making Left Turn	Going Straight Ahead	East	South	South	North
SLEATER KINNEY RD NE	6TH AVE NE	E268507	9/6/2013	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	Dry	Entering at angle	Making Left Turn	Going Straight Ahead	East	South	South	North
SLEATER KINNEY RD SE	6 AVE NE	3272200	11/3/2009	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	Dry	Entering at angle	Making Left Turn	Going Straight Ahead	East	South	South	North

APPENDIX C
TRAFFIC VOLUME CALCULATION WORKSHEETS

Bayan Trails
Olympia, WA
Traffic Volume Worksheet

Growth Rate: 2%
Two Hour Peak Average Rate: 0.92

			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
			Existing Volumes			Projected 2016 Calculation					Model Growth Calculation				Projected 2022 Calculation		
			Existing Peak Hour Traffic Volumes	Existing 2014 Peak Hour Traffic Volumes	**Existing 2014 2 Hour Peak Average**	2016 without Project without Pipeline	Pipeline Traffic	**Projected 2016 without Project**	Phase 1 Project Traffic	**Projected 2016 with Project**	Model 2009 Base Volumes	Model 2035 Base Volumes	Model Delta	6 years of Model Growth	**Projected 2022 without Full Build**	Phase 2 Project Traffic	**Projected 2022 with Full Build**
1		**6th Ave NE/Sleater-Kinney Rd**															
		Year: 2014															
	rt	1	0	0	**0**	0	0	**0**	2	**2**	-	-	0	0	**2**	0	**2**
SB	th	2	347	347	**319**	329	0	**329**	0	**329**	221	402	181	42	**371**	7	**378**
	lt	3	119	119	**109**	113	0	**113**	0	**113**	75	21	-54	-12	**101**	0	**101**
	rt	4	171	171	**157**	162	0	**162**	0	**162**	123	43	-80	-18	**144**	0	**144**
WB	th	5	0	0	**0**	0	0	**0**	3	**3**	-	-	0	0	**3**	0	**3**
	lt	6	84	84	**77**	80	0	**80**	0	**80**	53	69	16	4	**84**	0	**84**
	rt	7	188	188	**173**	178	0	**178**	0	**178**	53	71	18	4	**182**	0	**182**
NB	th	8	534	534	**491**	506	0	**506**	0	**506**	419	773	354	82	**588**	4	**592**
	lt	9	0	0	**0**	0	0	**0**	9	**9**	-	-	0	0	**9**	0	**9**
	rt	10	0	0	**0**	0	0	**0**	7	**7**	-	-	0	0	**7**	0	**7**
EB	th	11	0	0	**0**	0	0	**0**	3	**3**	-	-	0	0	**3**	0	**3**
	lt	12	0	0	**0**	0	0	**0**	2	**2**	-	-	0	0	**2**	0	**2**
2		**Kasey Keller Dr NE/Sleater-Kinney Rd**															
		Year: 2014															
	rt	1	0	0	**0**	0	0	**0**	0	**0**	-	-	0	0	**0**	0	**0**
SB	th	2	379	379	**349**	359	0	**359**	7	**366**	264	458	194	45	**411**	22	**433**
	lt	3	65	65	**60**	62	0	**62**	0	**62**	10	12	2	0	**62**	1	**63**
	rt	4	148	148	**136**	140	0	**140**	0	**140**	27	32	5	1	**141**	1	**142**
WB	th	5	0	0	**0**	0	0	**0**	0	**0**	-	-	0	0	**0**	0	**0**
	lt	6	7	7	**6**	7	0	**7**	0	**7**	19	25	6	1	**8**	0	**8**
	rt	7	31	31	**29**	29	0	**29**	0	**29**	6	8	2	0	**29**	0	**29**
NB	th	8	587	587	**540**	556	0	**556**	9	**565**	444	812	368	85	**650**	34	**684**
	lt	9	0	0	**0**	0	0	**0**	0	**0**	-	-	0	0	**0**	0	**0**
	rt	10	0	0	**0**	0	0	**0**	0	**0**	-	-	0	0	**0**	0	**0**
EB	th	11	0	0	**0**	0	0	**0**	0	**0**	-	-	0	0	**0**	0	**0**
	lt	12	0	0	**0**	0	0	**0**	0	**0**	-	-	0	0	**0**	0	**0**
3		**Martin Way/Sleater Kinney Rd**															
		Year: 2013															
	rt	1	64	65	**60**	62	0	**62**	4	**66**	98	190	92	21	**87**	5	**92**
SB	th	2	269	273	**251**	259	0	**259**	3	**262**	232	376	144	33	**295**	9	**304**
	lt	3	72	73	**67**	69	2	**71**	0	**71**	47	52	5	1	**72**	8	**80**
	rt	4	59	60	**55**	57	2	**59**	1	**60**	51	69	18	4	**64**	12	**76**
WB	th	5	508	516	**474**	489	11	**500**	0	**500**	681	1387	706	163	**663**	0	**663**
	lt	6	294	298	**275**	283	12	**295**	0	**295**	322	442	120	28	**323**	0	**323**
	rt	7	348	353	**325**	335	13	**348**	0	**348**	183	180	-3	-1	**347**	0	**347**
NB	th	8	422	428	**394**	406	0	**406**	4	**410**	344	474	130	30	**440**	13	**453**
	lt	9	225	228	**210**	216	0	**216**	0	**216**	166	227	61	14	**230**	0	**230**
	rt	10	372	378	**347**	358	0	**358**	0	**358**	105	208	103	24	**382**	0	**382**
EB	th	11	603	612	**563**	580	13	**593**	0	**593**	683	1246	563	130	**723**	0	**723**
	lt	12	131	133	**122**	126	0	**126**	4	**130**	144	383	239	55	**185**	9	**194**

Bayan Trails
Olympia, WA
Traffic Volume Worksheet

Growth Rate: 2%
Two Hour Peak Average Rate: 0.92

			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
			Existing Volumes			Projected 2016 Calculation					Model Growth Calculation				Projected 2022 Calculation		
			Existing Peak Hour Traffic Volumes	Existing 2014 Peak Hour Traffic Volumes	**Existing 2014 2 Hour Peak Average**	2016 without Project without Pipeline	Pipeline Traffic	**Projected 2016 without Project**	Phase 1 Project Traffic	**Projected 2016 with Project**	Model 2009 Base Volumes	Model 2035 Base Volumes	Model Delta	6 years of Model Growth	**Projected 2022 without Full Build**	Phase 2 Project Traffic	**Projected 2022 with Full Build**
4		**6th Ave NE Extension/Center Driveway**															
		Year: **2016**															
	rt	1	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
SB	th	2	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
	lt	3	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
	rt	4	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
WB	th	5	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
	lt	6	0	0	**0**	0	0	**0**	7	**7**					**7**	0	**7**
	rt	7	0	0	**0**	0	0	**0**	6	**6**					**6**	0	**6**
NB	th	8	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
	lt	9	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
	rt	10	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
EB	th	11	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
	lt	12	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
5		**6th Ave NE Extension/East Driveway**															
		Year: **2016**															
	rt	1	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
SB	th	2	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
	lt	3	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
	rt	4	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
WB	th	5	0	0	**0**	0	0	**0**	7	**7**					**7**	0	**7**
	lt	6	0	0	**0**	0	0	**0**	7	**7**					**7**	0	**7**
	rt	7	0	0	**0**	0	0	**0**	6	**6**					**6**	0	**6**
NB	th	8	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
	lt	9	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
	rt	10	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
EB	th	11	0	0	**0**	0	0	**0**	6	**6**					**6**	0	**6**
	lt	12	0	0	**0**	0	0	**0**	0	**0**					**0**	0	**0**
			0	0	**0**	0											
6		**Road C/Sleater-Kinney Rd**															
		Year: **2014**															
	rt	1	0	0	**0**	0	0	**0**	0	**0**	0	0	0	0	**0**	7	**7**
SB	th	2	431	431	**397**	408	0	**408**	7	**415**	274	471	197	45	**461**	7	**468**
	lt	3	0	0	**0**	0	0	**0**	0	**0**	0	0	0	0	**0**	0	**0**
	rt	4	0	0	**0**	0	0	**0**	0	**0**	0	0	0	0	**0**	0	**0**
WB	th	5	0	0	**0**	0	0	**0**	0	**0**	0	0	0	0	**0**	0	**0**
	lt	6	0	0	**0**	0	0	**0**	0	**0**	0	0	0	0	**0**	0	**0**
	rt	7	0	0	**0**	0	0	**0**	0	**0**	0	0	0	0	**0**	0	**0**
NB	th	8	722	722	**664**	684	0	**684**	9	**693**	472	844	372	86	**779**	9	**788**
	lt	9	0	0	**0**	0	0	**0**	0	**0**	0	0	0	0	**0**	35	**35**
	rt	10	0	0	**0**	0	0	**0**	0	**0**	0	0	0	0	**0**	23	**23**
EB	th	11	0	0	**0**	0	0	**0**	0	**0**	0	0	0	0	**0**	0	**0**
	lt	12	0	0	**0**	0	0	**0**	0	**0**	0	0	0	0	**0**	4	**4**

Column A: Peak hour traffic volumes from earlier than 2014

Column B: Column A * Growth Rate * Years of Growth or peak hour traffic volumes from 2014 counts

Column C: Column B * 2 Hour Peak Average Rate

Column D: Column B * Growth Rate * Years of Growth (2)

Column E: Pipeline project traffic volumes

Column F: Column D + Column E

Column G: Phase 1 and 2 site-generated new to network traffic volumes

Column H: Column F + Column G

Column I: Existing 2009 TRPC travel demand model turning movement data

Column J: Future 2035 TRPC travel demand model turning movement data

Column K: Column J - Column I

Column L: Column K / Model year difference (26) * Years of Growth (6)

Column M: Column H + Column L

Column N: Phase 3 site-generated new to network traffic volumes

Column O: Column M + Column N

APPENDIX D
CAPACITY ANALYSIS WORKSHEETS

Lanes and Geometrics
1: Sleater-Kinney Rd & 6th Avenue NE

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	100	0		0	200	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1787	1599	1881	1599	1787	1881
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1787	1599	1881	1599	1787	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	1287		1320			721
Travel Time (s)	29.3		30.0			16.4

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	4.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	75	155	490	175	110	320
Conflicting Peds, #/hr	3	3	0	3	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	86	178	563	201	126	368

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1187	568	0	0	566	0
Stage 1	566	-	-	-	-	-
Stage 2	621	-	-	-	-	-
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	209	524	-	-	1011	-
Stage 1	570	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	182	522	-	-	1009	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	569	-	-	-	-	-
Stage 2	470	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.9	0	2.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	182	522	1009	-
HCM Lane V/C Ratio	-	-	0.474	0.341	0.125	-
HCM Control Delay (s)	-	-	41.4	15.4	9.1	-
HCM Lane LOS	-	-	E	C	A	-
HCM 95th %tile Q(veh)	-	-	2.3	1.5	0.4	-

Lanes and Geometrics
2: Sleater-Kinney Rd & Kasey Keller Dr

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.870		0.992			
Flt Protected	0.998				0.950	
Satd. Flow (prot)	1633	0	3546	0	1787	1881
Flt Permitted	0.998				0.950	
Satd. Flow (perm)	1633	0	3546	0	1787	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	857		934			1320
Travel Time (s)	19.5		21.2			30.0

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	5	135	540	30	60	350
Conflicting Peds, #/hr	12	12	0	12	12	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	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	6	150	600	33	67	389

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1151	341	0	0	645	0
Stage 1	629	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.615	6.915	-	-	4.12	-
Critical Hdwy Stg 1	5.815	-	-	-	-	-
Critical Hdwy Stg 2	5.415	-	-	-	-	-
Follow-up Hdwy	3.5095	3.3095	-	-	2.21	-
Pot Cap-1 Maneuver	206	658	-	-	943	-
Stage 1	497	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	187	645	-	-	934	-
Mov Cap-2 Maneuver	187	-	-	-	-	-
Stage 1	492	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	593	934	-
HCM Lane V/C Ratio	-	-	0.262	0.071	-
HCM Control Delay (s)	-	-	13.2	9.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1	0.2	-

HCM 2010 Signalized Intersection Summary
3: Sleater-Kinney Rd & Martin Way

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	565	345	275	475	55	210	395	325	65	250	60
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	126	595	363	289	500	58	212	428	342	68	263	63
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	0
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	1	1	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	1088	484	330	1424	828	397	835	646	227	370	87
Arrive On Green	0.09	0.30	0.30	0.19	0.40	0.40	0.22	0.22	0.22	0.13	0.13	0.13
Sat Flow, veh/h	1792	3574	1590	1774	3539	1556	1774	3725	1571	1774	2901	679
Grp Volume(v), veh/h	126	595	363	289	500	58	212	428	342	68	167	159
Grp Sat Flow(s),veh/h/ln	1792	1787	1590	1774	1770	1556	1774	1863	1571	1774	1863	1717
Q Serve(g_s), s	7.0	14.1	20.9	16.1	10.0	1.8	10.7	10.2	16.7	3.5	8.7	9.0
Cycle Q Clear(g_c), s	7.0	14.1	20.9	16.1	10.0	1.8	10.7	10.2	16.7	3.5	8.7	9.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.40
Lane Grp Cap(c), veh/h	158	1088	484	330	1424	828	397	835	646	227	238	219
V/C Ratio(X)	0.80	0.55	0.75	0.88	0.35	0.07	0.53	0.51	0.53	0.30	0.70	0.73
Avail Cap(c_a), veh/h	353	1374	611	700	2059	1107	560	1175	790	402	422	389
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.4	29.4	31.8	40.1	21.1	11.6	34.7	34.5	22.6	40.1	42.4	42.5
Incr Delay (d2), s/veh	8.9	0.4	3.9	7.3	0.1	0.0	1.1	0.5	0.7	0.7	3.7	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	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	7.0	9.7	8.5	4.9	1.0	5.4	5.3	7.3	1.8	4.7	4.6
LnGrp Delay(d),s/veh	54.2	29.9	35.7	47.5	21.2	11.7	35.8	35.0	23.2	40.9	46.1	47.1
LnGrp LOS	D	C	D	D	C	B	D	C	C	D	D	D
Approach Vol, veh/h		1084			847			982			394	
Approach Delay, s/veh		34.7			29.5			31.1			45.6	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.9	44.8		26.7	22.9	34.9		17.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	20.0	59.0		32.0	40.0	39.0		23.0
Max Q Clear Time (g_c+I1), s	9.0	12.0		18.7	18.1	22.9		11.0
Green Ext Time (p_c), s	0.2	11.8		4.1	0.8	8.0		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	100	0		0	200	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1787	1599	1881	1599	1787	1881
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1787	1599	1881	1599	1787	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	1287		1320			721
Travel Time (s)	29.3		30.0			16.4

Intersection Summary	
Area Type:	Other

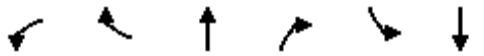
Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	80	160	505	180	115	330
Conflicting Peds, #/hr	3	3	0	3	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	92	184	580	207	132	379

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1227	585	0	0	583	0
Stage 1	583	-	-	-	-	-
Stage 2	644	-	-	-	-	-
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	198	513	-	-	996	-
Stage 1	560	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	171	511	-	-	994	-
Mov Cap-2 Maneuver	171	-	-	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	454	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.7	0	2.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	171	511	994	-
HCM Lane V/C Ratio	-	-	0.538	0.36	0.133	-
HCM Control Delay (s)	-	-	48.2	16	9.2	-
HCM Lane LOS	-	-	E	C	A	-
HCM 95th %tile Q(veh)	-	-	2.7	1.6	0.5	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.870		0.992			
Flt Protected	0.998				0.950	
Satd. Flow (prot)	1633	0	3546	0	1787	1881
Flt Permitted	0.998				0.950	
Satd. Flow (perm)	1633	0	3546	0	1787	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	857		934			1320
Travel Time (s)	19.5		21.2			30.0

Intersection Summary	
Area Type:	Other

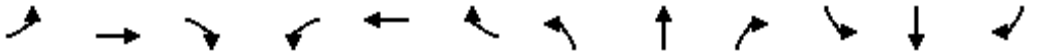
Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	5	140	555	30	60	360
Conflicting Peds, #/hr	12	12	0	12	12	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	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	6	156	617	33	67	400

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1178	349	0	0	662	0
Stage 1	645	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Critical Hdwy	6.615	6.915	-	-	4.12	-
Critical Hdwy Stg 1	5.815	-	-	-	-	-
Critical Hdwy Stg 2	5.415	-	-	-	-	-
Follow-up Hdwy	3.5095	3.3095	-	-	2.21	-
Pot Cap-1 Maneuver	198	650	-	-	929	-
Stage 1	488	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	180	637	-	-	920	-
Mov Cap-2 Maneuver	180	-	-	-	-	-
Stage 1	483	-	-	-	-	-
Stage 2	542	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.5	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	586	920	-
HCM Lane V/C Ratio	-	-	0.275	0.072	-
HCM Control Delay (s)	-	-	13.5	9.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.1	0.2	-



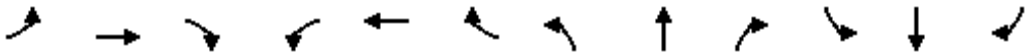
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	125	595	360	295	500	60	215	405	350	70	260	60
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	132	626	379	311	526	63	217	438	368	74	274	63
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	0
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	1	1	2	2	2	2	2	2	2	2	2
Cap, veh/h	163	1091	485	349	1455	841	402	844	667	225	371	84
Arrive On Green	0.09	0.31	0.31	0.20	0.41	0.41	0.23	0.23	0.23	0.13	0.13	0.13
Sat Flow, veh/h	1792	3574	1590	1774	3539	1556	1774	3725	1571	1774	2926	659
Grp Volume(v), veh/h	132	626	379	311	526	63	217	438	368	74	172	165
Grp Sat Flow(s),veh/h/ln	1792	1787	1590	1774	1770	1556	1774	1863	1571	1774	1863	1722
Q Serve(g_s), s	8.0	16.3	24.0	18.9	11.4	2.2	11.9	11.4	19.5	4.2	9.8	10.2
Cycle Q Clear(g_c), s	8.0	16.3	24.0	18.9	11.4	2.2	11.9	11.4	19.5	4.2	9.8	10.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	163	1091	485	349	1455	841	402	844	667	225	236	218
V/C Ratio(X)	0.81	0.57	0.78	0.89	0.36	0.07	0.54	0.52	0.55	0.33	0.73	0.75
Avail Cap(c_a), veh/h	324	1293	575	642	1921	1045	497	1045	752	369	388	358
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	32.3	35.0	43.3	22.5	12.3	37.7	37.5	24.0	44.0	46.4	46.6
Incr Delay (d2), s/veh	9.3	0.5	5.8	7.9	0.2	0.0	1.1	0.5	0.7	0.8	4.3	5.2
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	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	8.2	11.3	10.0	5.6	1.2	6.0	5.9	8.6	2.1	5.4	5.2
LnGrp Delay(d),s/veh	58.7	32.8	40.8	51.2	22.7	12.3	38.8	38.0	24.7	44.8	50.7	51.8
LnGrp LOS	E	C	D	D	C	B	D	D	C	D	D	D
Approach Vol, veh/h		1137			900			1023			411	
Approach Delay, s/veh		38.5			31.8			33.4			50.1	
Approach LOS		D			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	49.5		29.0	25.7	37.7		18.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	20.0	60.0		31.0	40.0	40.0		23.0
Max Q Clear Time (g_c+I1), s	10.0	13.4		21.5	20.9	26.0		12.2
Green Ext Time (p_c), s	0.2	12.7		3.5	0.9	7.7		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	36.6
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	100		0	200		0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.981			0.855				0.850		0.999	
Flt Protected		0.979		0.950			0.950			0.950		
Satd. Flow (prot)	0	1807	0	1787	1608	0	1787	1881	1599	1787	1879	0
Flt Permitted		0.979		0.950			0.950			0.950		
Satd. Flow (perm)	0	1807	0	1787	1608	0	1787	1881	1599	1787	1879	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		391			1287			1320			721	
Travel Time (s)		8.9			29.3			30.0			16.4	

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	5	2	80	5	160	10	505	180	115	330	2
Conflicting Peds, #/hr	3	0	4	3	0	3	4	0	3	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	100	-	0	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	6	6	2	92	6	184	11	580	207	132	379	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1350	1255	388	1259	1256	586	386	0	0	583	0	0
Stage 1	649	649	-	606	606	-	-	-	-	-	-	-
Stage 2	701	606	-	653	650	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	128	172	662	148	172	512	1178	-	-	996	-	-
Stage 1	460	467	-	486	488	-	-	-	-	-	-	-
Stage 2	431	488	-	458	467	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	70	147	658	127	147	509	1174	-	-	994	-	-
Mov Cap-2 Maneuver	70	147	-	127	147	-	-	-	-	-	-	-
Stage 1	454	404	-	480	482	-	-	-	-	-	-	-
Stage 2	269	482	-	389	404	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	42	39.8	0.1	2.4
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1174	-	-	111	127	474	994	-	-
HCM Lane V/C Ratio	0.01	-	-	0.124	0.724	0.4	0.133	-	-
HCM Control Delay (s)	8.1	-	-	42	85.7	17.6	9.2	-	-
HCM Lane LOS	A	-	-	E	F	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	4.1	1.9	0.5	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.870		0.993			
Flt Protected	0.998				0.950	
Satd. Flow (prot)	1633	0	3549	0	1787	1881
Flt Permitted	0.998				0.950	
Satd. Flow (perm)	1633	0	3549	0	1787	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	857		934			1320
Travel Time (s)	19.5		21.2			30.0

Intersection Summary	
Area Type:	Other

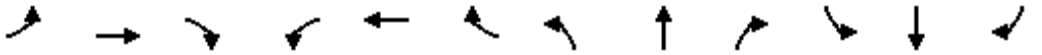
Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	5	140	565	30	60	365
Conflicting Peds, #/hr	12	12	0	12	12	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	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	6	156	628	33	67	406

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1195	355	0	0	673	0
Stage 1	656	-	-	-	-	-
Stage 2	539	-	-	-	-	-
Critical Hdwy	6.615	6.915	-	-	4.12	-
Critical Hdwy Stg 1	5.815	-	-	-	-	-
Critical Hdwy Stg 2	5.415	-	-	-	-	-
Follow-up Hdwy	3.5095	3.3095	-	-	2.21	-
Pot Cap-1 Maneuver	193	645	-	-	921	-
Stage 1	481	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	175	632	-	-	912	-
Mov Cap-2 Maneuver	175	-	-	-	-	-
Stage 1	476	-	-	-	-	-
Stage 2	538	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	580	912	-
HCM Lane V/C Ratio	-	-	0.278	0.073	-
HCM Control Delay (s)	-	-	13.6	9.3	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.1	0.2	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	130	595	360	295	500	60	215	410	350	70	260	65
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	137	626	379	311	526	63	219	441	368	74	274	68
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	0
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	1	1	2	2	2	2	2	2	2	2	2
Cap, veh/h	168	1089	484	349	1442	837	402	843	667	228	369	90
Arrive On Green	0.09	0.30	0.30	0.20	0.41	0.41	0.23	0.23	0.23	0.13	0.13	0.13
Sat Flow, veh/h	1792	3574	1590	1774	3539	1556	1774	3725	1571	1774	2878	699
Grp Volume(v), veh/h	137	626	379	311	526	63	219	441	368	74	175	167
Grp Sat Flow(s),veh/h/ln	1792	1787	1590	1774	1770	1556	1774	1863	1571	1774	1863	1713
Q Serve(g_s), s	8.3	16.4	24.2	19.0	11.5	2.2	12.1	11.5	19.6	4.2	10.0	10.4
Cycle Q Clear(g_c), s	8.3	16.4	24.2	19.0	11.5	2.2	12.1	11.5	19.6	4.2	10.0	10.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.41
Lane Grp Cap(c), veh/h	168	1089	484	349	1442	837	402	843	667	228	239	220
V/C Ratio(X)	0.82	0.57	0.78	0.89	0.36	0.08	0.55	0.52	0.55	0.33	0.73	0.76
Avail Cap(c_a), veh/h	323	1288	573	639	1913	1044	495	1040	750	368	386	355
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.4	32.5	35.2	43.5	22.9	12.5	37.9	37.7	24.1	44.0	46.6	46.7
Incr Delay (d2), s/veh	9.3	0.5	5.9	7.9	0.2	0.0	1.2	0.5	0.7	0.8	4.3	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	8.2	11.4	10.0	5.7	1.2	6.0	6.0	8.6	2.1	5.4	5.3
LnGrp Delay(d),s/veh	58.7	33.0	41.2	51.4	23.0	12.5	39.1	38.2	24.9	44.8	50.9	52.0
LnGrp LOS	E	C	D	D	C	B	D	D	C	D	D	D
Approach Vol, veh/h		1142			900			1028			416	
Approach Delay, s/veh		38.8			32.1			33.6			50.3	
Approach LOS		D			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.4	49.2		29.1	25.8	37.8		18.2
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	20.0	60.0		31.0	40.0	40.0		23.0
Max Q Clear Time (g_c+I1), s	10.3	13.5		21.6	21.0	26.2		12.4
Green Ext Time (p_c), s	0.2	12.7		3.5	0.9	7.7		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	36.9
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1881	0	0	1787	1627	0
Flt Permitted				0.950		
Satd. Flow (perm)	1881	0	0	1787	1627	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	384			390	549	
Travel Time (s)	8.7			8.9	12.5	

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	0	0	5	0	0	5
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	0	0	5	0	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	11	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	11	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1015	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	1011	-
Mov Cap-2 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1015	-

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

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.865	
Flt Protected				0.976		
Satd. Flow (prot)	1881	0	0	1836	1627	0
Flt Permitted				0.976		
Satd. Flow (perm)	1881	0	0	1836	1627	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	390			391	569	
Travel Time (s)	8.9			8.9	12.9	

Intersection Summary	
Area Type:	Other

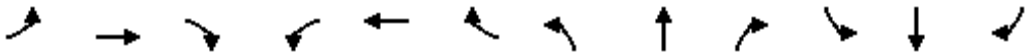
Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	5	0	5	5	0	5
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	0	5	5	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	5	0	21	5
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1623	-	998	1081
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1009	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1623	-	995	1081
Mov Cap-2 Maneuver	-	-	-	-	995	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1006	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	8.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1081	-	-	1623	-
HCM Lane V/C Ratio	0.005	-	-	0.003	-
HCM Control Delay (s)	8.3	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	100		0	200		0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.955			0.855				0.850		0.998	
Flt Protected		0.984		0.950			0.950			0.950		
Satd. Flow (prot)	0	1768	0	1787	1608	0	1787	1881	1599	1787	1877	0
Flt Permitted		0.984		0.950			0.950			0.950		
Satd. Flow (perm)	0	1768	0	1787	1608	0	1787	1881	1599	1787	1877	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		391			1287			1320			721	
Travel Time (s)		8.9			29.3			30.0			16.4	

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	5	5	85	5	145	10	590	180	100	370	5
Conflicting Peds, #/hr	3	0	4	3	0	3	4	0	3	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	100	-	0	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	5	5	5	89	5	153	11	621	189	105	389	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1331	1252	400	1257	1254	627	399	0	0	624	0	0
Stage 1	607	607	-	645	645	-	-	-	-	-	-	-
Stage 2	724	645	-	612	609	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	132	173	652	149	173	485	1165	-	-	962	-	-
Stage 1	485	488	-	462	469	-	-	-	-	-	-	-
Stage 2	419	469	-	482	487	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	80	152	648	130	152	483	1161	-	-	960	-	-
Mov Cap-2 Maneuver	80	152	-	130	152	-	-	-	-	-	-	-
Stage 1	479	433	-	456	463	-	-	-	-	-	-	-
Stage 2	280	463	-	419	432	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	32.8	39.5	0.1	1.9
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1161	-	-	145	130	450	960	-	-
HCM Lane V/C Ratio	0.009	-	-	0.109	0.688	0.351	0.11	-	-
HCM Control Delay (s)	8.1	-	-	32.8	78.7	17.3	9.2	-	-
HCM Lane LOS	A	-	-	D	F	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	3.8	1.6	0.4	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.874		0.993			
Flt Protected	0.997				0.950	
Satd. Flow (prot)	1639	0	3549	0	1787	1881
Flt Permitted	0.997				0.950	
Satd. Flow (perm)	1639	0	3549	0	1787	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	857		934			1320
Travel Time (s)	19.5		21.2			30.0

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	140	650	30	60	410
Conflicting Peds, #/hr	12	12	0	12	12	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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	11	147	684	32	63	432

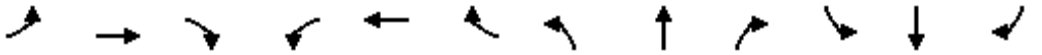
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1270	382	0	0	728	0
Stage 1	712	-	-	-	-	-
Stage 2	558	-	-	-	-	-
Critical Hdwy	6.615	6.915	-	-	4.12	-
Critical Hdwy Stg 1	5.815	-	-	-	-	-
Critical Hdwy Stg 2	5.415	-	-	-	-	-
Follow-up Hdwy	3.5095	3.3095	-	-	2.21	-
Pot Cap-1 Maneuver	173	619	-	-	878	-
Stage 1	450	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	157	607	-	-	869	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	446	-	-	-	-	-
Stage 2	528	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.2	0	1.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	510	869	-
HCM Lane V/C Ratio	-	-	0.31	0.073	-
HCM Control Delay (s)	-	-	15.2	9.5	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.3	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		275	175		300	175		0	300		400
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	0.95
Ped Bike Factor	0.99		0.97	1.00		0.97	0.99	1.00	0.97	0.99	0.99	
Frt			0.850			0.850			0.850		0.967	
Flt Protected	0.950			0.950			0.950	0.998		0.950	0.999	
Satd. Flow (prot)	1787	3574	1599	1770	3539	1583	1610	3383	1583	1610	3252	0
Flt Permitted	0.950			0.950			0.950	0.998		0.950	0.999	
Satd. Flow (perm)	1776	3574	1553	1761	3539	1541	1595	3382	1543	1599	3251	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			400			68			234		19	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1309			1022			761			934	
Travel Time (s)		25.5			19.9			17.3			21.2	

Intersection Summary	
Area Type:	Other



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	185	725	380	325	665	65	230	440	345	70	295	85
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	195	763	400	342	700	68	235	473	363	74	311	89
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	0
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	1	1	2	2	2	2	2	2	2	2	2
Cap, veh/h	225	1117	497	374	1408	840	372	780	663	248	389	109
Arrive On Green	0.13	0.31	0.31	0.21	0.40	0.40	0.21	0.21	0.21	0.14	0.14	0.14
Sat Flow, veh/h	1792	3574	1590	1774	3539	1556	1774	3725	1570	1774	2781	779
Grp Volume(v), veh/h	195	763	400	342	700	68	235	473	363	74	206	194
Grp Sat Flow(s),veh/h/ln	1792	1787	1590	1774	1770	1556	1774	1863	1570	1774	1863	1698
Q Serve(g_s), s	13.4	23.5	29.1	23.7	18.7	2.7	15.2	14.5	21.9	4.7	13.5	13.9
Cycle Q Clear(g_c), s	13.4	23.5	29.1	23.7	18.7	2.7	15.2	14.5	21.9	4.7	13.5	13.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.46
Lane Grp Cap(c), veh/h	225	1117	497	374	1408	840	372	780	663	248	260	237
V/C Ratio(X)	0.87	0.68	0.80	0.91	0.50	0.08	0.63	0.61	0.55	0.30	0.79	0.82
Avail Cap(c_a), veh/h	399	1222	544	536	1491	877	409	859	696	339	355	324
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.9	37.8	39.7	48.5	28.4	14.1	45.3	45.0	27.5	48.6	52.3	52.5
Incr Delay (d2), s/veh	9.6	1.4	8.0	15.7	0.3	0.0	2.7	1.0	0.8	0.7	8.2	11.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	11.8	13.9	13.2	9.2	1.5	7.7	7.5	9.6	2.3	7.5	7.3
LnGrp Delay(d),s/veh	63.5	39.2	47.7	64.2	28.7	14.1	48.0	46.1	28.3	49.2	60.6	63.6
LnGrp LOS	E	D	D	E	C	B	D	D	C	D	E	E
Approach Vol, veh/h		1358			1110			1071			474	
Approach Delay, s/veh		45.2			38.7			40.5			60.0	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.8	54.0		30.3	30.5	43.3		21.6
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	28.0	53.0		29.0	38.0	43.0		24.0
Max Q Clear Time (g_c+I1), s	15.4	20.7		23.9	25.7	31.1		15.9
Green Ext Time (p_c), s	0.4	15.4		2.4	0.8	8.2		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	43.9
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Two Way Analysis cannot be performed on Signalized Intersection.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1881	0	0	1787	1627	0
Flt Permitted				0.950		
Satd. Flow (perm)	1881	0	0	1787	1627	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	384			390	549	
Travel Time (s)	8.7			8.9	12.5	

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	0	0	5	0	0	5
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	0	0	5	0	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	11	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	11	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1015	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	1011	-
Mov Cap-2 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1015	-

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

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.865	
Flt Protected				0.976		
Satd. Flow (prot)	1881	0	0	1836	1627	0
Flt Permitted				0.976		
Satd. Flow (perm)	1881	0	0	1836	1627	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	390			391	569	
Travel Time (s)	8.9			8.9	12.9	

Intersection Summary	
Area Type:	Other

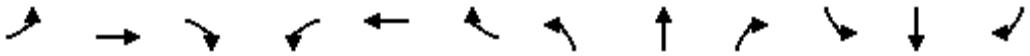
Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	5	0	5	5	0	5
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	0	5	5	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	5	0	21	5
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1623	-	998	1081
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1009	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1623	-	995	1081
Mov Cap-2 Maneuver	-	-	-	-	995	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1006	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	8.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1081	-	-	1623	-
HCM Lane V/C Ratio	0.005	-	-	0.003	-
HCM Control Delay (s)	8.3	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	100		0	200		0
Storage Lanes	0		0	1		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.955				0.850			0.850		0.998	
Flt Protected		0.984			0.955		0.950			0.950		
Satd. Flow (prot)	0	1768	0	0	1797	1599	1787	1881	1599	1787	1877	0
Flt Permitted		0.984			0.955		0.950			0.950		
Satd. Flow (perm)	0	1768	0	0	1797	1599	1787	1881	1599	1787	1877	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		391			1287			480			721	
Travel Time (s)		10.7			35.1			13.1			19.7	

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	5	5	85	5	145	10	590	180	100	380	5
Conflicting Peds, #/hr	3	0	4	3	0	3	4	0	3	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	0	100	-	0	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	5	5	5	89	5	153	11	621	189	105	400	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1265	1262	411	1267	1265	627	409	0	0	624	0	0
Stage 1	617	617	-	645	645	-	-	-	-	-	-	-
Stage 2	648	645	-	622	620	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	147	171	643	146	170	485	1155	-	-	962	-	-
Stage 1	479	483	-	462	469	-	-	-	-	-	-	-
Stage 2	461	469	-	476	481	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	89	150	639	128	149	483	1151	-	-	960	-	-
Mov Cap-2 Maneuver	89	150	-	128	149	-	-	-	-	-	-	-
Stage 1	473	429	-	456	463	-	-	-	-	-	-	-
Stage 2	308	463	-	414	427	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	31	42.9	0.1	1.9
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1151	-	-	154	129	483	960	-	-
HCM Lane V/C Ratio	0.009	-	-	0.103	0.734	0.316	0.11	-	-
HCM Control Delay (s)	8.2	-	-	31	86.3	15.9	9.2	-	-
HCM Lane LOS	A	-	-	D	F	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	4.2	1.3	0.4	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.874		0.994			
Flt Protected	0.997				0.950	
Satd. Flow (prot)	1639	0	3553	0	1787	1881
Flt Permitted	0.997				0.950	
Satd. Flow (perm)	1639	0	3553	0	1787	1881
Link Speed (mph)	25		25			25
Link Distance (ft)	857		934			840
Travel Time (s)	23.4		25.5			22.9

Intersection Summary	
Area Type:	Other

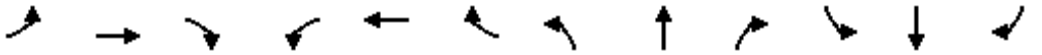
Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	140	685	30	65	435
Conflicting Peds, #/hr	12	12	0	12	12	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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	11	147	721	32	68	458

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1344	400	0	0	765	0
Stage 1	749	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Critical Hdwy	6.615	6.915	-	-	4.12	-
Critical Hdwy Stg 1	5.815	-	-	-	-	-
Critical Hdwy Stg 2	5.415	-	-	-	-	-
Follow-up Hdwy	3.5095	3.3095	-	-	2.21	-
Pot Cap-1 Maneuver	156	603	-	-	851	-
Stage 1	431	-	-	-	-	-
Stage 2	552	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	141	591	-	-	842	-
Mov Cap-2 Maneuver	141	-	-	-	-	-
Stage 1	427	-	-	-	-	-
Stage 2	502	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.9	0	1.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	487	842	-
HCM Lane V/C Ratio	-	-	0.324	0.081	-
HCM Control Delay (s)	-	-	15.9	9.7	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.4	0.3	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	195	725	380	325	665	75	230	455	345	80	305	90
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1900
Adj Flow Rate, veh/h	205	763	400	342	700	79	240	481	363	84	321	95
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	0
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	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	235	1115	496	375	1393	842	373	784	665	258	400	116
Arrive On Green	0.13	0.31	0.31	0.21	0.39	0.39	0.21	0.21	0.21	0.14	0.14	0.14
Sat Flow, veh/h	1792	3574	1590	1792	3574	1571	1792	3762	1585	1792	2784	807
Grp Volume(v), veh/h	205	763	400	342	700	79	240	481	363	84	215	201
Grp Sat Flow(s),veh/h/ln	1792	1787	1590	1792	1787	1571	1792	1881	1585	1792	1881	1711
Q Serve(g_s), s	14.2	23.6	29.2	23.6	18.8	3.1	15.5	14.6	21.8	5.3	13.9	14.4
Cycle Q Clear(g_c), s	14.2	23.6	29.2	23.6	18.8	3.1	15.5	14.6	21.8	5.3	13.9	14.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	235	1115	496	375	1393	842	373	784	665	258	270	246
V/C Ratio(X)	0.87	0.68	0.81	0.91	0.50	0.09	0.64	0.61	0.55	0.33	0.79	0.82
Avail Cap(c_a), veh/h	397	1217	542	539	1501	889	412	864	698	341	358	325
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	38.0	39.9	48.8	29.2	14.5	45.7	45.3	27.8	48.6	52.2	52.5
Incr Delay (d2), s/veh	10.6	1.4	8.2	15.4	0.3	0.0	2.9	1.1	0.8	0.7	8.8	11.6
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	7.7	11.9	13.9	13.3	9.3	1.8	8.0	7.7	9.7	2.7	7.9	7.6
LnGrp Delay(d),s/veh	64.3	39.4	48.1	64.2	29.5	14.5	48.6	46.5	28.6	49.3	61.0	64.1
LnGrp LOS	E	D	D	E	C	B	D	D	C	D	E	E
Approach Vol, veh/h		1368			1121			1084			500	
Approach Delay, s/veh		45.7			39.1			40.9			60.3	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	20.6	53.2		30.3	30.4	43.4		22.1
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	28.0	53.0		29.0	38.0	43.0		24.0
Max Q Clear Time (g_c+I1), s	16.2	20.8		23.8	25.6	31.2		16.4
Green Ext Time (p_c), s	0.4	15.4		2.5	0.8	8.2		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	44.4
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1881	0	0	1787	1627	0
Flt Permitted				0.950		
Satd. Flow (perm)	1881	0	0	1787	1627	0
Link Speed (mph)	25			25	30	
Link Distance (ft)	382			394	398	
Travel Time (s)	10.4			10.7	9.0	

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	0	0	5	0	0	5
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	0	0	5	0	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	11	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	11	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1015	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	1011	-
Mov Cap-2 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1015	-

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

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.865	
Flt Protected				0.976		
Satd. Flow (prot)	1881	0	0	1836	1627	0
Flt Permitted				0.976		
Satd. Flow (perm)	1881	0	0	1836	1627	0
Link Speed (mph)	25			25	30	
Link Distance (ft)	394			391	233	
Travel Time (s)	10.7			10.7	5.3	

Intersection Summary	
Area Type:	Other

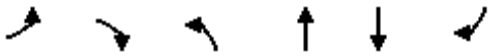
Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	5	0	5	5	0	5
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	0	5	5	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	5	0	21	5
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1623	-	998	1081
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1009	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1623	-	995	1081
Mov Cap-2 Maneuver	-	-	-	-	995	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1006	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	8.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1081	-	-	1623	-
HCM Lane V/C Ratio	0.005	-	-	0.003	-
HCM Control Delay (s)	8.3	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	100			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.887				0.999	
Flt Protected	0.992		0.950			
Satd. Flow (prot)	1655	0	1787	3574	1879	0
Flt Permitted	0.992		0.950			
Satd. Flow (perm)	1655	0	1787	3574	1879	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	555			840	480	
Travel Time (s)	15.1			22.9	13.1	

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	25	35	790	470	5
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	5	26	37	832	495	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	986	497	500	0	-	0
Stage 1	497	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Critical Hdwy	6.615	6.215	4.11	-	-	-
Critical Hdwy Stg 1	5.415	-	-	-	-	-
Critical Hdwy Stg 2	5.815	-	-	-	-	-
Follow-up Hdwy	3.5095	3.3095	2.209	-	-	-
Pot Cap-1 Maneuver	261	575	1069	-	-	-
Stage 1	613	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	252	575	1069	-	-	-
Mov Cap-2 Maneuver	252	-	-	-	-	-
Stage 1	613	-	-	-	-	-
Stage 2	565	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1069	-	474	-	-
HCM Lane V/C Ratio	0.034	-	0.067	-	-
HCM Control Delay (s)	8.5	-	13.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Queuing and Blocking Report

Intersection: 1: Sleater-Kinney Rd & 6th Avenue NE

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	T	R	L	TR
Maximum Queue (ft)	49	86	84	31	75	56	69	17
Average Queue (ft)	16	42	40	7	5	5	31	1
95th Queue (ft)	43	78	70	29	32	29	60	10
Link Distance (ft)	788		1240		1098	1098		680
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		100		100			200	
Storage Blk Time (%)		0	0		0			
Queuing Penalty (veh)		0	0		0			

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report

Intersection: 6: Sleater-Kinney Rd & Road C

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	61	36
Average Queue (ft)	23	12
95th Queue (ft)	50	38
Link Distance (ft)	874	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0