Revised Transportation Impact Analysis

POTALA VILLAGE
KIRKLAND, WA

Prepared for:
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May 2011

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Executive Summary

This section provides an executive summary of the transportation impact analysis for the Potala Village development through a set of frequently asked questions (FAQs).

Where is the site located?

The project is located on the southeast corner of the Lake Street S and 10th Avenue S intersection in Kirkland, Washington. It is comprised of two parcels, 1006 and 1020 Lake Street. Access to the underground parking garage is proposed via one full access driveway along Lake Street S.

What is the land use and trip generation?

The project would develop approximately 143 residential units and 6,186 square-feet of commercial use consisting of approximately 3,186 square-feet of general office and 3,000 square-feet of medical office use. The proposal includes 316 parking stalls.

Trip generation was estimated based on average trip rates from ITE's *Trip* Generation, 8th Edition. The proposed project would generate approximately 1,070 net new daily trips with 86 trips occurring during the AM peak hour and 111 trips occurring during the PM peak hour.

What are the existing and future without-project conditions in the study area?

All study intersections currently operate at LOS D or better except 116th Avenue NE/I-405 Northbound Ramp, which operates at LOS E during the weekday PM peak hour. Anticipated increases in traffic volumes by 2012 would degrade operations at the 108th Avenue NE/NE 68th Street and NE 72nd Place/I-405 Southbound Ramp intersections to LOS E and the 116th Avenue NE/I-405 Northbound Ramp intersection to LOS F. All other study intersections would continue to operate at LOS C or better under baseline 2012 conditions.

Would the project have any transportation impacts?

Project traffic represents a proportional share at the signalized study intersections of less than three percent. The addition of project traffic is not anticipated to have a SEPA impact as defined by the City of Kirkland.

How would the site access operate?

The proposed project driveway is anticipated to operate at LOS D during the weekday PM peak hour. There would be adequate sight distance at the proposed driveway. In addition, a gap analysis shows that based on existing data there are sufficient vehicle gaps to accommodate the inbound and outbound left-turn movements to and from the site access.

Is there adequate parking supply?

The proposed parking supply would accommodate the anticipated parking demand and meet the City's parking code requirements.

What mitigation measures are recommended?

The developer would be required to pay the City of Kirkland transportation impact fees, which are preliminarily estimated at $382,500. These fees are provided as estimates only and will be finalized by the City.

Introduction

The purpose of this transportation impact analysis (TIA) is to identify potential transportation-related impacts along the surrounding roadway network associated with the proposed Potala Village. As necessary, mitigation measures are identified that would offset or reduce State Environmental Policy Action (SEPA) impacts as defined by the City of Kirkland.

Project Description

Figure 1 illustrates the project site and the surrounding vicinity. The project is located in Kirkland, Washington at the southeast corner of the Lake Street S and 10th Avenue S intersection. It is comprised of two parcels, 1006 and 1020 Lake Street. The project would develop approximately 143 residential units and 6,186 square-feet of commercial use consisting of 3,186 square-feet of general office and 3,000 square-feet of medical office use. The site is currently occupied by an approximately 1,500 square-foot dry cleaner and a small café.

A preliminary site plan is shown on Figure 2. Access to the project site would be provided via one full access driveway along Lake Street S. The access would be into the parking garage, which would have 316 parking spaces. The project is anticipated to be constructed and occupied by 2012.

Study Area and Scope

The transportation analysis scope and approach were identified through coordination with City of Kirkland staff. Based on the City's *Transportation Impact Analysis Guidelines* (February 2004), the study intersections are those identified as significant based on the City's proportional share impact worksheets. Appendix A contains the worksheets for the study area. In addition, the City requested an evaluation of the Lake Street S/10th Avenue S and State Street S/10th Avenue S intersections as well as the site driveway. The study intersections, listed below and shown in Figure 1, represent locations within the project vicinity that would experience impacts as defined by the City:

1. Lake Street S/10th Avenue S
2. State Street S/10th Avenue S
3. State Street S/NE 68th Street
4. 108th Avenue NE/NE 68th Street
5. Lake Washington Boulevard NE/Lakeview Drive
6. Lake Washington Boulevard NE/NE 38th Place
7. NE 72nd Place/I-405 Southbound Ramp
8. 116th Avenue NE/I-405 Northbound Ramp
9. NE 70th Place/116th Avenue NE

Consistent with the City TIA guidelines, the analysis focuses on the weekday PM peak period (4:00 to 6:00 p.m.). The TIA begins by describing conditions in the site vicinity, including roadway network, existing and future (2012) weekday PM peak hour traffic volumes, traffic operations, traffic safety, non-motorized facilities, and transit. Future with-project conditions are evaluated by adding site-generated traffic to future baseline volumes. Analysis of future conditions addresses cumulative impacts of the proposed project and traffic growth in the study area. Site-generated impacts are identified based on differences in transportation conditions between with-and without-project conditions.

Site Vicinity

FIGURE

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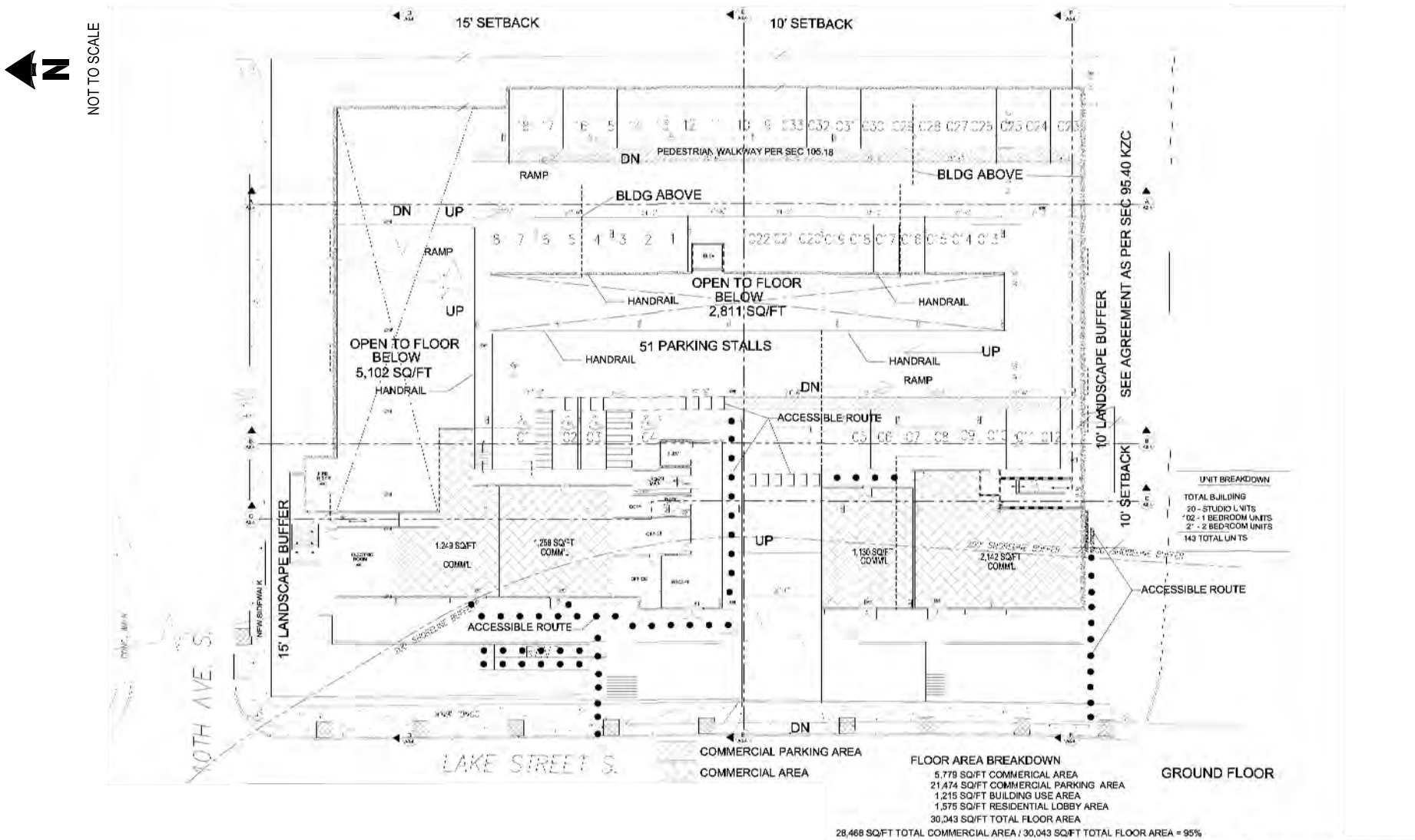

Note: This represents the first floor of the proposed development

Preliminary Site Plan

Potala Village

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FIGURE

2

Existing and Baseline Conditions

This section describes existing and future baseline (without-project) conditions within the identified study area. Characteristics are provided for the roadway network, peak hour traffic volumes, traffic operations, traffic safety, non-motorized facilities, and transit.

Roadway Network

The proposed project is located along Lake Street S at 10th Avenue S. The major roadways in the study area are listed and described below:

Lake Street S/Lake Washington Boulevard NE extends north-south from Central Way to Northup Way. The City classifies this roadway as a principal arterial. It has a posted speed limit of 30 to 35 mph within the study area. Sidewalks and bicycle lanes are provided on both sides.

108th Avenue NE extends north-south from NE 38th Place to Central Way/NE 85th Street. The City classifies this roadway as a minor arterial. It has a posted speed limit of 25 to 30 mph within the study area. Sidewalks and bicycle lanes are provided on both sides.

Lakeview Drive/NE 68th Street/NE 72nd Place/NE 70th Place extends north-south from Lake Washington Boulevard NE to State Street and then east-west from State Street to 132nd Avenue NE. The City classifies this roadway as a minor arterial. It has a posted speed limit of 25 to 30 mph within the study area. Sidewalks and bicycle lanes are provided on both sides.

State Street extends north-south from Lakeview Drive to Central Way. The City classifies this roadway as a minor arterial. It has a posted speed limit of 25 mph within the study area. Sidewalks and bicycle lanes are provided on both sides.

116th Avenue NE extends north-south from the Kirkland City limits to NE 80th Street. The City classifies this roadway as a collector. It has a posted speed limit of 25 to 30 mph within the study area. Sidewalks and bicycle lanes are provided on both sides.

NE 38th Place extends between Lake Washington Boulevard NE and 108th Avenue NE. The City classifies this roadway as a collector. It has a posted speed limit of 25 mph within the study area. Sidewalks and bicycle lanes are provided on both sides.

Planned Transportation Improvements

The Kirkland *2009-2014 Capital Improvement Program* (CIP) was reviewed to determine if there were 2012 funded transportation improvements in the study area. Based on a review of the program, there are no funded transportation improvements for the study intersections. The City is currently going through the adoption process for the 2011-2016 CIP. This plan also does not include any transportation improvements in the study area.

Traffic Volumes

Existing weekday PM peak hour turning movement counts at the study intersections were conducted in early December 2010. Intersection turning movement counts are provided in Appendix B. Existing weekday PM peak hour traffic volumes are summarized on Figure 3 and were used to evaluate existing traffic conditions. The City provided weekday PM peak hour future baseline 2012 traffic forecasts. These forecasts were developed based on the City's traffic model. The Lake Street S/10th Avenue S and State Street S/10th Avenue S intersections are not included in the City's model. Based on coordination with City staff, future

traffic volumes were developed by applying a two-percent per year growth rate to the existing traffic volumes and adding the planned Park Place development traffic. This method provides a future 2012 forecast for the 10th Avenue S locations consistent with the City's traffic model. Baseline intersection volumes for the weekday PM peak hour are shown in Figure 4.

Traffic Operations

Traffic operations are characterized through an intersection level of service (LOS) analysis. LOS is a widely applied analysis technique for measuring the Quality of traffic flow through intersections and comparing resulting traffic operations to adopted standards. Kirkland's adopted intersection LOS standard is LOS D or better. WSDOT also has an adopted LOS D standard for urban highways of statewide significant, which includes I-405.

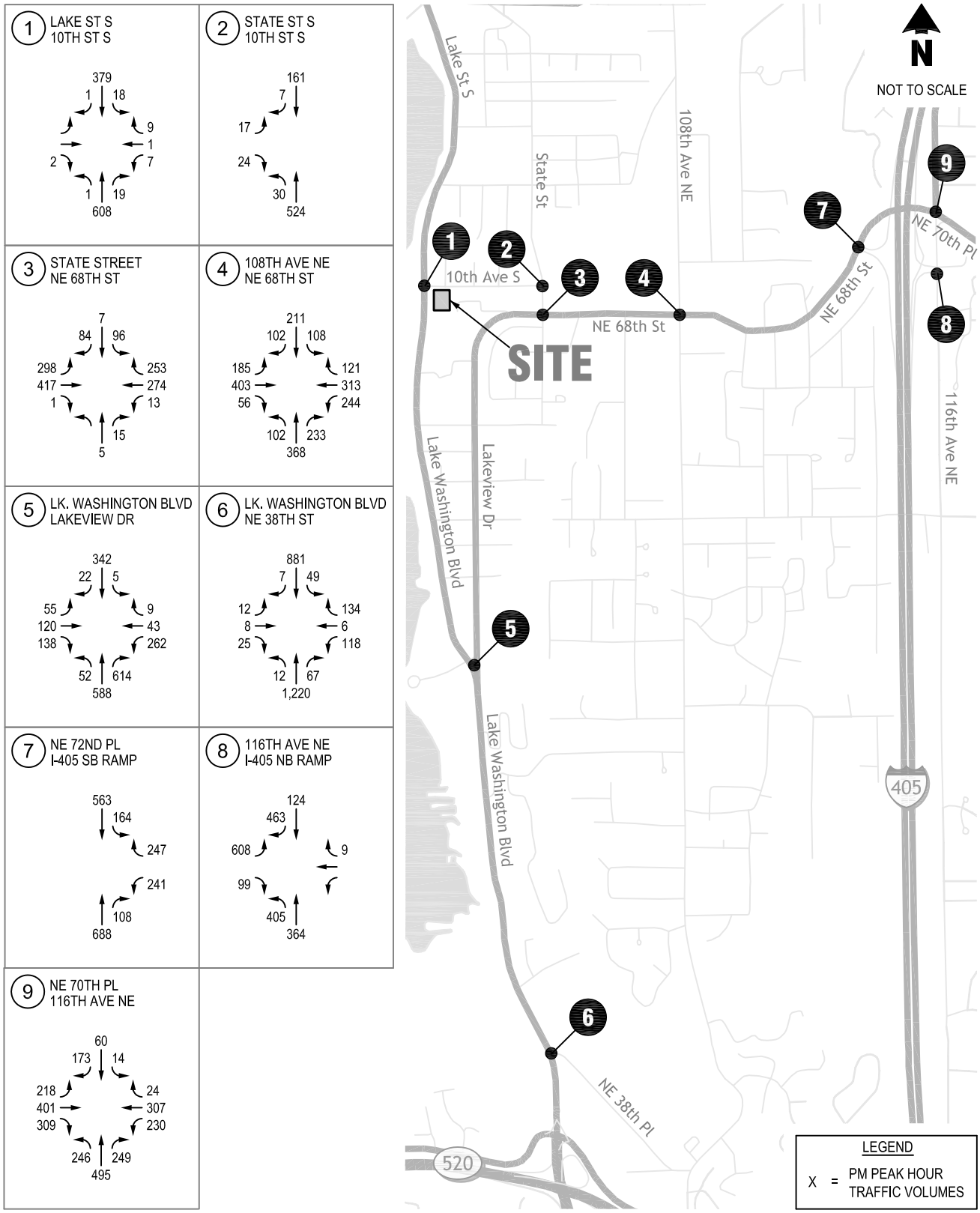
LOS values range from LOS A indicating free-flow traffic to LOS F indicating extreme congestion and long vehicle delays. Existing and baseline LOS, delays, and volume-to-capacity (v/c) ratios were calculated using the *Highway Capacity Manual* (*HCM*) *2000* method and Synchro (version 7.0). Appendix C provides a more detailed explanation of intersection LOS. This method uses peak hour traffic volumes, intersection geometry, intersection control, and roadway characteristics as inputs to evaluate operations. Table 1 summarizes the existing and baseline weekday PM peak hour intersection operations. Detailed LOS worksheets are provided in Appendix D.

Table 1. Existing and Baseline Weekday PM Peak Hour Intersection Level of Service

	2010 Existing			2012 Baseline		
Intersection	**LOS[1]**	**Delay[2]**	**V/C[3] or WM[4]**	**LOS[1]**	**Delay[2]**	**V/C[3] or WM[4]**
1. Lake Street S/10th Avenue S	C	19	WB	C	24	WB
2. State Street S/10th Avenue S	B	13	EB	C	16	EB
3. State Street S/NE 68th Street	B	19	0.48	C	26	0.62
4. 108th Avenue NE/NE 68th Street	D	39	0.72	E	67	0.96
5. Lake Washington Boulevard NE/Lakeview Drive	B	18	0.57	C	21	0.64
6. Lake Washington Boulevard NE/NE 38th Place	C	25	0.87	C	31	0.94
7. NE 72nd Place/I-405 Southbound Ramps	C	26	0.84	E	74	1.04
8. 116th Avenue NE/I-405 Northbound Ramps	E	58	0.95	F	125	1.16
9. NE 70th Place/116th Avenue NE	C	26	0.76	C	34	0.84

Source: HCM, 2000 and Transpo Group, 2011.
1. LOS as defined by the HCM (TRB, 2000)
2. Average delay per vehicle in seconds.
3. Volume-to-Capacity (V/C) ratio reported for signalized intersections.
4. Worst movement (WM) reported for stop-controlled intersections.

As shown in the table, all study intersections operate at LOS D or better except the 116th Avenue NE/I-405 Northbound Ramps, which operates at LOS E. Future 2012 increases in traffic would degrade operations at the 108th Avenue NE/NE 68th Street and NE 72nd Place/I-405 Southbound Ramp intersections to LOS E and the 116th Avenue NE/I-405 Northbound Ramp intersection to LOS F. All other study intersections would continue to operate at LOS C or better under baseline 2012 conditions during the weekday PM peak hour.



Existing (2010) PM Peak Hour Traffic Volumes

FIGURE 3

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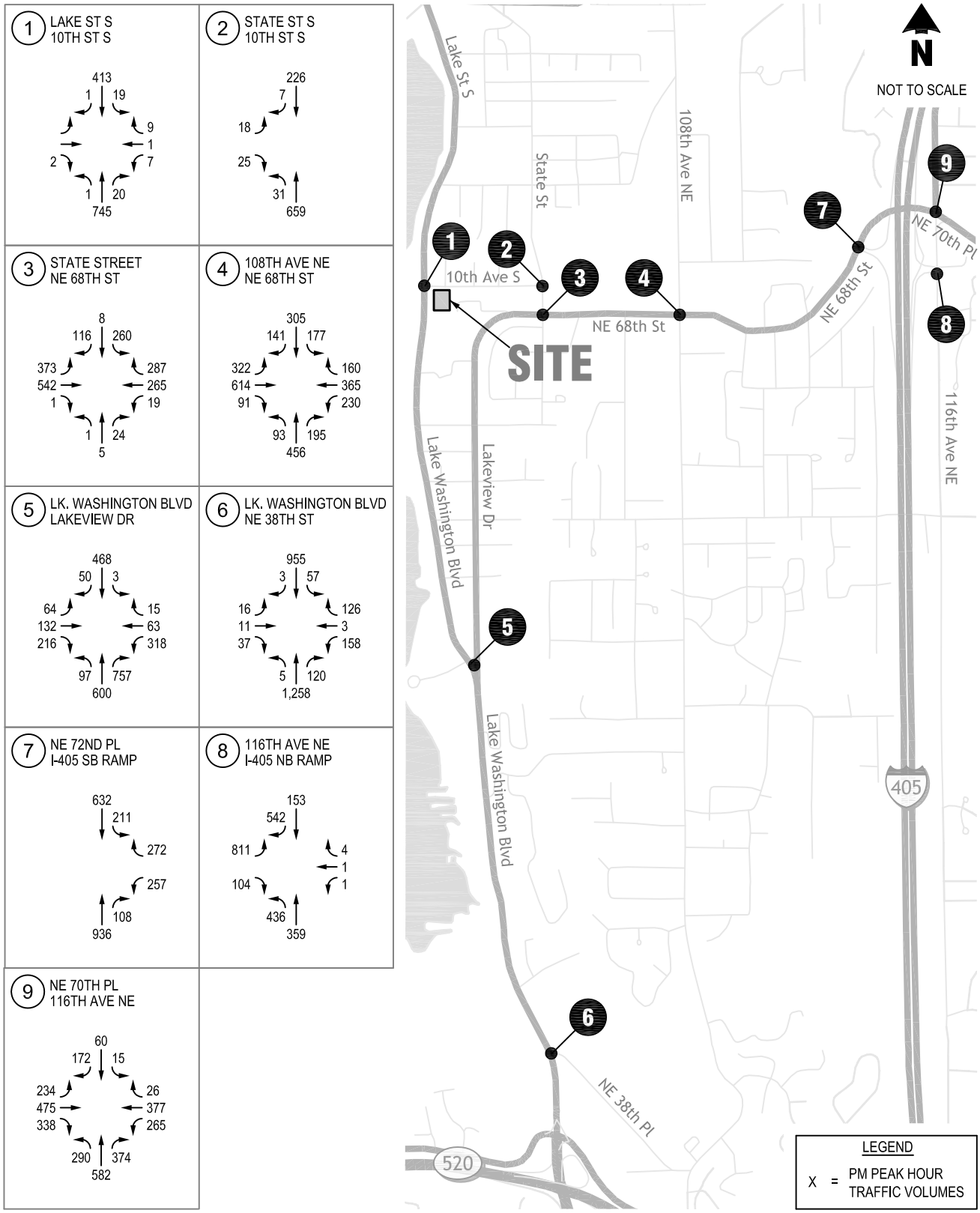

Baseline (2012) PM Peak Hour Traffic Volumes

FIGURE **4**

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Traffic Safety

Collision data provided by WSDOT for the most recent three-year period, January 1, 2007 – December 31, 2009, was examined to determine if a high volume of collisions or any patterns indicate potential safety issues within the study area. Table 2 provides a summary of the collision data at the study intersections.

As shown in the table, a majority of the study intersections have less than two collisions per year except for the intersections in the vicinity of I-405 interchange, which have four to six collisions per year. The I-405 interchanges are signalized and field observations and existing intersection LOS show that these locations are congested during peak periods. The majority of the collisions at these intersections are rear-end accidents, which are typical at congested signalized locations that have stop-and-go traffic conditions.

Table 2. Three-Year Collision Summary – 2007 to 2009

Intersection	Number of Collisions			Total	Annual Average
	2007	2008	2009		
1. Lake Street S/10th Avenue S	1	1	0	2	1.0
2. State Street S/10th Avenue S	0	0	0	0	0.0
3. State Street S/NE 68th Street	0	1	2	3	1.0
4. 108th Avenue NE/NE 68th Street	2	2	0	4	1.0
5. Lake Washington Boulevard NE/Lakeview Drive	0	4	3	7	1.7
6. Lake Washington Boulevard NE/NE 38th Place	1	3	1	5	1.7
7. NE 72nd Place/I-405 Southbound Ramp	7	3	5	15	5.0
8. 116th Avenue NE/I-405 Northbound Ramp	7	2	3	12	4.0
9. NE 70th Place/116th Avenue NE	9	4	6	19	6.3

Source: WSDOT, 2010.

Non-Motorized Facilities

Sidewalks are provided along both sides of roadways throughout the study area including along Lake Street S and 10th Avenue S. An unsignalized crosswalk is provided across Lake Street S at 10th Avenue S near the project site. Bicycle lanes are provided on both sides of the Lake Street S along the project frontage and extending north to downtown and south towards SR 520 and the City of Bellevue.

Transit Service

Transit service in the study area is provided by King County Metro Transit. The closest transit stop to the project is approximately one-quarter mile to the east along State Street S at 10th Avenue S. This location is served by Route 230, which provides service from the Kingsgate Park-and-Ride in Totem Lake to the Redmond Transit Center via downtown Kirkland and Bellevue. Service is provided on weekdays from approximately 5:00 a.m. to midnight with 30-minute headways for a majority of the day (including the peak commute periods) and 60-minute headways in the early morning and late evening. Weekend service is also provided from approximately 6:00 a.m. to midnight with 60-minute headways.

Project Impacts

This section documents project-generated impacts on the surrounding transportation system and at the study intersections. First, project peak hour traffic generation is estimated, distributed, and assigned to the study area. Next, future 2012 traffic volumes with the project are projected and potential impacts are identified.

Trip Generation

Daily and weekday peak hour trip generation for the proposed Potala development was estimated based on the land use size and trip rates from the Institute of Transportation Engineers' *Trip Generation,* 8th Edition. This is consistent with City of Kirkland requirements. The tenants for the commercial portion of the project are unknown. Based on coordination with the developer, 3,000 square-feet of medical office and 3,186 square-feet of general office use were assumed.

The proposed development will replace existing uses; therefore, trip generation for the existing uses was estimated and subtracted from the proposed project traffic generation to determine the net new project trips. Traffic for the existing uses was estimated based on the size and the average trip rate from ITE's *Trip Generation*. Table 3 summarizes the estimated trip generation for the proposed development. As shown in the table, the proposed Potala Village is anticipated to generate approximately 1,070 net new daily trips with 86 trips occurring during the AM peak hour and 107 trips occurring during the PM peak.

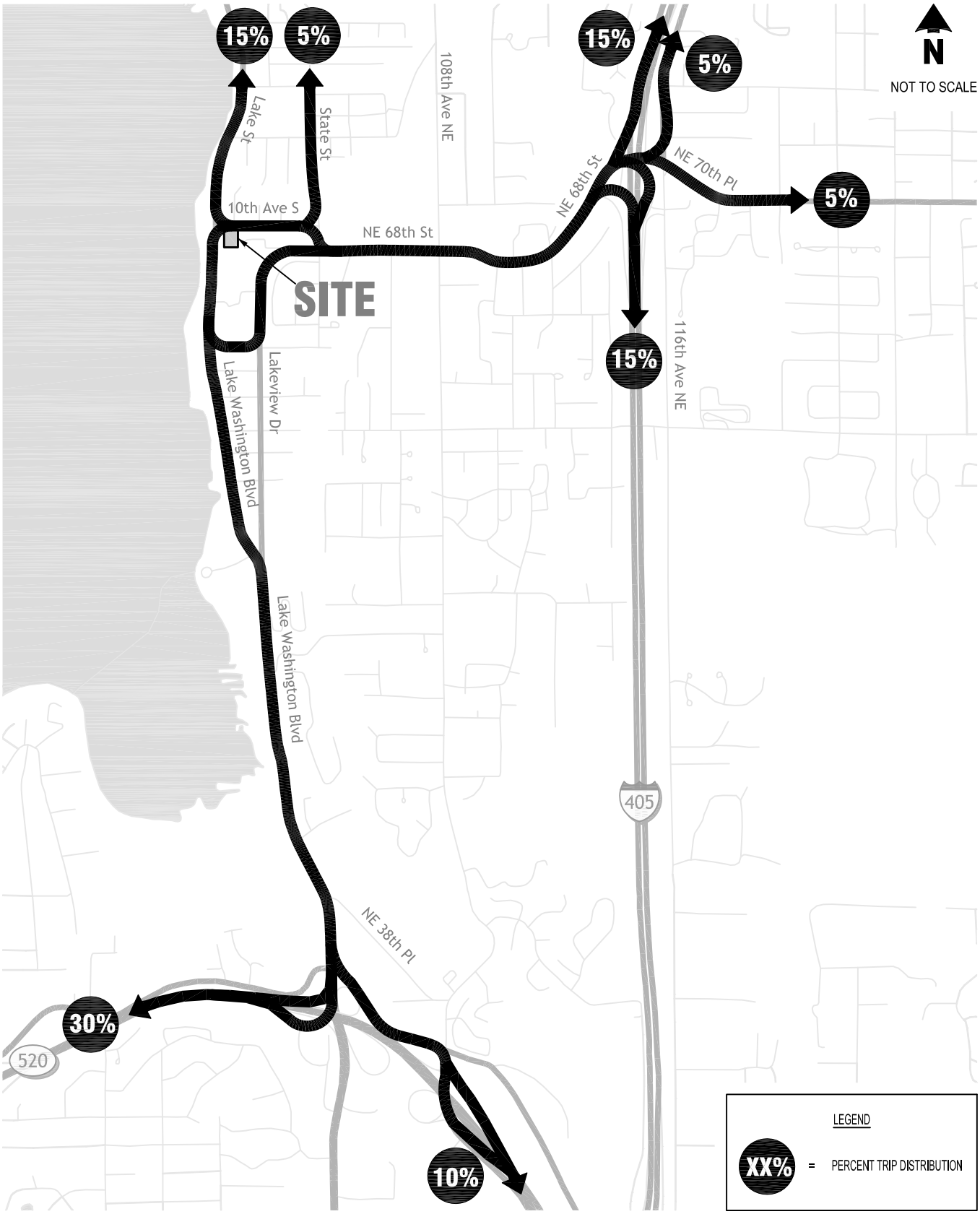
Table 3. Estimated Project Trip Generation

			Weekday AM Peak Hour[1]			Weekday PM Peak Hour[1]		
Land Use	**Size[1]**	**Daily[1]**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Proposed Use								
Apartment #220	143 units	990	15	59	74	62	34	96
General Office #710	3.186 ksf	35	4	1	5	1	4	5
Medical Office #720	3.000 ksf	108	6	1	7	3	7	10
Subtotal of Proposed Use		*1,133*	*25*	*61*	*86*	*66*	*45*	*111*
Existing Use								
Specialty Retail #814	1.500 ksf	66	0	0	0	2	2	4
Net New Project Trips		***1,067***	***25***	***61***	***86***	***64***	***43***	***107***

Note: ksf = 1,000 square-feet
1. Based on ITE *Trip Generation*, 8th Edition regression equation for Apartment #220 and average trip rates for Medical Office #720, General Office (#710) and Specialty Retail #814.

Trip Distribution and Assignment

The proposed project distribution was based on information provided by the City of Kirkland using the City's travel demand model as well as knowledge of the study area, observed travel patterns, and traffic calming measures located along 10th Avenue S. Figure 5 summarizes the distributions patterns. As shown in the figure, approximately 60 percent of the project traffic would come to and from the north and 40 percent would come to and from the south. The anticipated net new PM peak hour project trips were assigned to the study intersections as shown in Figure 6. Project traffic volumes were added to the future baseline traffic volumes to form the basis of the with-project analysis. Figure 7 shows the weekday PM peak hour traffic volumes at the study intersections.



Project Trip Distribution

FIGURE

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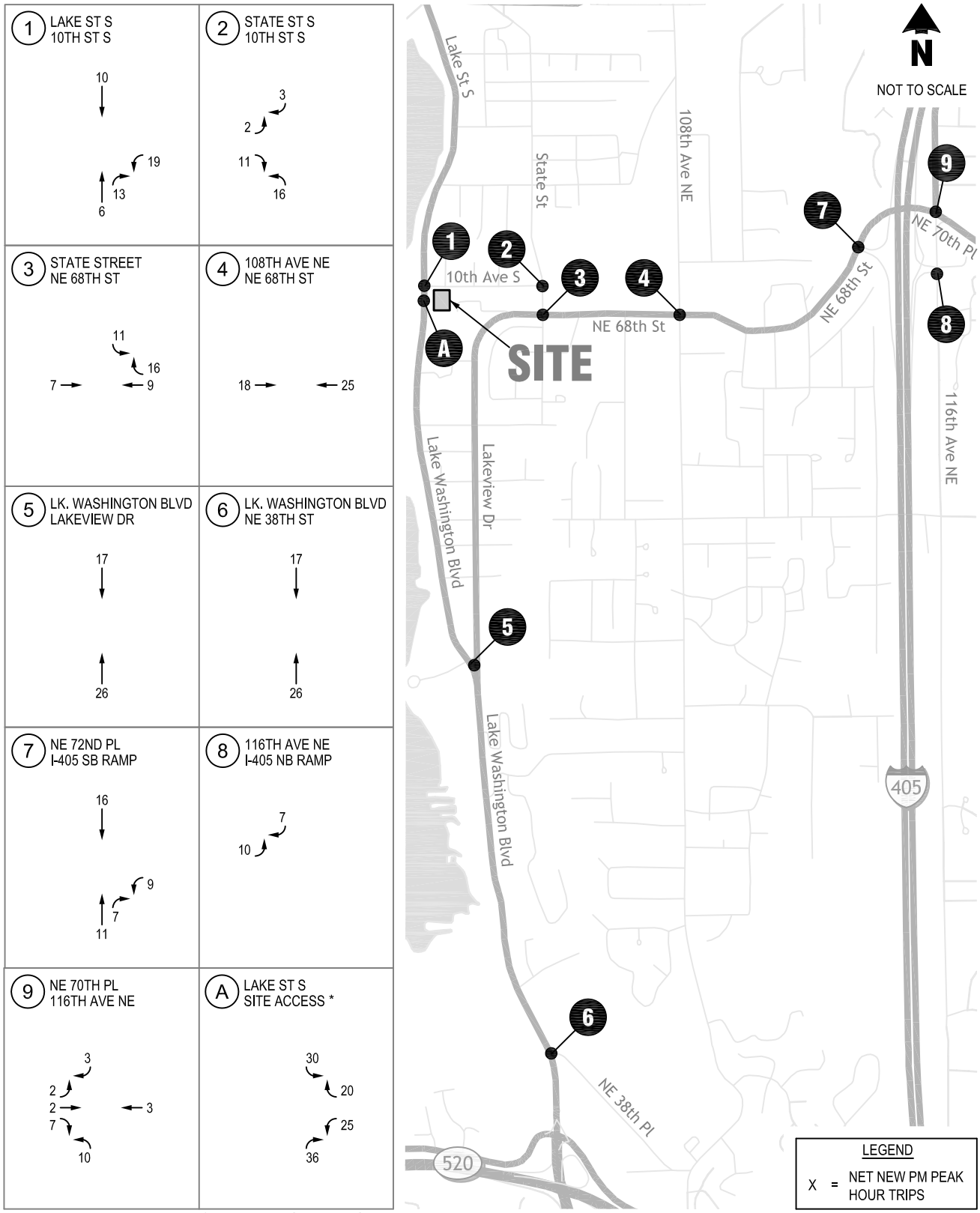

* PM PEAK HOUR TRIPS SHOWN INCLUDE EXISTING TRIPS

Project Trip Assignment

FIGURE 6

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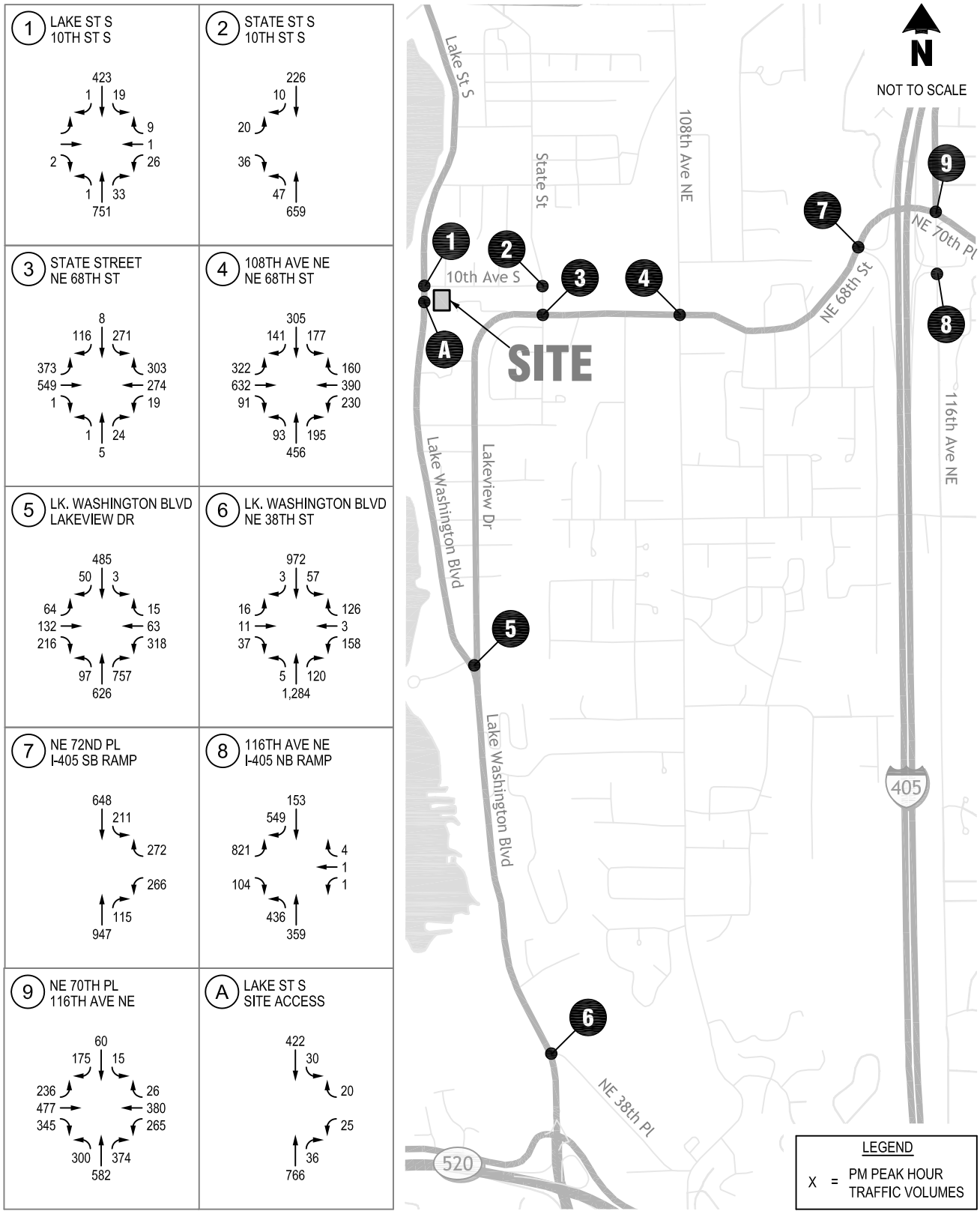

With-Project (2012) PM Peak Hour Traffic Volumes

FIGURE 7

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Traffic Operations

An operational analysis was conducted at the study intersections to evaluate the future (2012) weekday PM peak hour conditions with the project. The results of the with-project analysis were compared to the baseline analysis to identify the potential project impacts. Table 4 summarizes the future with and without-project LOS for the weekday PM peak hour. Detailed LOS worksheets are included in Appendix D.

As discussed previously, the City and WSDOT's adopted standard is LOS D. Based on the City's *Traffic Impact Analysis Guidelines* (February 2004), the City defines a SEPA impact requiring mitigation at a signalized location where the project's proportional share of daily intersection traffic related to the capacity of the intersection represents[1]:

- More than 15 percent at intersections operating at LOS E
- More than 5 percent at intersections operating at LOS F

Appendix A contains the proportional share calculation worksheets. The project's proportional share represents approximately one to three percent at all signalized study locations.

As shown in Table 4, with the addition of project traffic during the weekday PM peak hour, all the study intersections would continue to have the same LOS as baseline conditions with the exception of Lake Street S/10th Avenue S, which would operate at LOS D. The 108th Avenue NE/NE 68th Street and NE 72nd Place/I-405 Southbound Ramp intersections would operate at LOS E during the PM peak hour under baseline and with-project conditions. In addition, the 116th Avenue NE/I-405 Northbound Ramp intersection would operate at LOS F during the PM peak hour under baseline and with-project conditions. At the intersections operating at LOS E or F, the project's proportional impact[2] would be less than two percent, which is less than the City's threshold defined for a SEPA impact requiring mitigation.

Table 4. Future 2012 Weekday PM Peak Hour Intersection Level of Service

	Baseline			With-Project		
Intersection	**LOS[1]**	**Delay[2]**	**V/C[3] or WM[4]**	**LOS[1]**	**Delay[2]**	**V/C[3] or WM[4]**
1. Lake Street S/10th Avenue S	C	24	WB	D	34	WB
2. State Street S/10th Avenue S	C	16	EB	C	16	EB
3. State Street S/NE 68th Street	C	26	0.62	C	27	0.63
4. 108th Avenue NE/NE 68th Street	E	67	0.96	E	70	0.97
5. Lake Washington Boulevard NE/Lakeview Drive	C	21	0.64	C	22	0.66
6. Lake Washington Boulevard NE/NE 38th Place	C	31	0.94	C	34	0.96
7. NE 72nd Place/I-405 Southbound Ramp	E	74	1.04	E	77	1.06
8. 116th Avenue NE/I-405 Northbound Ramp	F	125	1.16	F	129	1.16
9. NE 70th Place/116th Avenue NE	C	34	0.84	C	34	0.84

Source: HCM, 2000 and Transpo Group, 2011.
1. LOS as defined by the HCM (TRB, 2000)
2. Average delay per vehicle in seconds.
3. V/C ratio reported for signalized intersections.
4. Worst movement reported for stop-controlled intersections.

[1] See Table 1 of the City of Kirkland *Traffic Impact Analysis Guidelines*, Revised February 2004.

[2] As defined by the City of Kirkland method outlined in *Traffic Impact Analysis Guidelines*, Revised February 2004 (see Appendix A).

Transportation Concurrency

A transportation concurrency test was completed for this project by the City of Kirkland on November 29, 2010. The proposed project passed the concurrency test based on the project having 164 condominium units and 9,028 square-feet of retail. The current proposal would construct 143 condominium units and 5,779 square-feet of commercial use, which would generate less traffic than the previous proposal, and thus, would continue to meet concurrency. Appendix E contains the transportation concurrency test results. The concurrency test notice shall expire and a new concurrency test application is required unless:

- A complete SEPA checklist, traffic impact analysis and all required documentation are submitted to the City within 90 calendar days of the concurrency test notice.
- A Certificate of Concurrency is issued or an extension is requested and granted by the Public Works Department within one year of issuance of the concurrency test notice. (A Certificate of Concurrency is issued at the same time a development permit or building permit is issued if the applicant holds a valid concurrency test notice.)
- A Certificate of Concurrency shall expire six years from the date of issuance of the concurrency test notice unless all building permits are issued for buildings approved under the concurrency test notice.

Site Access Evaluation

The proposed site access driveway would provide full access along Lake Street S with stop control provided on the driveway approach. This section discusses the proposed site access operations.

Intersection Operations

Weekday PM peak hour LOS and queuing were reviewed at the site access driveway. Table 5 summarizes the site access operations. As shown in the table, the site access is anticipated to operate LOS D with Lake Street S operating at LOS A. The queues at the driveway are anticipated to be minimal during the weekday PM peak hour.

Table 5. Site Access Weekday PM Peak Hour Operations

Movement	LOS[1]	Delay[2]	Storage[3]	95th Percentile Queue
Northbound Through/Right-Turn	A	0	70 feet	0
Southbound Left-Turn/Through	A	1	220 feet	5 feet
Westbound Left/Right-Turn	D	26	-	25 feet

Source: HCM, 2000 and Transpo Group, 2011.
1. LOS and 95th percentile queue as defined by the HCM (TRB, 2000)
2. Average delay per vehicle in seconds.
3. Storage for the northbound and southbound movements measured to the nearest intersections or driveways.

Sight Distance

Sight distance was also evaluated at the project driveway. The City of Kirkland recommends an entering sight distance of 335-feet at driveways with a PM peak hour volume between 50 and 200 vehicles per hour with access to a major street with an average daily traffic volume greater than 6,000 vehicles and a posted speed limit of 30 mph. Based on field measurements using the City of Kirkland procedures, the project site access would have entering sight distances greater than 400 feet in both directions. However, consistent with the existing access points along Lake Street/Lake Washington Boulevard, when vehicles are parked on-street near the proposed driveway, sight distance would be obstructed by the

parked vehicles. Similar to how the existing access points function along the roadway, drivers would need to pull forward such that they were positioned approximately 10-feet from the edge of travel way (instead of 14-feet as outlined in the procedures for measuring sight distance). By moving up, drivers would be able to see past the parked vehicles and the City's entering sight distance recommendations would be met.

Gap Analysis

At the request of the City, data were collected on January 4, 2011 during the weekday PM peak period to determine the number of available gaps along Lake Street S for traffic entering and exiting the project site. The data is provided in Appendix B. The necessary gap for passenger cars making left-turns in and out of the project was determined based on criteria found in the American Association of State Highway and Transportation Officials' (AASHTO) *A Policy on Geometric Design of Highways and Streets*, 4th Edition (2001). The gap required for outbound left-turns (exiting) the driveway onto Lake Street S is approximately 7.5 seconds representing the gap between vehicles in both the northbound and southbound directions allow the exiting vehicle to traverse the northbound travel lane and entering the traffic stream in the southbound direction. The gap required for inbound left-turns (entering) the driveway from Lake Street S is approximately 5.5 seconds representing the gap between vehicles in the northbound direction allowing a vehicle to traverse the lane and enter the site. Table 6 summarizes the gap analysis for the outbound and inbound left-turn movements.

Table 6. PM Peak Hour Left-turn Gap Analysis

Movement	Required Time Gap (seconds)[1]	Number of Observed Gaps in Traffic Greater than Requirement[2]	Anticipated Left-Turns	Can Gaps Serve Left-Turns?[3]
Outbound Left-turn	7.5	99	25	Yes
Inbound Left-turn	5.5	124	30	Yes

1. Based on AASHTO, *A Policy on Geometric Design of Highways and Streets*, 4th Edition, 2001. The outbound left-turn requires a vehicle gap of 7.5 seconds to traverse both the southbound and northbound direction and the inbound left-turn requires a vehicle gap of 5.5 seconds to traverse the northbound direction.
2. The observed gaps is based on data collected on January 4, 2011 for the PM Peak hour (5:00 to 6:00 p.m.).
3. If the number of observed vehicle gaps along Lake Street S is greater than the total number of left-turns then there are adequate gaps to serve the driveway.

Table 6 shows there are sufficient gaps during the PM peak hour to serve the outbound and inbound left-turns since the number anticipated left-turns is less than the observed gaps in traffic. As traffic volumes increase in the future, the number of vehicle gaps would decrease. Based on the future 2012 forecasts, traffic volumes are anticipated to increase by approximately 20 to 30 percent in the vicinity of the project site. However, if the vehicle gaps were reduced by as much as 50 percent due to growth in traffic volumes, there would still be sufficient gaps to accommodate the project traffic.

Parking

The project includes 316 garage parking spaces with 29 parking stalls for commercial use and 43 parking stalls for visitors. The visitor and commercial parking would not be gated so that parking can be accessed at all times. This section summarizes the parking demand and code analysis prepared for the project.

Parking Demand

The anticipated parking demand was calculated based on weekday average rates in ITE's *Parking Generation*, 4th Edition. Residential peak parking demand was based on low/mid-rise apartment land use (#221) and the commercial demand was based on general office #701 and medical office #720 land uses.

Time of day parking characteristics from ITE were also taken into consideration since parking could be shared on the first floor of the garage. The apartment land use does not have time of day information for the period between 9:00 a.m. and 3:00 p.m.; therefore, the rental townhouse (#224) land use was used since it is a similar use. Table 7 provides a summary of the estimated parking demand. As shown in the table, the proposed parking supply would accommodate the peak parking demand with or without consideration of shared or existing on-street parking.

Table 7. Estimated Parking Demand

Land Use	Size	Parking Rate[1]	Peak Parking Demand	Peak Shared Parking Demand[2]
Apartment (#221)	143 units	1.23 vehicles per unit	176	
General Office #701	3,186 sf	2.84 vehicles per 1,000 sf	9	176
Medical Office #720	3,000 sf	3.20 vehicles per 1,000 sf	10	
Total Demand			**195**	**176**
Proposed Supply			*316*	*316*
Net Difference			***-121***	***-140***

Note: sf = square-feet
1. Weekday average rate for suburban location from ITE's *Parking Generation*, 4th Edition.
2. Based on time of day information in ITE's *Parking Generation*, 4th Edition, where the peak parking demand for all the uses would occur between 12:00 to 4:00 a.m. when all the residential parking would be required and no commercial spaces would be needed.

City of Kirkland Parking Code Analysis

As noted previously, the project includes 316 garage parking spaces with 29 parking stalls for commercial use and 43 stalls for visitors. The City of Kirkland Municipal Code Title 23 *Zoning* requires 1.7 spaces per residential unit, up to 0.5 spaces per residential unit for guest parking, one space per 300 square-feet for office uses, and one space per 200 square-feet for medical office uses for zone BN. Table 8 provides a summary of the proposed parking supply compared to parking code.

Table 8. Kirkland Parking Requirements

Land Use	Size	Parking Code	Code Parking Supply	Proposed Parking Supply
Apartments (Resident)	143 units	1.7 stalls per unit	244 spaces	244 spaces
Apartments (Guest)		up to 0.5 per unit	36[1] to 72 spaces	43 spaces
Office	3,186 sf	1 space per 300 sf	11 spaces	29 spaces
Medical Office	3,000 sf	1 space per 200 sf	15 spaces	
Total			***306 to 342 spaces***	***316 spaces***

Note: sf = square-feet
1. The parking code requires up to 0.5 stalls per unit for visitors. Based on past project, the City has typically required between 0.25 and 0.5 stalls per unit.

As shown in the table, the proposed parking supply would meet the City's parking code. The developer would provide approximately 0.30 spaces per unit for visitor parking, which is within the range typically required by the City[3].

[3] The parking code requires up to 0.5 stalls per unit for visitors. Based on past projects, the City has typically required between 0.25 and 0.50 spaces per unit.

Mitigation Measures and Study Recommendations

It is anticipated that in 2012 with the addition of project traffic that existing infrastructure combined would accommodate the proposed development. The developer would be required to pay the City of Kirkland transportation impact fees. The impact fee ordinance allows credit for existing land uses, which are reflected in the calculations in Table 9. The preliminary fee estimate for the proposed project is $382,500. These fees are provided as estimates only and will be finalized by the City upon review.

Table 9. Preliminary Estimate of Transportation Impact Fee

Land Use	Size	Rate[1]	Fee
Proposed Uses			
Attached and Stacked Housing	143 units	$2,242 per unit	$320,600
Office	3,186 sf	$7.40 per sf	$23,600
Medical Office	3,000 sf	$14.49 per sf	$43,500
Subtotal			*$387,700*
Existing Use Credit			
Other Retail Sales	1,500 sf	$3.49 per sf	-$5,200
Total			***$382,500***

Note: sf = square-feet
1. Based on City of Kirkland Transportation Impact Fee Schedule as of September, 2010.

Appendix A: Intersection Proportional Share Impact Worksheets

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	Lake Washington	# of Lanes*=	1
Minor Street[1]	NE 38th Place	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	268	268	268	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	0	0	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	3.22%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.00%
$P_3=V_1/(15{,}000 \times f_3)$ =	2.14%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.00%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	1.61%
$S_2=(P_3+P_4)/2$=	1.07%

Intersection Proportional Share = Maximum of S1 and S2 = 1.61%
Significant Intersection? **yes**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	Lake Washington	# of Lanes*=	1
Minor Street[1]	Lakeview Drive	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	268	268	268	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	0	0	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	3.22%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.00%
$P_3=V_1/(15{,}000 \times f_3)$ =	2.14%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.00%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	1.61%
$S_2=(P_3+P_4)/2$=	1.07%

Intersection Proportional Share = Maximum of S1 and S2 = 1.61%
Significant Intersection? **yes**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	NE 68th Street	# of Lanes*=	1
Minor Street[1]	State Street	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	191	114	268	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	84	168	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	2.29%
$P_2=V_2/(5{,}000 \times f_2)$ =	1.68%
$P_3=V_1/(15{,}000 \times f_3)$ =	1.53%
$P_4=V_2/(2{,}500 \times f_4)$ =	3.36%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	1.99%
$S_2=(P_3+P_4)/2$=	2.44%

Intersection Proportional Share = Maximum of S1 and S2 = 2.44%
Significant Intersection? **yes**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	108th Avenue NE	# of Lanes*=	1
Minor Street[1]	NE 68th Street	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	274.5	281	268	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	0	0	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	3.30%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.00%
$P_3=V_1/(15{,}000 \times f_3)$ =	2.20%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.00%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	1.65%
$S_2=(P_3+P_4)/2$=	1.10%

Intersection Proportional Share = Maximum of S1 and S2 = 1.65%
Significant Intersection? **yes**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	Central Way	# of Lanes*=	2
Minor Street[1]	3rd Street	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	17	34	0	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	13.5	27	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
1	***1***	***1***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.17%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.27%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.11%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.54%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.22%
$S_2=(P_3+P_4)/2$=	0.33%

Intersection Proportional Share = Maximum of S1 and S2 = 0.33%
Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

106_Central_3rd /Calculation sheet

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	Lake Street	# of Lanes*=	1
Minor Street[1]	Kirkland Avenue	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	101	101	101	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	0	0	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	1.21%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.00%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.81%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.00%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.61%
$S_2=(P_3+P_4)/2$=	0.40%

Intersection Proportional Share = Maximum of S1 and S2 = 0.61%
Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

108_Lake_Kirkland /Calculation sheet

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	3rd Avenue	# of Lanes*=	1
Minor Street[1]	Kirkland Avenue	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	27	27	27	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	3.5	7	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.32%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.07%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.22%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.14%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.20%
$S_2=(P_3+P_4)/2$=	0.18%

Intersection Proportional Share = Maximum of S1 and S2 = 0.20%
Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

111_Kirkland_3rd /Calculation sheet

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	98th Avenue	# of Lanes*=	2
Minor Street[1]	Juanita Drive	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	101	101	101	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	0	0	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
1	***1***	***1***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	1.01%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.00%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.67%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.00%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.51%
$S_2=(P_3+P_4)/2$=	0.34%

Intersection Proportional Share = Maximum of S1 and S2 = 0.51%
Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

201_98th_Juanita /Calculation sheet

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	Market Street	# of Lanes*=	1
Minor Street[1]	Forbes Creek Drive	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	101	101	101	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	0	0	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	1.21%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.00%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.81%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.00%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.61%
$S_2=(P_3+P_4)/2$=	0.40%

Intersection Proportional Share = Maximum of S1 and S2 = 0.61%
Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	Market Street	# of Lanes*=	1
Minor Street[1]	7th Avenue	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	101	101	101	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	0	0	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	1.21%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.00%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.81%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.00%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.61%
$S_2=(P_3+P_4)/2$=	0.40%

Intersection Proportional Share = Maximum of S1 and S2 = 0.61%
Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	Market Street	# of Lanes*=	1
Minor Street[1]	15th Avenue	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	101	101	101	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	0	0	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	1.21%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.00%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.81%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.00%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.61%
$S_2=(P_3+P_4)/2$=	0.40%

Intersection Proportional Share = Maximum of S1 and S2 = 0.61%
Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	NE 70th Street	# of Lanes*=	1
Minor Street[1]	116th Avenue NE	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	101	168	34	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	67.5	101	34	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	1.21%
$P_2=V_2/(5{,}000 \times f_2)$ =	1.35%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.81%
$P_4=V_2/(2{,}500 \times f_4)$ =	2.70%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	1.28%
$S_2=(P_3+P_4)/2$=	1.75%

Intersection Proportional Share = Maximum of S1 and S2 = 1.75%
Significant Intersection? **yes**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	116th Avenue NE	# of Lanes*=	1
Minor Street[1]	I-405 Ramps	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	33.5	67	0	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	84	168	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.40%
$P_2=V_2/(5{,}000 \times f_2)$ =	1.68%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.27%
$P_4=V_2/(2{,}500 \times f_4)$ =	3.36%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	1.04%
$S_2=(P_3+P_4)/2$=	1.81%

Intersection Proportional Share = Maximum of S1 and S2 = 1.81%
Significant Intersection? **yes**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	NE 72nd Place	# of Lanes*=	1
Minor Street[1]	I-405 Ramp	# of Lanes*=	1

DATE:
4/4/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	224.5	281	168	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	50.5	101	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	2.70%
$P_2=V_2/(5{,}000 \times f_2)$ =	1.01%
$P_3=V_1/(15{,}000 \times f_3)$ =	1.80%
$P_4=V_2/(2{,}500 \times f_4)$ =	2.02%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	1.85%
$S_2=(P_3+P_4)/2$=	1.91%

Intersection Proportional Share = Maximum of S1 and S2 = 1.91%
Significant Intersection? **yes**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	Potola Village		
Major Street[1]	Lake Street	# of Lanes*=	1
Minor Street[1]	10th Street	# of Lanes*=	1

DATE:
3/31/2011

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	201.5	302	101	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	50.5	101	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	2.42%
$P_2=V_2/(5{,}000 \times f_2)$ =	1.01%
$P_3=V_1/(15{,}000 \times f_3)$ =	1.61%
$P_4=V_2/(2{,}500 \times f_4)$ =	2.02%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	1.71%
$S_2=(P_3+P_4)/2$=	1.82%

Intersection Proportional Share = Maximum of S1 and S2 = 1.82%

Significant Intersection? **yes**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By: Stefanie Herzstein
Company: Transpo Group

Appendix B: Traffic Data

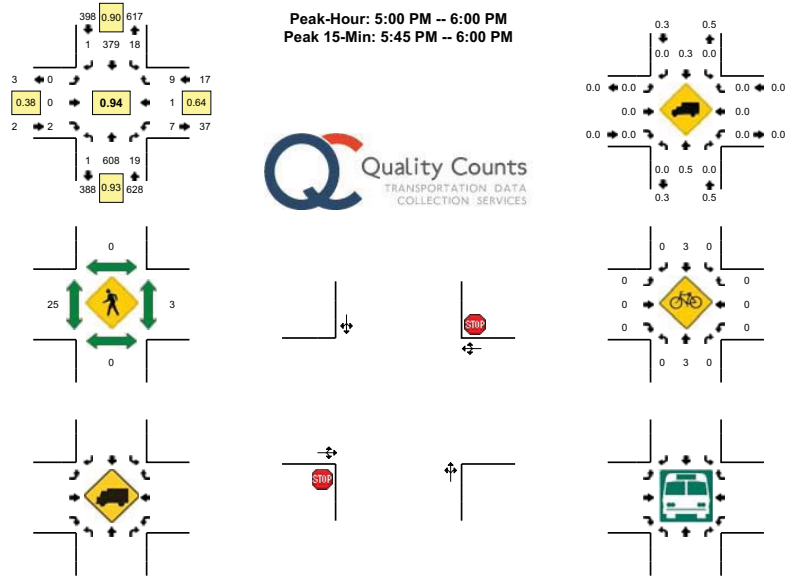
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Lake St S -- 10th Ave
CITY/STATE: Kirkland, WA

QC JOB #: 10564901
DATE: 12/7/2010

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM



5-Min Count Period Beginning At	Lake St S (Northbound)				Lake St S (Southbound)				10th Ave (Eastbound)				10th Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	48	0	0	1	27	0	0	0	0	0	0	0	0	0	0	76	
4:05 PM	0	43	1	0	0	30	0	0	0	1	0	0	0	0	0	0	75	
4:10 PM	0	38	0	0	0	29	0	0	0	0	0	0	1	0	1	0	69	
4:15 PM	0	56	2	0	1	32	0	0	0	0	0	0	0	1	1	0	93	
4:20 PM	0	55	0	0	3	34	2	0	0	0	0	0	1	0	3	0	98	
4:25 PM	0	44	1	0	1	31	0	0	0	0	0	0	1	0	0	0	78	
4:30 PM	0	52	2	0	1	28	0	0	0	0	0	0	2	0	0	0	85	
4:35 PM	0	41	1	0	1	28	1	0	0	0	1	0	0	0	1	0	74	
4:40 PM	0	66	0	0	1	34	0	0	1	0	0	0	2	0	0	0	104	
4:45 PM	0	57	2	0	0	32	0	0	0	0	0	0	0	0	0	0	91	
4:50 PM	0	43	2	0	0	32	0	0	0	0	0	0	0	0	0	0	77	
4:55 PM	1	54	1	0	1	32	1	0	0	0	0	0	1	0	0	0	91	1011
5:00 PM	0	43	0	0	0	41	0	0	0	0	0	0	1	0	0	0	85	1020
5:05 PM	0	47	0	0	2	24	0	0	0	0	0	0	1	0	0	0	74	1019
5:10 PM	0	51	1	0	1	32	0	0	0	0	0	0	2	1	0	0	88	1038
5:15 PM	0	48	1	0	1	34	0	0	0	0	1	0	0	0	1	0	86	1031
5:20 PM	0	52	1	0	1	39	0	0	0	0	0	0	0	0	1	0	94	1027
5:25 PM	0	52	0	0	2	36	0	0	0	0	0	0	0	0	0	0	90	1039
5:30 PM	0	53	3	0	1	26	0	0	0	0	0	0	1	0	0	0	84	1038
5:35 PM	0	56	1	0	1	22	0	0	0	0	0	0	0	0	0	0	80	1044
5:40 PM	1	50	1	0	2	29	1	0	0	0	0	0	1	0	1	0	86	1026
5:45 PM	0	54	4	0	2	28	0	0	0	0	0	0	0	0	4	0	92	1027
5:50 PM	0	53	2	0	3	31	0	0	0	0	1	0	1	0	0	0	91	1041
5:55 PM	0	49	5	0	2	37	0	0	0	0	0	0	0	0	2	0	95	1045

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	624	44	0	28	384	0	0	0	0	4	0	4	0	24	0	1112
Heavy Trucks	0	4	0		0	4	0		0	0	0		0	0	0		8
Pedestrians		0				0				20				0			20
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 12/13/2010 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

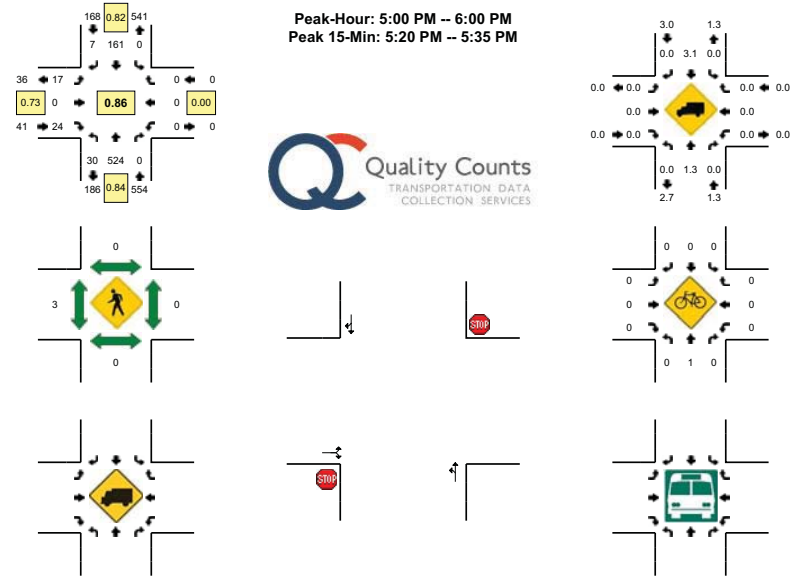
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: State St S -- 10th Ave
CITY/STATE: Kirkland, WA

QC JOB #: 10564902
DATE: 12/7/2010

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:20 PM -- 5:35 PM



5-Min Count Period Beginning At	State St S (Northbound)				State St S (Southbound)				10th Ave (Eastbound)				10th Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	27	0	0	0	8	1	0	0	0	0	0	0	0	0	0	36	
4:05 PM	1	25	0	0	0	18	1	0	1	0	1	0	0	0	0	0	47	
4:10 PM	2	20	0	0	0	11	1	0	0	0	2	0	0	0	0	0	36	
4:15 PM	3	28	0	0	0	19	1	0	0	0	1	0	0	0	0	0	52	
4:20 PM	4	35	0	0	0	8	0	0	0	0	2	0	0	0	0	0	49	
4:25 PM	2	35	0	0	0	11	0	0	1	0	2	0	0	0	0	0	51	
4:30 PM	1	45	0	1	0	10	1	0	0	0	3	0	0	0	0	0	61	
4:35 PM	2	41	0	0	0	22	0	0	0	0	5	0	0	0	0	0	70	
4:40 PM	1	32	0	0	0	14	0	0	0	0	1	0	0	0	0	0	48	
4:45 PM	0	33	0	0	0	17	0	0	0	0	3	0	0	0	0	0	53	
4:50 PM	1	33	0	0	0	14	1	0	0	0	2	0	0	0	0	0	51	
4:55 PM	3	43	0	0	0	11	1	0	0	0	3	0	0	0	0	0	61	615
5:00 PM	3	25	0	0	0	11	0	0	1	0	1	0	0	0	0	0	41	620
5:05 PM	5	41	0	0	0	19	1	0	0	0	0	0	0	0	0	0	66	639
5:10 PM	3	47	0	0	0	26	1	0	1	0	4	0	0	0	0	0	82	685
5:15 PM	1	37	0	1	0	12	0	0	2	0	1	0	0	0	0	0	54	687
5:20 PM	5	50	0	0	0	9	0	0	1	0	4	0	0	0	0	0	69	707
5:25 PM	4	46	0	0	0	16	2	0	0	0	2	0	0	0	0	0	70	726
5:30 PM	1	59	0	0	0	16	0	0	3	0	4	0	0	0	0	0	83	748
5:35 PM	0	37	0	0	0	6	0	0	0	0	1	0	0	0	0	0	44	722
5:40 PM	1	46	0	0	0	15	2	0	1	0	1	0	0	0	0	0	66	740
5:45 PM	2	46	0	0	0	14	1	0	2	0	3	0	0	0	0	0	68	755
5:50 PM	2	42	0	0	0	8	0	0	4	0	0	0	0	0	0	0	56	760
5:55 PM	2	48	0	0	0	9	0	0	2	0	3	0	0	0	0	0	64	763

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	40	620	0	0	0	164	8	0	16	0	40	0	0	0	0	0	888
Heavy Trucks	0	16	0		0	8	0		0	0	0		0	0	0		24
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 12/13/2010 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

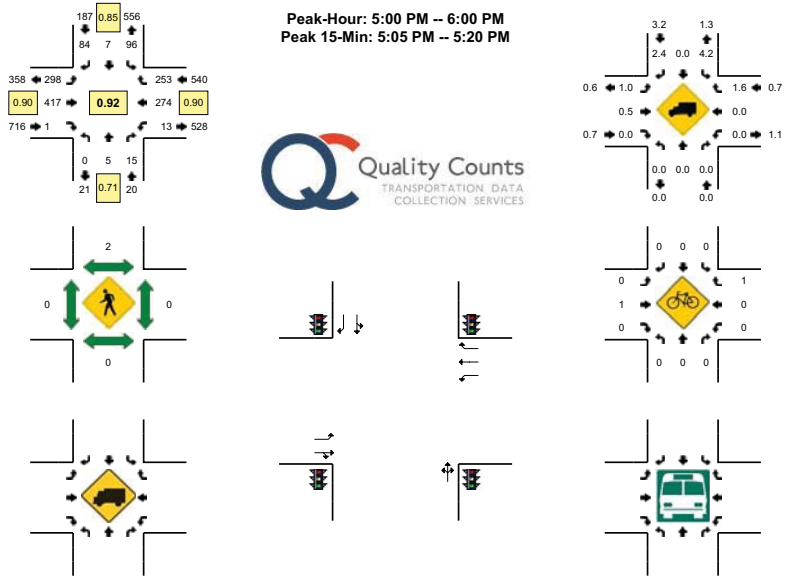
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: State St S -- NE 68th St
CITY/STATE: Kirkland, WA

QC JOB #: 10564903
DATE: 12/7/2010

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:05 PM -- 5:20 PM



5-Min Count Period Beginning At	State St S (Northbound)				State St S (Southbound)				NE 68th St (Eastbound)				NE 68th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	1	0	4	0	3	0	12	31	0	0	0	14	14	0	79	
4:05 PM	0	0	1	0	15	1	4	0	13	29	2	0	1	26	12	0	104	
4:10 PM	1	0	2	0	7	0	4	0	13	46	0	0	1	21	10	0	105	
4:15 PM	0	1	1	0	16	0	4	0	11	19	0	0	1	13	19	0	85	
4:20 PM	0	0	1	0	8	0	2	0	16	28	0	0	0	13	23	0	91	
4:25 PM	0	0	0	0	6	0	7	0	16	20	0	0	0	19	22	0	90	
4:30 PM	1	0	0	0	9	0	4	0	26	27	1	0	2	18	20	0	108	
4:35 PM	0	0	2	0	20	1	7	0	21	25	1	0	2	16	22	0	117	
4:40 PM	1	0	0	0	8	0	6	0	24	31	2	0	3	15	8	0	98	
4:45 PM	1	0	0	0	15	1	6	0	22	33	0	0	2	13	12	0	105	
4:50 PM	1	0	1	0	5	0	9	0	18	29	0	0	0	21	17	0	101	
4:55 PM	0	1	0	0	9	0	7	0	26	20	1	0	2	13	16	0	95	1178
5:00 PM	0	1	2	0	6	0	4	0	15	31	0	0	3	17	14	0	93	1192
5:05 PM	0	0	3	0	11	0	10	0	22	47	0	0	1	21	22	0	137	1225
5:10 PM	0	1	2	0	16	2	10	0	29	44	0	0	1	16	21	0	142	1262
5:15 PM	0	0	0	0	9	0	5	0	22	32	0	0	2	28	19	0	117	1294
5:20 PM	0	0	1	0	7	0	7	0	32	39	0	0	1	25	23	0	135	1338
5:25 PM	0	0	1	0	10	0	7	0	25	31	0	0	1	24	27	0	126	1374
5:30 PM	0	1	1	0	9	1	10	0	31	35	0	0	0	16	25	0	129	1395
5:35 PM	0	0	0	0	2	0	5	0	23	28	1	0	1	31	11	0	102	1380
5:40 PM	0	0	1	0	9	1	6	0	23	31	0	0	1	24	28	0	124	1406
5:45 PM	0	0	2	0	10	0	8	0	32	32	0	0	2	26	15	0	127	1428
5:50 PM	0	1	2	0	3	0	3	0	22	41	0	0	0	21	20	0	113	1440
5:55 PM	0	1	0	0	4	3	9	0	22	26	0	0	0	25	28	0	118	1463

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	4	20	0	144	8	100	0	292	492	0	0	16	260	248	0	1584
Heavy Trucks	0	0	0		4	0	0		0	0	0		0	0	4		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	1		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 12/13/2010 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

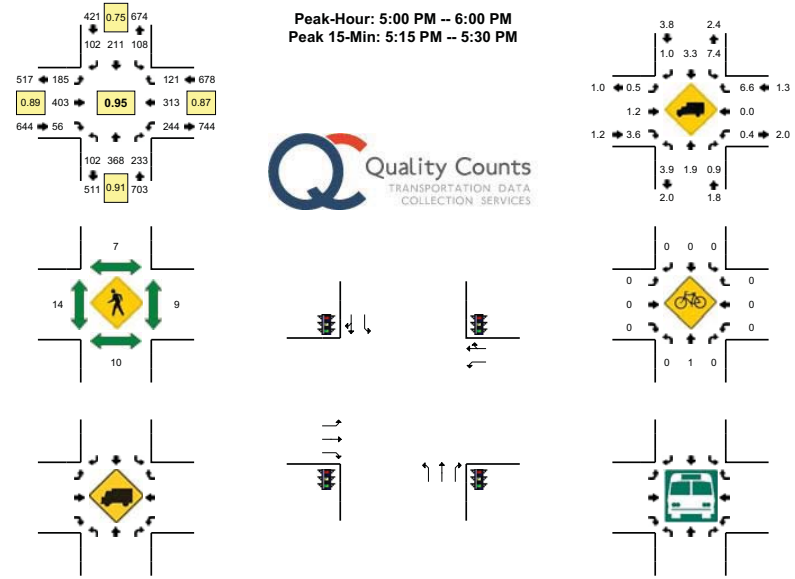
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 108th Ave S -- NE 68th St
CITY/STATE: Kirkland, WA

QC JOB #: 10564904
DATE: 12/7/2010

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:15 PM -- 5:30 PM



5-Min Count Period Beginning At	108th Ave S (Northbound)				108th Ave S (Southbound)				NE 68th St (Eastbound)				NE 68th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	28	21	0	18	11	13	0	16	37	3	0	13	22	10	0	197	
4:05 PM	7	19	16	0	32	19	10	0	10	35	4	0	9	26	11	0	198	
4:10 PM	8	29	31	0	19	28	15	0	9	36	6	0	12	19	12	0	224	
4:15 PM	3	19	24	0	14	25	6	0	12	33	7	0	23	13	7	0	186	
4:20 PM	9	24	17	0	12	18	9	0	13	24	4	0	8	23	10	0	171	
4:25 PM	4	18	15	0	13	12	13	0	6	19	3	0	29	29	21	0	182	
4:30 PM	10	29	14	0	20	16	8	0	14	38	4	0	11	19	7	0	190	
4:35 PM	8	29	16	0	21	6	8	0	6	37	7	0	14	28	14	0	194	
4:40 PM	1	25	18	0	19	21	10	0	23	32	3	0	16	9	14	0	191	
4:45 PM	8	27	33	0	13	11	13	0	10	29	4	0	17	22	14	0	201	
4:50 PM	11	33	18	0	13	9	5	0	13	28	7	0	20	26	9	0	192	
4:55 PM	2	19	17	0	12	9	2	0	10	35	2	0	30	34	12	0	184	2310
5:00 PM	7	30	26	0	11	23	6	0	6	27	5	0	15	26	10	0	192	2305
5:05 PM	7	16	28	0	4	15	9	0	20	45	6	0	20	24	15	0	209	2316
5:10 PM	12	33	23	0	5	14	5	0	16	26	4	0	14	18	8	0	178	2270
5:15 PM	8	19	20	0	17	18	9	0	16	43	5	0	23	29	16	0	223	2307
5:20 PM	7	37	22	0	9	14	12	0	27	29	2	0	25	18	3	0	205	2341
5:25 PM	17	31	22	0	11	17	6	0	16	32	6	0	19	23	13	0	213	2372
5:30 PM	8	37	13	0	7	18	8	0	15	36	7	0	17	31	6	0	203	2385
5:35 PM	5	23	17	0	18	20	10	0	12	40	1	0	20	39	12	0	217	2408
5:40 PM	5	35	20	0	5	12	9	0	9	32	7	0	34	32	11	0	211	2428
5:45 PM	5	37	14	0	7	23	11	0	23	36	3	0	17	15	9	0	200	2427
5:50 PM	11	38	17	0	11	19	10	0	14	26	3	0	22	30	7	0	208	2443
5:55 PM	10	32	11	0	3	18	7	0	11	31	7	0	18	28	11	0	187	2446

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	128	348	256	0	148	196	108	0	236	416	52	0	268	280	128	0	2564
Heavy Trucks	4	8	0		4	8	0		0	8	4		0	0	8		44
Pedestrians		24				12				12				20			68
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 12/13/2010 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

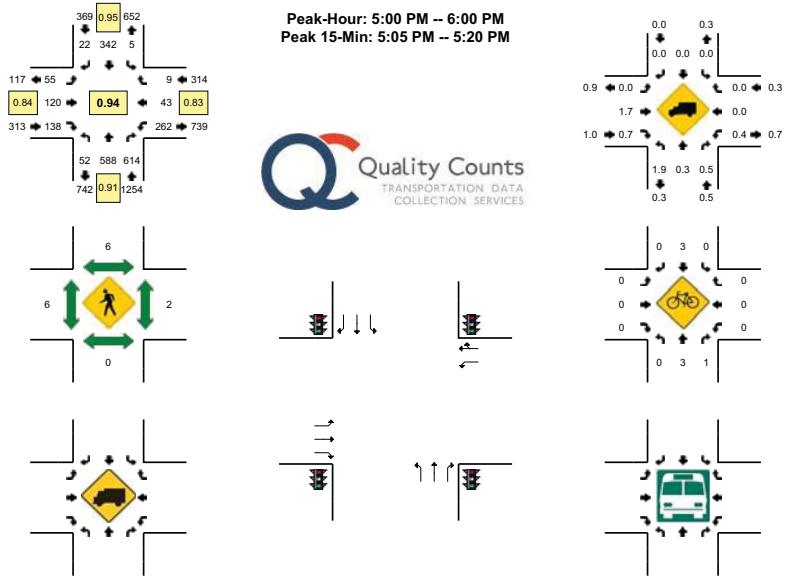
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Lake Washington Blvd NE -- Lakeview Dr
CITY/STATE: Kirkland, WA

QC JOB #: 10564905
DATE: 12/7/2010

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:05 PM -- 5:20 PM



5-Min Count Period Beginning At	Lake Washington Blvd NE (Northbound)				Lake Washington Blvd NE (Southbound)				Lakeview Dr (Eastbound)				Lakeview Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	7	38	28	0	0	19	3	0	6	9	11	0	14	4	0	0	139	
4:05 PM	8	39	31	0	2	26	3	0	2	13	18	0	28	1	0	0	171	
4:10 PM	2	43	41	0	0	28	3	0	4	7	7	0	15	4	0	0	154	
4:15 PM	2	54	28	0	1	28	2	0	1	7	17	0	15	2	0	0	157	
4:20 PM	3	45	31	0	0	29	1	0	3	8	6	0	17	0	0	0	143	
4:25 PM	3	52	45	0	0	27	4	0	3	6	11	0	20	4	0	0	175	
4:30 PM	7	38	30	0	2	23	2	0	4	6	11	0	15	3	1	0	142	
4:35 PM	4	46	40	0	0	30	1	0	8	8	13	0	22	5	1	0	178	
4:40 PM	9	64	48	0	0	31	0	0	7	3	10	0	15	5	0	0	192	
4:45 PM	7	42	49	0	1	30	4	0	2	8	13	0	27	0	0	0	183	
4:50 PM	4	39	41	0	0	31	4	0	5	6	11	0	21	4	1	0	167	
4:55 PM	6	47	33	0	1	29	2	0	6	4	15	0	16	3	1	0	163	1964
5:00 PM	4	46	55	0	3	25	1	0	2	9	10	0	12	3	1	0	171	1996
5:05 PM	7	38	55	0	0	29	1	0	10	15	16	0	31	4	1	0	207	2032
5:10 PM	3	47	44	0	0	33	2	0	7	11	12	0	23	3	0	0	185	2063
5:15 PM	4	54	56	0	0	33	4	0	4	8	11	0	28	5	0	0	207	2113
5:20 PM	6	44	50	0	0	27	3	0	1	9	13	0	27	0	1	0	181	2151
5:25 PM	3	49	43	0	0	28	1	0	5	14	12	0	18	6	1	0	180	2156
5:30 PM	2	55	63	0	1	32	2	0	6	12	11	0	29	1	1	0	215	2229
5:35 PM	5	43	33	0	0	18	0	0	2	13	14	0	18	5	1	0	152	2203
5:40 PM	1	65	55	0	0	31	2	0	5	7	8	0	18	2	2	0	196	2207
5:45 PM	6	46	52	0	0	26	0	0	3	7	8	0	22	3	1	0	174	2198
5:50 PM	5	53	60	0	1	28	0	0	4	9	10	0	16	3	0	0	189	2220
5:55 PM	6	48	48	0	0	32	6	0	6	6	13	0	20	8	0	0	193	2250

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	56	556	620	0	0	380	28	0	84	136	156	0	328	48	4	0	2396
Heavy Trucks	0	0	0		0	0	0		0	4	4		0	0	0		8
Pedestrians		0				8				4				8			20
Bicycles	0	2	0		0	1	0		0	0	0		0	0	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 12/13/2010 2:05 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

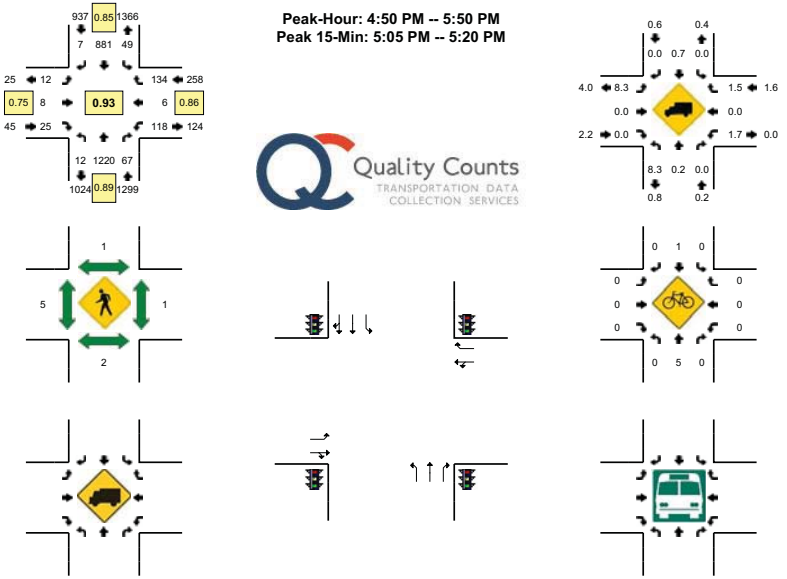
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Lake Washington Blvd -- NE 38th Pl
CITY/STATE: Kirkland, WA

QC JOB #: 10564906
DATE: 12/14/2010

Peak-Hour: 4:50 PM -- 5:50 PM
Peak 15-Min: 5:05 PM -- 5:20 PM



5-Min Count Period Beginning At	Lake Washington Blvd (Northbound)				Lake Washington Blvd (Southbound)				NE 38th Pl (Eastbound)				NE 38th Pl (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	77	4	0	4	58	0	0	0	0	3	0	8	0	10	0	164	
4:05 PM	0	86	4	0	7	65	0	0	0	0	3	0	10	2	10	0	187	
4:10 PM	1	72	3	0	5	82	1	0	0	1	3	0	9	1	2	0	180	
4:15 PM	0	89	2	0	4	66	1	0	1	1	0	0	5	0	9	0	178	
4:20 PM	2	81	8	0	3	67	0	0	0	1	2	0	6	0	4	0	174	
4:25 PM	0	75	2	0	6	58	0	0	1	0	0	0	6	0	9	0	157	
4:30 PM	0	86	4	0	5	54	0	0	1	2	1	0	12	0	13	0	178	
4:35 PM	2	100	4	0	2	60	0	0	1	0	1	0	7	1	11	0	189	
4:40 PM	0	94	4	0	6	49	0	0	1	0	0	0	9	1	9	0	173	
4:45 PM	2	100	15	0	6	57	0	0	2	0	1	0	8	0	24	0	215	
4:50 PM	1	108	6	0	2	73	0	0	0	1	1	0	8	1	10	0	211	
4:55 PM	0	87	6	0	2	77	1	0	3	2	1	0	12	1	12	0	204	2210
5:00 PM	4	76	7	0	7	59	1	0	2	0	1	0	7	0	17	0	181	2227
5:05 PM	0	87	6	0	9	110	1	0	0	0	4	0	12	1	13	0	243	2283
5:10 PM	0	120	5	0	3	84	0	0	2	0	3	0	6	1	7	0	231	2334
5:15 PM	2	112	2	0	3	64	0	0	0	1	5	0	11	1	9	0	210	2366
5:20 PM	2	109	7	0	4	81	2	0	0	2	1	0	5	1	5	0	219	2411
5:25 PM	1	100	5	0	5	50	1	0	0	0	2	0	10	0	6	0	180	2434
5:30 PM	0	122	7	0	3	98	0	0	0	1	1	0	6	0	8	0	246	2502
5:35 PM	0	73	1	0	3	64	1	0	3	0	2	0	19	0	23	0	189	2502
5:40 PM	2	110	6	0	5	38	0	0	0	0	2	0	9	0	12	0	184	2513
5:45 PM	0	116	9	0	3	83	0	0	2	1	2	0	13	0	12	0	241	2539
5:50 PM	1	112	7	0	4	52	1	0	2	0	0	0	5	0	7	0	191	2519
5:55 PM	1	124	6	0	8	61	0	0	0	0	0	0	5	0	12	0	217	2532

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	1276	52	0	60	1032	4	0	8	4	48	0	116	12	116	0	2736
Heavy Trucks	0	0	0		0	4	0		0	0	0		0	0	4		8
Pedestrians		4				4				4				4			16
Bicycles	0	2	0		0	1	0		0	0	0		0	0	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 12/15/2010 2:51 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

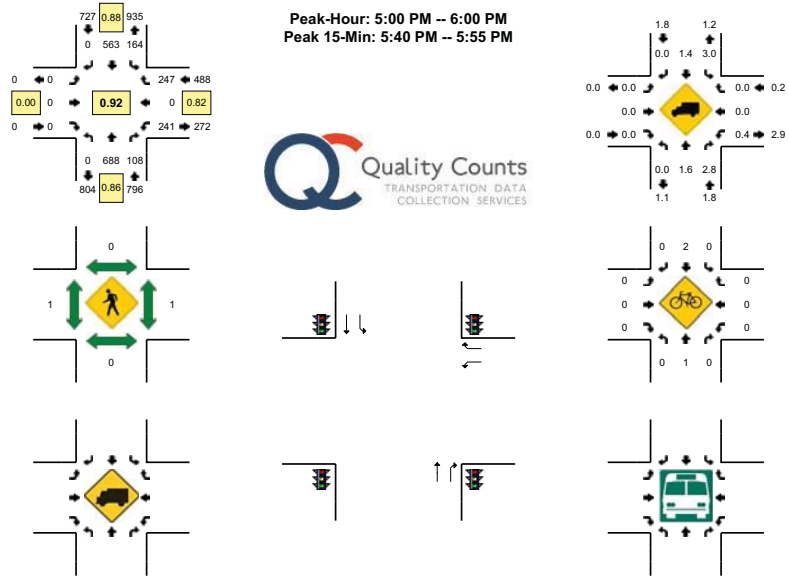
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NE 72nd -- I-405 SB Ramp
CITY/STATE: Kirkland, WA

QC JOB #: 10564907
DATE: 12/7/2010

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:40 PM -- 5:55 PM



5-Min Count Period Beginning At	NE 72nd (Northbound)				NE 72nd (Southbound)				I-405 SB Ramp (Eastbound)				I-405 SB Ramp (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	64	11	0	12	36	0	0	0	0	0	0	14	0	22	0	159	
4:05 PM	0	64	21	0	14	41	0	0	0	0	0	0	12	0	14	0	166	
4:10 PM	0	67	15	0	10	47	0	0	0	0	0	0	13	0	18	0	170	
4:15 PM	0	63	16	0	16	33	0	0	0	0	0	0	20	0	27	0	175	
4:20 PM	0	53	12	0	17	51	0	0	0	0	0	0	16	0	31	0	180	
4:25 PM	0	58	3	0	19	33	0	0	0	0	0	0	14	0	15	0	142	
4:30 PM	0	40	9	0	22	49	0	0	0	0	0	0	15	0	21	0	156	
4:35 PM	0	69	17	0	21	27	0	0	0	0	0	0	10	0	16	0	160	
4:40 PM	0	54	9	0	17	38	0	0	0	0	0	0	13	0	24	0	155	
4:45 PM	0	68	15	0	24	55	0	0	0	0	0	0	9	0	14	0	185	
4:50 PM	0	50	13	0	17	48	0	0	0	0	0	0	22	0	21	0	171	
4:55 PM	0	45	13	0	20	48	0	0	0	0	0	0	19	0	18	0	163	1982
5:00 PM	0	55	10	0	11	56	0	0	0	0	0	0	13	0	16	0	161	1984
5:05 PM	0	62	8	0	11	43	0	0	0	0	0	0	13	0	16	0	153	1971
5:10 PM	0	59	6	0	19	37	0	0	0	0	0	0	23	0	23	0	167	1968
5:15 PM	0	70	10	0	13	42	0	0	0	0	0	0	17	0	18	0	170	1963
5:20 PM	0	51	12	0	16	52	0	0	0	0	0	0	20	0	22	0	173	1956
5:25 PM	0	60	3	0	14	44	0	0	0	0	0	0	21	0	8	0	150	1964
5:30 PM	0	54	10	0	8	50	0	0	0	0	0	0	17	0	17	0	156	1964
5:35 PM	0	49	15	0	13	34	0	0	0	0	0	0	25	0	26	0	162	1966
5:40 PM	0	47	10	0	21	51	0	0	0	0	0	0	29	0	26	0	184	1995
5:45 PM	0	65	8	0	10	54	0	0	0	0	0	0	21	0	21	0	179	1989
5:50 PM	0	65	9	0	15	47	0	0	0	0	0	0	20	0	27	0	183	2001
5:55 PM	0	51	7	0	13	53	0	0	0	0	0	0	22	0	27	0	173	2011

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	708	108	0	184	608	0	0	0	0	0	0	280	0	296	0	2184
Heavy Trucks	0	8	0		4	8	0		0	0	0		0	0	0		20
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 12/13/2010 2:06 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

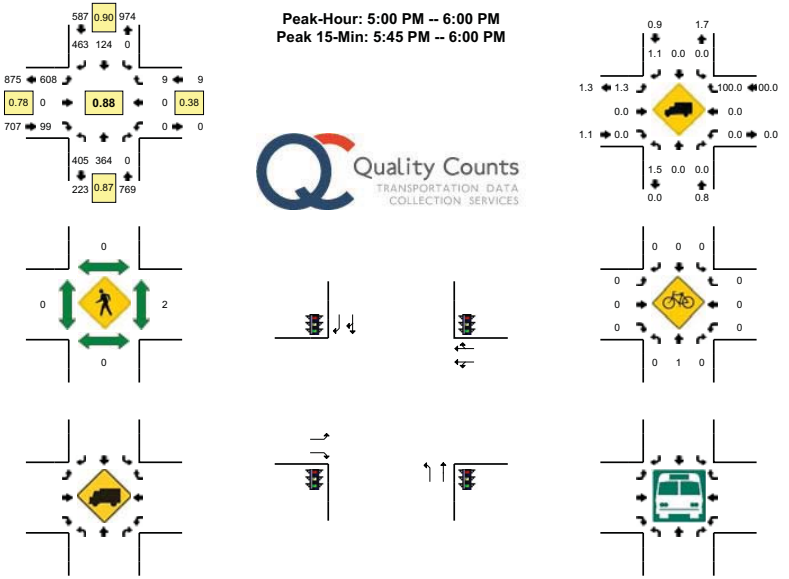
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 116th Ave -- I-405 NB Ramp
CITY/STATE: Kirkland, WA

QC JOB #: 10564908
DATE: 12/7/2010

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM



5-Min Count Period Beginning At	116th Ave (Northbound)				116th Ave (Southbound)				I-405 NB Ramp (Eastbound)				I-405 NB Ramp (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	32	20	0	0	0	8	43	0	31	0	2	0	0	0	0	0	136	
4:05 PM	31	14	0	0	0	6	50	0	34	0	3	0	0	0	1	0	139	
4:10 PM	36	21	0	0	0	10	42	0	21	0	7	0	0	0	1	0	138	
4:15 PM	30	23	0	0	0	12	50	0	41	0	2	0	0	0	0	0	158	
4:20 PM	26	22	0	0	0	7	38	0	55	0	6	0	0	0	0	0	154	
4:25 PM	25	17	0	0	0	13	45	0	40	0	1	0	0	0	0	0	141	
4:30 PM	17	17	0	0	0	12	41	0	48	0	5	0	0	0	0	0	140	
4:35 PM	40	23	0	0	0	11	37	0	41	0	1	0	0	0	0	0	153	
4:40 PM	35	15	0	0	0	10	35	0	30	0	2	0	0	0	1	0	128	
4:45 PM	38	29	0	0	0	9	40	0	48	0	6	1	0	0	0	0	171	
4:50 PM	21	38	0	0	0	8	34	0	60	0	14	0	0	0	0	0	175	
4:55 PM	30	23	0	0	0	11	39	0	60	0	4	0	0	0	0	0	167	1800
5:00 PM	14	23	0	0	0	2	31	0	49	0	4	0	0	0	3	0	126	1790
5:05 PM	35	35	0	0	0	6	36	0	29	0	7	1	0	0	2	0	151	1802
5:10 PM	43	19	0	0	0	8	45	0	53	0	4	1	0	0	1	0	174	1838
5:15 PM	34	26	0	0	0	10	50	0	44	0	2	0	0	0	1	0	167	1847
5:20 PM	43	24	0	0	0	9	51	0	49	0	4	0	0	0	0	0	180	1873
5:25 PM	21	26	0	0	0	9	40	0	58	0	7	0	0	0	0	0	161	1893
5:30 PM	50	41	0	0	0	7	38	0	45	0	10	2	0	0	0	0	193	1946
5:35 PM	37	33	0	0	0	14	26	0	54	0	4	1	0	0	1	0	170	1963
5:40 PM	27	33	0	0	0	15	36	0	42	0	9	0	0	0	1	0	163	1998
5:45 PM	32	41	0	0	0	14	42	0	57	0	10	0	0	0	0	0	196	2023
5:50 PM	34	30	0	0	0	14	32	0	60	0	12	1	0	0	0	0	183	2031
5:55 PM	35	33	0	0	0	16	36	0	61	0	26	1	0	0	0	0	208	2072

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	404	416	0	0	0	176	440	0	712	0	192	8	0	0	0	0	2348
Heavy Trucks	4	0	0		0	0	0		12	0	0		0	0	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 12/13/2010 2:06 PM

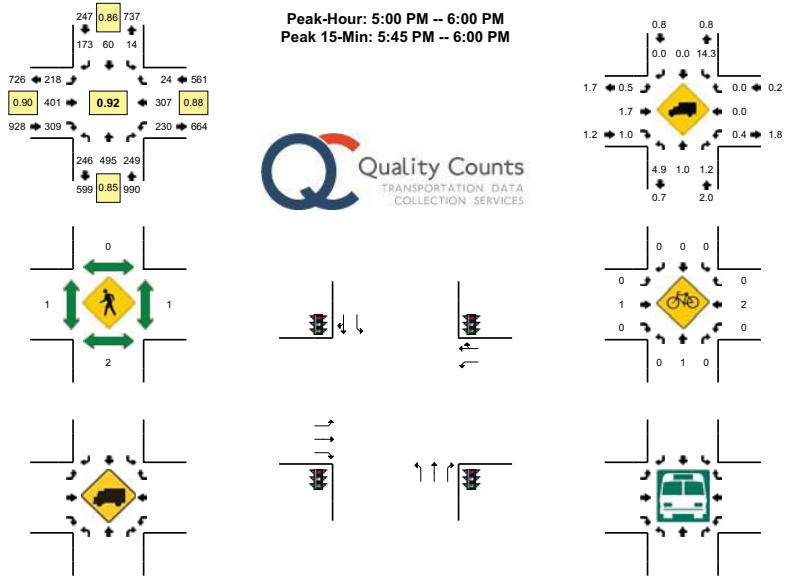
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NE 70th Pl -- 116th Ave
CITY/STATE: Kirkland, WA

QC JOB #: 10564909
DATE: 12/7/2010



5-Min Count Period Beginning At	NE 70th Pl (Northbound)				NE 70th Pl (Southbound)				116th Ave (Eastbound)				116th Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	27	15	16	0	0	2	11	0	13	35	27	0	23	18	0	0	187	
4:05 PM	10	15	16	0	0	6	17	0	13	36	39	0	15	29	1	0	197	
4:10 PM	14	17	14	0	2	3	14	0	17	35	38	0	14	24	0	0	192	
4:15 PM	19	30	22	0	1	3	14	0	16	30	31	0	19	24	0	0	209	
4:20 PM	18	26	17	0	2	3	14	0	11	50	31	0	16	26	2	0	216	
4:25 PM	17	35	18	0	0	5	9	0	12	23	30	0	23	26	1	0	199	
4:30 PM	14	24	16	0	0	2	19	0	10	37	21	0	26	30	2	0	201	
4:35 PM	13	37	13	0	0	4	7	0	20	28	27	0	19	25	0	0	193	
4:40 PM	18	16	9	0	3	2	12	0	12	54	26	0	10	41	3	0	206	
4:45 PM	26	33	23	0	0	4	15	0	19	24	29	0	19	27	1	0	220	
4:50 PM	20	36	20	0	0	4	9	0	16	41	26	0	17	41	3	0	233	
4:55 PM	34	45	19	0	2	2	9	0	11	23	23	0	16	24	1	0	209	2462
5:00 PM	22	50	17	0	0	5	18	0	11	34	21	0	13	22	3	0	216	2491
5:05 PM	12	25	16	0	1	4	11	0	21	48	24	0	15	32	0	0	209	2503
5:10 PM	20	36	22	0	2	2	15	0	17	22	35	0	15	19	1	0	206	2517
5:15 PM	20	32	20	0	0	6	13	0	24	26	35	0	28	28	2	0	234	2542
5:20 PM	18	37	18	0	3	5	17	0	14	29	19	0	29	24	1	0	214	2540
5:25 PM	22	30	32	0	1	2	6	0	23	34	24	0	18	35	4	0	231	2572
5:30 PM	19	44	20	0	0	5	17	0	13	36	24	0	18	20	2	0	218	2589
5:35 PM	16	42	16	0	1	6	14	0	16	34	25	0	19	32	3	0	224	2620
5:40 PM	28	43	20	0	1	4	19	0	14	33	26	0	19	20	3	0	230	2644
5:45 PM	26	54	30	0	2	5	13	0	28	37	18	0	20	22	1	0	256	2680
5:50 PM	21	49	21	0	3	6	19	0	20	31	34	0	17	28	2	0	251	2698
5:55 PM	22	53	17	0	0	10	11	0	17	37	24	0	19	25	2	0	237	2726

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	276	624	272	0	20	84	172	0	260	420	304	0	224	300	20	0	2976
Heavy Trucks	16	0	4		0	0	0		4	4	0		0	0	0		28
Pedestrians		0				0				4				0			4
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 12/13/2010 2:06 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

NB
Site Code: 01
Location 1: LAKE ST S/O 10TH

Date	Time	1-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-999
1/4/2011	02:15 PM	64	8	3	4	4	1	0	1	0	3	2	1	0	10
1/4/2011	02:30 PM	64	9	5	1	3	7	4	2	3	0	0	1	2	7
1/4/2011	02:45 PM	61	13	4	3	2	2	7	0	4	2	4	2	0	4
1/4/2011	03:00 PM	77	4	6	4	3	4	3	2	3	2	2	1	1	6
1/4/2011	03:15 PM	78	10	8	2	3	4	3	0	1	3	2	0	0	7
1/4/2011	03:30 PM	79	7	5	3	3	4	3	1	0	3	3	1	1	7
1/4/2011	03:45 PM	93	16	9	3	2	1	1	0	2	3	0	0	0	8
1/4/2011	04:00 PM	67	17	9	4	3	3	0	1	2	0	0	1	0	9
1/4/2011	04:15 PM	90	15	3	4	1	2	5	2	0	2	3	1	1	4
1/4/2011	04:30 PM	85	24	9	5	5	1	3	1	1	2	0	3	0	6
1/4/2011	04:45 PM	102	10	10	11	5	2	3	1	2	0	3	0	1	3
1/4/2011	05:00 PM	103	15	11	5	4	1	2	2	0	1	0	2	0	6
1/4/2011	05:15 PM	136	17	3	3	2	1	0	2	3	1	1	1	0	6
1/4/2011	05:30 PM	113	14	14	2	2	0	1	2	4	1	0	1	0	5
1/4/2011	05:45 PM	84	18	7	3	1	3	1	5	4	3	2	1	2	3

SB
Site Code: 01
Location 1: LAKE ST S/O 10TH

Date	Time	1-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-999
1/4/2011	02:15 PM	29	5	2	2	3	2	9	1	1	1	1	4	1	8
1/4/2011	02:30 PM	52	9	5	7	5	5	4	4	0	1	3	2	3	4
1/4/2011	02:45 PM	32	5	4	4	2	3	5	6	5	2	1	0	1	6
1/4/2011	03:00 PM	52	6	5	6	2	4	3	4	1	4	1	0	2	7
1/4/2011	03:15 PM	38	6	9	1	3	1	1	4	4	3	1	1	1	9
1/4/2011	03:30 PM	26	6	4	0	2	5	2	0	0	3	3	4	3	9
1/4/2011	03:45 PM	23	7	6	5	1	0	8	3	2	5	2	1	0	9
1/4/2011	04:00 PM	39	5	3	2	2	2	2	1	3	3	2	1	3	8
1/4/2011	04:15 PM	44	7	4	2	7	3	2	1	0	1	3	1	1	11
1/4/2011	04:30 PM	40	9	2	5	8	4	3	3	2	3	2	1	2	5
1/4/2011	04:45 PM	40	9	6	3	4	3	3	1	3	3	4	1	1	6
1/4/2011	05:00 PM	39	4	5	5	3	2	2	2	2	3	1	3	0	9
1/4/2011	05:15 PM	37	2	9	5	1	3	3	1	2	2	1	1	0	8
1/4/2011	05:30 PM	32	8	2	3	3	4	4	2	2	2	0	0	3	10
1/4/2011	05:45 PM	35	6	7	0	1	3	1	7	2	1	0	3	2	9

COMBINED
Site Code: 01
Location 1: LAKE ST S/O 10TH

Date	Time	1-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-999
1/4/2011	02:15 PM	112	20	10	4	2	4	5	0	1	4	1	2	0	5
1/4/2011	02:30 PM	147	22	12	10	2	5	3	2	2	2	1	0	2	2
1/4/2011	02:45 PM	115	26	10	3	6	4	8	5	2	2	2	0	0	1
1/4/2011	03:00 PM	157	17	10	6	6	4	1	3	4	3	0	1	1	2
1/4/2011	03:15 PM	144	14	14	4	8	3	5	2	2	0	3	0	0	4
1/4/2011	03:30 PM	123	19	10	6	5	3	4	6	1	1	5	2	0	2
1/4/2011	03:45 PM	145	22	14	7	5	2	3	4	0	0	2	1	1	4
1/4/2011	04:00 PM	131	21	15	5	5	2	1	2	2	1	1	3	1	2
1/4/2011	04:15 PM	166	26	7	3	4	3	2	3	0	3	0	0	0	3
1/4/2011	04:30 PM	171	22	12	8	9	4	0	2	1	0	1	1	0	3
1/4/2011	04:45 PM	173	26	16	6	5	4	5	1	1	0	0	0	0	3
1/4/2011	05:00 PM	171	26	14	6	3	0	2	1	0	4	1	0	0	4
1/4/2011	05:15 PM	207	15	8	6	4	2	2	3	0	1	1	0	0	2
1/4/2011	05:30 PM	171	25	13	4	5	2	3	3	4	2	0	0	2	0
1/4/2011	05:45 PM	141	28	13	10	4	5	1	5	2	2	0	2	1	0

Appendix C: LOS Definitions

Highway Capacity Manual, 2000

Signalized intersection level of service (LOS) is defined in terms of the average total vehicle delay of all movements through an intersection. Vehicle delay is a method of quantifying several intangible factors, including driver discomfort, frustration, and lost travel time. Specifically, LOS criteria are stated in terms of average delay per vehicle during a specified time period (for example, the PM peak hour). Vehicle delay is a complex measure based on many variables, including signal phasing (i.e., progression of movements through the intersection), signal cycle length, and traffic volumes with respect to intersection capacity. Table 1 shows LOS criteria for signalized intersections, as described in the *Highway Capacity Manual* (Transportation Research Board, Special Report 209, 2000).

Table 1 Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (sec/veh)	General Description (Signalized Intersections)
A	≤10	Free Flow
B	>10 - 20	Stable Flow (slight delays)
C	>20 - 35	Stable flow (acceptable delays)
D	>35 - 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 - 80	Unstable flow (intolerable delay)
F	>80	Forced flow (jammed)

Source: *Highway Capacity Manual*, Transportation Research Board, Special Report 209, 2000.

Unsignalized intersection LOS criteria can be further reduced into two intersection types: all-way stop-controlled and two-way stop-controlled. All-way, stop-controlled intersection LOS is expressed in terms of the average vehicle delay of all of the movements, much like that of a signalized intersection. Two-way, stop-controlled intersection LOS is defined in terms of the average vehicle delay of an individual movement(s). This is because the performance of a two-way, stop-controlled intersection is more closely reflected in terms of its individual movements, rather than its performance overall. For this reason, LOS for a two-way, stop-controlled intersection is defined in terms of its individual movements. With this in mind, total average vehicle delay (i.e., average delay of all movements) for a two-way, stop-controlled intersection should be viewed with discretion. Table 2 shows LOS criteria for unsignalized intersections (both all-way and two-way, stop-controlled).

Table 2 Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

Source: *Highway Capacity Manual*, Transportation Research Board, Special Report 209, 2000.

Appendix D: LOS Worksheets

HCM Unsignalized Intersection Capacity Analysis
1: S 10th St & Lake Street

Potala Village
Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	7	1	9	1	608	19	18	379	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	2	7	1	10	1	647	20	19	403	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1111	1111	404	1103	1102	657	404			667		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1111	1111	404	1103	1102	657	404			667		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	96	99	98	100			98		
cM capacity (veh/h)	180	206	651	187	209	468	1160			932		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	2	18	668	423
Volume Left	0	7	1	19
Volume Right	2	10	20	1
cSH	651	276	1160	932
Volume to Capacity	0.00	0.07	0.00	0.02
Queue Length 95th (ft)	0	5	0	2
Control Delay (s)	10.5	18.9	0.0	0.6
Lane LOS	B	C	A	A
Approach Delay (s)	10.5	18.9	0.0	0.6
Approach LOS	B	C		

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A	
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
2: S 10th St & State St S

Potala Village
Existing Conditions

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	17	24	30	524	161	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	20	28	35	609	187	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				388		
pX, platoon unblocked						
vC, conflicting volume	870	191	195			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	870	191	195			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	97	97			
cM capacity (veh/h)	316	856	1384			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	48	644	195
Volume Left	20	35	0
Volume Right	28	0	8
cSH	501	1384	1700
Volume to Capacity	0.10	0.03	0.11
Queue Length 95th (ft)	8	2	0
Control Delay (s)	12.9	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	12.9	0.7	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A	
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis
3: NE 68th Street & 3rd Street

Potala Village
Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	298	417	1	13	274	253	0	5	15	96	7	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.90		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1787	1881		1787	1881	1599		1655		1787	1619	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)	1787	1881		1787	1881	1599		1655		1787	1619	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.90	1.00	0.92
Adj. Flow (vph)	324	453	1	14	298	275	0	5	16	107	7	91
RTOR Reduction (vph)	0	0	0	0	0	131	0	14	0	0	77	0
Lane Group Flow (vph)	324	454	0	14	298	144	0	7	0	107	21	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type	Prot			Prot		pm+ov	Split			Split		
Protected Phases	1	6		5	2	4	8	8		4	4	
Permitted Phases						2						
Actuated Green, G (s)	18.7	39.1		0.6	21.0	31.3		6.3		10.3	10.3	
Effective Green, g (s)	19.7	40.1		1.6	22.0	33.3		7.3		11.3	11.3	
Actuated g/C Ratio	0.27	0.55		0.02	0.30	0.46		0.10		0.16	0.16	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	487	1043		40	572	803		167		279	253	
v/s Ratio Prot	c0.18	0.24		0.01	c0.16	0.03		c0.00		c0.06	0.01	
v/s Ratio Perm						0.06						
v/c Ratio	0.67	0.44		0.35	0.52	0.18		0.04		0.38	0.08	
Uniform Delay, d1	23.4	9.5		34.8	20.8	11.5		29.3		27.4	26.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	3.4	0.3		5.2	0.9	0.1		0.1		0.9	0.1	
Delay (s)	26.8	9.7		40.1	21.7	11.6		29.4		28.3	26.2	
Level of Service	C	A		D	C	B		C		C	C	
Approach Delay (s)		16.8			17.4			29.4			27.3	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM Average Control Delay	18.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.48			
Actuated Cycle Length (s)	72.3	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	52.9%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: NE 68th Street & 6th Street S

Potala Village
Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	185	403	56	244	313	121	102	368	233	108	211	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1881	1599	1770	1785		1770	1863	1583	1527	1738	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	1881	1599	1770	1785		1770	1863	1583	1527	1738	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	195	424	59	257	329	127	107	387	245	114	222	107
RTOR Reduction (vph)	0	0	32	0	12	0	0	0	145	0	15	0
Lane Group Flow (vph)	195	424	27	257	444	0	107	387	100	114	314	0
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Parking (#/hr)										4		
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	5	6		1	2		3	4		7	8	
Permitted Phases			6						4			
Actuated Green, G (s)	14.4	27.5	27.5	16.4	29.5		8.0	26.9	26.9	10.5	29.4	
Effective Green, g (s)	15.4	29.5	29.5	17.4	31.5		9.0	28.9	28.9	11.5	31.4	
Actuated g/C Ratio	0.16	0.30	0.30	0.18	0.32		0.09	0.29	0.29	0.12	0.32	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	277	559	475	310	566		160	542	461	177	550	
v/s Ratio Prot	0.11	0.23		c0.15	c0.25		0.06	c0.21		c0.07	0.18	
v/s Ratio Perm			0.02						0.06			
v/c Ratio	0.70	0.76	0.06	0.83	0.78		0.67	0.71	0.22	0.64	0.57	
Uniform Delay, d1	39.8	31.7	25.0	39.5	30.8		43.7	31.5	26.6	41.9	28.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.9	5.9	0.1	16.5	7.0		10.1	4.4	0.2	7.8	1.4	
Delay (s)	47.7	37.5	25.0	56.0	37.8		53.8	35.9	26.9	49.7	29.8	
Level of Service	D	D	C	E	D		D	D	C	D	C	
Approach Delay (s)		39.4			44.4			35.5			34.9	
Approach LOS		D			D			D			C	

Intersection Summary				
HCM Average Control Delay	38.9	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	99.3	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	73.4%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Lakeview Dr & Lake Washington Blvd

Potala Village
Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	120	138	262	43	9	52	588	614	5	342	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
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
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1881	1599	1805	1849		1787	1881	1599	1805	1900	1615
Flt Permitted	0.72	1.00	1.00	0.45	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1355	1881	1599	859	1849		1787	1881	1599	1805	1900	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	59	128	147	279	46	10	55	626	653	5	364	23
RTOR Reduction (vph)	0	0	123	0	7	0	0	0	0	0	0	14
Lane Group Flow (vph)	59	128	24	279	49	0	55	626	653	5	364	9
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt		Perm	pm+pt			Prot		Free	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2					Free			8
Actuated Green, G (s)	17.8	12.0	12.0	34.6	24.8		5.2	36.8	87.4	1.0	32.6	32.6
Effective Green, g (s)	19.8	14.0	14.0	36.6	26.8		7.2	38.8	87.4	3.0	34.6	34.6
Actuated g/C Ratio	0.23	0.16	0.16	0.42	0.31		0.08	0.44	1.00	0.03	0.40	0.40
Clearance Time (s)	4.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	341	301	256	572	567		147	835	1599	62	752	639
v/s Ratio Prot	0.01	0.07		c0.11	0.03		0.03	c0.33		0.00	0.19	
v/s Ratio Perm	0.03		0.01	c0.09					c0.41			0.01
v/c Ratio	0.17	0.43	0.09	0.49	0.09		0.37	0.75	0.41	0.08	0.48	0.01
Uniform Delay, d1	27.0	33.1	31.3	17.7	21.6		38.0	20.3	0.0	40.9	19.7	16.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	1.0	0.2	0.7	0.1		1.6	3.7	0.8	0.6	0.5	0.0
Delay (s)	27.3	34.0	31.4	18.4	21.6		39.6	24.0	0.8	41.4	20.2	16.0
Level of Service	C	C	C	B	C		D	C	A	D	C	B
Approach Delay (s)		31.7			18.9			13.3			20.2	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	0.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: NE 38th Street & Lake Street

Potala Village
Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	8	25	118	6	134	12	1220	67	49	881	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.89			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1653			1778	1583	1805	1900	1615	1787	3570	
Flt Permitted	0.44	1.00			0.71	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	827	1653			1321	1583	1805	1900	1615	1787	3570	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	13	9	27	127	6	144	13	1312	72	53	947	8
RTOR Reduction (vph)	0	23	0	0	0	123	0	0	13	0	0	0
Lane Group Flow (vph)	13	13	0	0	133	21	13	1312	59	53	955	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6			2		2			4			
Actuated Green, G (s)	19.4	19.4			19.4	19.4	3.0	109.7	109.7	6.9	113.6	
Effective Green, g (s)	21.4	21.4			21.4	21.4	4.0	111.7	111.7	7.9	115.6	
Actuated g/C Ratio	0.14	0.14			0.14	0.14	0.03	0.74	0.74	0.05	0.77	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	118	236			188	226	48	1415	1203	94	2751	
v/s Ratio Prot		0.01					0.01	c0.69		c0.03	0.27	
v/s Ratio Perm	0.02				c0.10	0.01			0.04			
v/c Ratio	0.11	0.05			0.71	0.09	0.27	0.93	0.05	0.56	0.35	
Uniform Delay, d1	56.0	55.6			61.3	55.9	71.6	15.8	5.1	69.4	5.4	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.1			11.5	0.2	3.0	11.9	0.1	7.5	0.3	
Delay (s)	56.4	55.7			72.8	56.0	74.6	27.7	5.2	76.9	5.7	
Level of Service	E	E			E	E	E	C	A	E	A	
Approach Delay (s)		55.9			64.1			27.0			9.5	
Approach LOS		E			E			C			A	

Intersection Summary			
HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: I-405 SB Ramp & NE 72nd Pl

Potala Village
Existing Conditions

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	241	247	688	108	164	563
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5		3.5	3.5	3.5	3.5
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.93		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1728		1863	1583	1770	1863
Flt Permitted	0.98		1.00	1.00	0.09	1.00
Satd. Flow (perm)	1728		1863	1583	170	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	262	268	748	117	178	612
RTOR Reduction (vph)	41	0	0	57	0	0
Lane Group Flow (vph)	489	0	748	60	178	612
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Turn Type				Perm	pm+pt	
Protected Phases	4		2		1	6
Permitted Phases				2	6	
Actuated Green, G (s)	29.8		38.4	38.4	49.0	49.0
Effective Green, g (s)	31.8		40.4	40.4	51.0	51.0
Actuated g/C Ratio	0.36		0.45	0.45	0.57	0.57
Clearance Time (s)	4.5		5.5	5.5	5.5	5.5
Vehicle Extension (s)	3.5		4.0	4.0	2.5	3.5
Lane Grp Cap (vph)	619		848	720	226	1070
v/s Ratio Prot	c0.28		c0.40		c0.06	0.33
v/s Ratio Perm				0.04	0.39	
v/c Ratio	0.79		0.88	0.08	0.79	0.57
Uniform Delay, d1	25.5		22.0	13.7	18.5	12.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	6.8		11.0	0.1	15.9	0.8
Delay (s)	32.4		33.0	13.8	34.4	12.8
Level of Service	C		C	B	C	B
Approach Delay (s)	32.4		30.4			17.7
Approach LOS	C		C			B

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	9.5
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: I-405 NB Ramp & 116th Avenue NE

Potala Village
Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	608	0	99	0	0	9	405	364	0	0	124	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5		4.0		4.5	5.0			5.0	5.0
Lane Util. Factor	1.00		1.00		0.95		1.00	1.00			0.95	0.95
Frt	1.00		0.85		0.85		1.00	1.00			0.91	0.85
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1787		1599		1534		1787	1881			1628	1519
Flt Permitted	0.95		1.00		1.00		0.18	1.00			1.00	1.00
Satd. Flow (perm)	1787		1599		1534		339	1881			1628	1519
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	691	0	112	0	0	10	460	414	0	0	141	526
RTOR Reduction (vph)	0	0	39	0	10	0	0	0	0	0	33	244
Lane Group Flow (vph)	691	0	73	0	0	0	460	414	0	0	313	77
Heavy Vehicles (%)	1%	1%	1%	100%	100%	100%	1%	1%	1%	1%	1%	1%
Turn Type	Prot		custom	Perm			pm+pt					Perm
Protected Phases	8				7		5	2			6	
Permitted Phases			8	7			2					6
Actuated Green, G (s)	35.5		35.5		1.0		55.1	55.1			25.1	25.1
Effective Green, g (s)	35.5		35.5		1.0		55.1	55.1			25.1	25.1
Actuated g/C Ratio	0.34		0.34		0.01		0.52	0.52			0.24	0.24
Clearance Time (s)	4.5		4.5		4.0		4.5	5.0			5.0	5.0
Vehicle Extension (s)	2.5		2.5		3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	604		540		15		529	986			389	363
v/s Ratio Prot	c0.39				c0.00		c0.21	0.22			0.19	
v/s Ratio Perm			0.05				c0.24					0.05
v/c Ratio	1.14		0.14		0.01		0.87	0.42			0.80	0.21
Uniform Delay, d1	34.8		24.1		51.6		24.3	15.3			37.7	32.1
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	83.2		0.1		0.2		14.2	0.3			11.4	0.3
Delay (s)	118.0		24.2		51.7		38.4	15.5			49.1	32.4
Level of Service	F		C		D		D	B			D	C
Approach Delay (s)		105.0			51.7			27.6			41.0	
Approach LOS		F			D			C			D	

Intersection Summary			
HCM Average Control Delay	57.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	105.1	Sum of lost time (s)	13.0
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	218	401	309	230	307	24	246	495	249	14	60	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1881	1599	1805	1879		1770	1863	1583	1787	1672	
Flt Permitted	0.33	1.00	1.00	0.17	1.00		0.32	1.00	1.00	0.29	1.00	
Satd. Flow (perm)	619	1881	1599	324	1879		603	1863	1583	537	1672	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	237	436	336	250	334	26	267	538	271	15	65	188
RTOR Reduction (vph)	0	0	170	0	3	0	0	0	64	0	92	0
Lane Group Flow (vph)	237	436	166	250	357	0	267	538	207	15	161	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt		pm+ov	pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		
Actuated Green, G (s)	38.4	26.8	41.7	42.2	28.7		40.8	34.5	34.5	22.2	20.9	
Effective Green, g (s)	42.4	28.8	45.7	46.2	30.7		42.8	36.5	36.5	26.2	22.9	
Actuated g/C Ratio	0.44	0.30	0.48	0.48	0.32		0.45	0.38	0.38	0.27	0.24	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	438	564	810	395	600		474	708	601	189	398	
v/s Ratio Prot	0.08	c0.23	0.04	c0.10	0.19		c0.10	c0.29		0.00	0.10	
v/s Ratio Perm	0.16		0.07	0.20			0.15		0.13	0.02		
v/c Ratio	0.54	0.77	0.21	0.63	0.60		0.56	0.76	0.34	0.08	0.40	
Uniform Delay, d1	18.2	30.7	14.6	18.0	27.5		18.4	26.0	21.3	26.0	30.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.4	6.5	0.1	3.3	1.6		1.5	4.7	0.3	0.2	0.7	
Delay (s)	19.6	37.2	14.8	21.3	29.1		19.9	30.7	21.6	26.2	31.5	
Level of Service	B	D	B	C	C		B	C	C	C	C	
Approach Delay (s)		25.6			25.9			25.7			31.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	26.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	96.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: S 10th St & Lake Street

Potala Village
2012 Baseline Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	7	1	9	1	745	20	19	413	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	2	7	1	10	1	793	21	20	439	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1296	1296	440	1288	1286	803	440			814		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1296	1296	440	1288	1286	803	440			814		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	95	99	98	100			98		
cM capacity (veh/h)	134	159	621	139	162	387	1125			822		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	2	18	815	461
Volume Left	0	7	1	20
Volume Right	2	10	21	1
cSH	621	213	1125	822
Volume to Capacity	0.00	0.08	0.00	0.02
Queue Length 95th (ft)	0	7	0	2
Control Delay (s)	10.8	23.5	0.0	0.7
Lane LOS	B	C	A	A
Approach Delay (s)	10.8	23.5	0.0	0.7
Approach LOS	B	C		

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization		54.8%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
2: S 10th St & State St S

Potala Village
2012 Baseline Conditions

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	18	25	31	659	226	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	21	29	36	766	263	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				388		
pX, platoon unblocked						
vC, conflicting volume	1105	267	271			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1105	267	271			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	96	97			
cM capacity (veh/h)	229	777	1298			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	50	802	271
Volume Left	21	36	0
Volume Right	29	0	8
cSH	388	1298	1700
Volume to Capacity	0.13	0.03	0.16
Queue Length 95th (ft)	11	2	0
Control Delay (s)	15.7	0.7	0.0
Lane LOS	C	A	
Approach Delay (s)	15.7	0.7	0.0
Approach LOS	C		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		62.0%	ICU Level of Service	B
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis
3: NE 68th Street & 3rd Street

Potala Village
2012 Baseline Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	373	542	1	19	265	287	1	5	24	260	8	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.89		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1787	1881		1787	1881	1599		1640		1787	1616	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)	1787	1881		1787	1881	1599		1640		1787	1616	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.90	1.00	0.92
Adj. Flow (vph)	405	589	1	21	288	312	1	5	26	289	8	126
RTOR Reduction (vph)	0	0	0	0	0	141	0	24	0	0	96	0
Lane Group Flow (vph)	405	590	0	21	288	171	0	8	0	289	38	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type	Prot			Prot		pm+ov	Split			Split		
Protected Phases	1	6		5	2	4	8	8		4	4	
Permitted Phases						2						
Actuated Green, G (s)	26.2	47.8		1.3	22.9	43.6		6.4		20.7	20.7	
Effective Green, g (s)	27.2	48.8		2.3	23.9	45.6		7.4		21.7	21.7	
Actuated g/C Ratio	0.30	0.53		0.02	0.26	0.49		0.08		0.24	0.24	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	527	996		45	488	843		132		421	380	
v/s Ratio Prot	c0.23	c0.31		0.01	0.15	0.05		c0.00		c0.16	0.02	
v/s Ratio Perm						0.06						
v/c Ratio	0.77	0.59		0.47	0.59	0.20		0.06		0.69	0.10	
Uniform Delay, d1	29.6	14.9		44.3	29.9	13.1		39.2		32.1	27.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	6.7	1.0		7.5	1.9	0.1		0.2		4.6	0.1	
Delay (s)	36.3	15.8		51.8	31.8	13.2		39.4		36.8	27.7	
Level of Service	D	B		D	C	B		D		D	C	
Approach Delay (s)		24.2			23.1			39.4			33.9	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: NE 68th Street & 6th Street S

Potala Village
2012 Baseline Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	322	614	91	230	365	160	93	456	195	177	305	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1881	1599	1770	1778		1770	1863	1583	1527	1740	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	1881	1599	1770	1778		1770	1863	1583	1527	1740	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	339	646	96	242	384	168	98	480	205	186	321	148
RTOR Reduction (vph)	0	0	33	0	14	0	0	0	94	0	15	0
Lane Group Flow (vph)	339	646	63	242	538	0	98	480	111	186	454	0
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Parking (#/hr)										4		
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	5	6		1	2		3	4		7	8	
Permitted Phases			6						4			
Actuated Green, G (s)	21.0	40.5	40.5	15.0	34.5		7.9	28.0	28.0	13.0	33.1	
Effective Green, g (s)	22.0	42.5	42.5	16.0	36.5		8.9	30.0	30.0	14.0	35.1	
Actuated g/C Ratio	0.19	0.37	0.37	0.14	0.32		0.08	0.26	0.26	0.12	0.31	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	343	698	594	247	567		138	488	415	187	533	
v/s Ratio Prot	c0.19	c0.34		0.14	0.30		0.06	c0.26		c0.12	0.26	
v/s Ratio Perm			0.04						0.07			
v/c Ratio	0.99	0.93	0.11	0.98	0.95		0.71	0.98	0.27	0.99	0.85	
Uniform Delay, d1	46.1	34.5	23.6	49.1	38.1		51.5	42.0	33.5	50.2	37.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	45.0	18.1	0.1	50.9	25.5		15.8	36.2	0.3	63.9	12.5	
Delay (s)	91.1	52.6	23.6	100.0	63.6		67.3	78.2	33.9	114.1	49.8	
Level of Service	F	D	C	F	E		E	E	C	F	D	
Approach Delay (s)		62.1			74.7			65.3			68.0	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM Average Control Delay	67.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	114.5	Sum of lost time (s)	9.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Lakeview Dr & Lake Washington Blvd

Potala Village
2012 Baseline Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	132	216	318	63	15	97	600	757	3	468	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
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
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1881	1599	1805	1845		1787	1881	1599	1805	1900	1615
Flt Permitted	0.70	1.00	1.00	0.41	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1323	1881	1599	771	1845		1787	1881	1599	1805	1900	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	68	140	230	338	67	16	103	638	805	3	498	53
RTOR Reduction (vph)	0	0	195	0	8	0	0	0	0	0	0	33
Lane Group Flow (vph)	68	140	35	338	75	0	103	638	805	3	498	20
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt		Perm	pm+pt			Prot		Free	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2					Free			8
Actuated Green, G (s)	19.2	13.1	13.1	39.6	29.5		9.0	43.6	99.3	1.1	35.7	35.7
Effective Green, g (s)	21.2	15.1	15.1	41.6	31.5		11.0	45.6	99.3	3.1	37.7	37.7
Actuated g/C Ratio	0.21	0.15	0.15	0.42	0.32		0.11	0.46	1.00	0.03	0.38	0.38
Clearance Time (s)	4.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	316	286	243	568	585		198	864	1599	56	721	613
v/s Ratio Prot	0.02	0.07		c0.14	0.04		0.06	c0.34		0.00	0.26	
v/s Ratio Perm	0.03		0.02	c0.11					c0.50			0.01
v/c Ratio	0.22	0.49	0.14	0.60	0.13		0.52	0.74	0.50	0.05	0.69	0.03
Uniform Delay, d1	31.9	38.6	36.5	21.0	24.1		41.7	22.0	0.0	46.7	25.9	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	1.3	0.3	1.7	0.1		2.5	3.3	1.1	0.4	2.9	0.0
Delay (s)	32.3	39.9	36.8	22.7	24.2		44.1	25.3	1.1	47.1	28.8	19.4
Level of Service	C	D	D	C	C		D	C	A	D	C	B
Approach Delay (s)		37.1			23.0			14.0			28.0	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	99.3	Sum of lost time (s)	3.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: NE 38th Street & Lake Street

Potala Village
2012 Baseline Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	11	37	158	3	126	5	1258	120	57	955	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.88			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1648			1776	1583	1805	1900	1615	1787	3573	
Flt Permitted	0.37	1.00			0.67	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	695	1648			1249	1583	1805	1900	1615	1787	3573	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	17	12	40	170	3	135	5	1353	129	61	1027	3
RTOR Reduction (vph)	0	33	0	0	0	113	0	0	24	0	0	0
Lane Group Flow (vph)	17	19	0	0	173	22	5	1353	105	61	1030	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6			2		2			4			
Actuated Green, G (s)	22.4	22.4			22.4	22.4	1.2	107.2	107.2	6.4	112.4	
Effective Green, g (s)	24.4	24.4			24.4	24.4	2.2	109.2	109.2	7.4	114.4	
Actuated g/C Ratio	0.16	0.16			0.16	0.16	0.01	0.73	0.73	0.05	0.76	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	113	268			203	258	26	1383	1176	88	2725	
v/s Ratio Prot		0.01					0.00	c0.71		c0.03	0.29	
v/s Ratio Perm	0.02				c0.14	0.01			0.06			
v/c Ratio	0.15	0.07			0.85	0.09	0.19	0.98	0.09	0.69	0.38	
Uniform Delay, d1	53.9	53.2			61.0	53.3	73.0	19.3	5.9	70.2	5.9	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.1			27.5	0.1	3.6	19.5	0.1	21.0	0.4	
Delay (s)	54.5	53.3			88.5	53.5	76.6	38.8	6.1	91.2	6.3	
Level of Service	D	D			F	D	E	D	A	F	A	
Approach Delay (s)		53.6			73.2			36.1			11.1	
Approach LOS		D			E			D			B	

Intersection Summary			
HCM Average Control Delay	31.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: I-405 SB Ramp & NE 72nd Pl

Potala Village
2012 Baseline Conditions

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	257	272	936	108	211	632
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5		3.5	3.5	3.5	3.5
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.93		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1726		1863	1583	1770	1863
Flt Permitted	0.98		1.00	1.00	0.09	1.00
Satd. Flow (perm)	1726		1863	1583	166	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	279	296	1017	117	229	687
RTOR Reduction (vph)	41	0	0	43	0	0
Lane Group Flow (vph)	534	0	1017	74	229	687
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Turn Type				Perm	pm+pt	
Protected Phases	4		2		1	6
Permitted Phases				2	6	
Actuated Green, G (s)	32.4		39.3	39.3	49.8	49.8
Effective Green, g (s)	34.4		41.3	41.3	51.8	51.8
Actuated g/C Ratio	0.37		0.45	0.45	0.56	0.56
Clearance Time (s)	4.5		5.5	5.5	5.5	5.5
Vehicle Extension (s)	3.5		4.0	4.0	2.5	3.5
Lane Grp Cap (vph)	644		835	709	215	1047
v/s Ratio Prot	c0.31		c0.55		c0.08	0.37
v/s Ratio Perm				0.05	0.52	
v/c Ratio	0.83		1.22	0.11	1.07	0.66
Uniform Delay, d1	26.2		25.4	14.7	25.3	14.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	8.9		108.9	0.1	79.7	1.6
Delay (s)	35.1		134.4	14.8	105.0	15.6
Level of Service	D		F	B	F	B
Approach Delay (s)	35.1		122.0			37.9
Approach LOS	D		F			D

Intersection Summary			
HCM Average Control Delay	73.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	9.5
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: I-405 NB Ramp & 116th Avenue NE

Potala Village
2012 Baseline Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	811	0	104	1	1	4	436	359	0	0	153	542
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5		4.0		4.5	5.0			5.0	5.0
Lane Util. Factor	1.00		1.00		0.95		1.00	1.00			0.95	0.95
Frt	1.00		0.85		0.89		1.00	1.00			0.91	0.85
Flt Protected	0.95		1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1787		1599		1600		1787	1881			1633	1519
Flt Permitted	0.95		1.00		0.99		0.14	1.00			1.00	1.00
Satd. Flow (perm)	1787		1599		1600		254	1881			1633	1519
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	922	0	118	1	1	5	495	408	0	0	174	616
RTOR Reduction (vph)	0	0	30	0	7	0	0	0	0	0	31	291
Lane Group Flow (vph)	922	0	88	0	0	0	495	408	0	0	377	91
Heavy Vehicles (%)	1%	1%	1%	100%	100%	100%	1%	1%	1%	1%	1%	1%
Turn Type	Prot		custom	Perm			pm+pt					Perm
Protected Phases	8				7		5	2			6	
Permitted Phases			8	7			2					6
Actuated Green, G (s)	35.5		35.5		1.0		55.1	55.1			25.1	25.1
Effective Green, g (s)	35.5		35.5		1.0		55.1	55.1			25.1	25.1
Actuated g/C Ratio	0.34		0.34		0.01		0.52	0.52			0.24	0.24
Clearance Time (s)	4.5		4.5		4.0		4.5	5.0			5.0	5.0
Vehicle Extension (s)	2.5		2.5		3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	604		540		15		505	986			390	363
v/s Ratio Prot	c0.52						c0.24	0.22			0.23	
v/s Ratio Perm			0.05		0.00		c0.28					0.06
v/c Ratio	1.53		0.16		0.00		0.98	0.41			0.97	0.25
Uniform Delay, d1	34.8		24.4		51.6		30.1	15.2			39.6	32.4
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	245.3		0.1		0.1		34.8	0.3			36.4	0.4
Delay (s)	280.1		24.5		51.7		64.9	15.5			76.0	32.8
Level of Service	F		C		D		E	B			E	C
Approach Delay (s)		251.1			51.7			42.6			55.1	
Approach LOS		F			D			D			E	

Intersection Summary			
HCM Average Control Delay	125.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	105.1	Sum of lost time (s)	13.0
Intersection Capacity Utilization	106.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	234	475	338	265	377	26	290	582	374	15	60	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1881	1599	1805	1882		1770	1863	1583	1787	1672	
Flt Permitted	0.28	1.00	1.00	0.11	1.00		0.30	1.00	1.00	0.16	1.00	
Satd. Flow (perm)	533	1881	1599	203	1882		568	1863	1583	306	1672	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	254	516	367	288	410	28	315	633	407	16	65	187
RTOR Reduction (vph)	0	0	161	0	2	0	0	0	81	0	88	0
Lane Group Flow (vph)	254	516	206	288	436	0	315	633	326	16	164	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt		pm+ov	pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		
Actuated Green, G (s)	43.2	32.4	50.8	51.6	36.6		46.0	39.6	39.6	24.0	22.6	
Effective Green, g (s)	47.2	34.4	54.8	54.4	38.6		48.0	41.6	41.6	28.0	24.6	
Actuated g/C Ratio	0.44	0.32	0.51	0.50	0.36		0.44	0.38	0.38	0.26	0.23	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	380	597	853	353	670		478	715	607	125	379	
v/s Ratio Prot	0.08	0.27	0.05	c0.13	0.23		c0.12	c0.34		0.00	0.10	
v/s Ratio Perm	0.21		0.08	c0.28			0.17		0.21	0.03		
v/c Ratio	0.67	0.86	0.24	0.82	0.65		0.66	0.89	0.54	0.13	0.43	
Uniform Delay, d1	21.6	34.8	15.1	28.2	29.3		21.7	31.2	25.9	31.3	35.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.4	12.4	0.1	13.5	2.3		3.3	12.6	0.9	0.5	0.8	
Delay (s)	26.0	47.2	15.2	41.7	31.5		24.9	43.8	26.9	31.8	36.7	
Level of Service	C	D	B	D	C		C	D	C	C	D	
Approach Delay (s)		32.1			35.6			34.3			36.4	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	34.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	108.4	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: S 10th St & Lake Street

Potala Village
2012 With-Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	26	1	9	1	751	33	19	423	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	2	28	1	10	1	799	35	20	450	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1320	1327	451	1312	1310	816	451			834		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1320	1327	451	1312	1310	816	451			834		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	79	99	97	100			97		
cM capacity (veh/h)	129	153	613	134	156	380	1115			808		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	2	38	835	471
Volume Left	0	28	1	20
Volume Right	2	10	35	1
cSH	613	160	1115	808
Volume to Capacity	0.00	0.24	0.00	0.03
Queue Length 95th (ft)	0	22	0	2
Control Delay (s)	10.9	34.3	0.0	0.7
Lane LOS	B	D	A	A
Approach Delay (s)	10.9	34.3	0.0	0.7
Approach LOS	B	D		

Intersection Summary				
Average Delay		1.3		
Intersection Capacity Utilization		57.3%	ICU Level of Service	B
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
2: S 10th St & State St S

Potala Village
2012 With-Project Conditions

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	20	36	47	659	226	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	23	42	55	766	263	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				388		
pX, platoon unblocked						
vC, conflicting volume	1144	269	274			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1144	269	274			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	95	96			
cM capacity (veh/h)	214	775	1294			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	65	821	274
Volume Left	23	55	0
Volume Right	42	0	12
cSH	400	1294	1700
Volume to Capacity	0.16	0.04	0.16
Queue Length 95th (ft)	14	3	0
Control Delay (s)	15.8	1.1	0.0
Lane LOS	C	A	
Approach Delay (s)	15.8	1.1	0.0
Approach LOS	C		

Intersection Summary				
Average Delay		1.7		
Intersection Capacity Utilization		63.1%	ICU Level of Service	B
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis
3: NE 68th Street & 3rd Street

Potala Village
2012 With-Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	373	549	1	19	274	303	1	5	24	271	8	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.89		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1787	1881		1787	1881	1599		1640		1787	1616	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)	1787	1881		1787	1881	1599		1640		1787	1616	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.90	1.00	0.92
Adj. Flow (vph)	405	597	1	21	298	329	1	5	26	301	8	126
RTOR Reduction (vph)	0	0	0	0	0	142	0	24	0	0	96	0
Lane Group Flow (vph)	405	598	0	21	298	187	0	8	0	301	38	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type	Prot			Prot		pm+ov	Split			Split		
Protected Phases	1	6		5	2	4	8	8		4	4	
Permitted Phases						2						
Actuated Green, G (s)	26.6	48.6		1.3	23.3	44.8		6.4		21.5	21.5	
Effective Green, g (s)	27.6	49.6		2.3	24.3	46.8		7.4		22.5	22.5	
Actuated g/C Ratio	0.29	0.53		0.02	0.26	0.50		0.08		0.24	0.24	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	526	995		44	487	849		129		429	388	
v/s Ratio Prot	c0.23	c0.32		0.01	0.16	0.05		c0.00		c0.17	0.02	
v/s Ratio Perm						0.06						
v/c Ratio	0.77	0.60		0.48	0.61	0.22		0.06		0.70	0.10	
Uniform Delay, d1	30.2	15.3		45.2	30.6	13.2		40.0		32.6	27.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	6.7	1.0		7.9	2.3	0.1		0.2		5.1	0.1	
Delay (s)	36.9	16.3		53.1	32.9	13.4		40.2		37.7	27.9	
Level of Service	D	B		D	C	B		D		D	C	
Approach Delay (s)		24.6			23.6			40.2			34.7	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	93.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: NE 68th Street & 6th Street S

Potala Village
2012 With-Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	322	632	91	230	390	160	93	456	195	177	305	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1881	1599	1770	1782		1770	1863	1583	1527	1740	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	1881	1599	1770	1782		1770	1863	1583	1527	1740	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	339	665	96	242	411	168	98	480	205	186	321	148
RTOR Reduction (vph)	0	0	32	0	13	0	0	0	94	0	15	0
Lane Group Flow (vph)	339	665	64	242	566	0	98	480	111	186	454	0
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Parking (#/hr)										4		
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	5	6		1	2		3	4		7	8	
Permitted Phases			6						4			
Actuated Green, G (s)	21.0	41.0	41.0	15.0	35.0		7.9	28.0	28.0	13.0	33.1	
Effective Green, g (s)	22.0	43.0	43.0	16.0	37.0		8.9	30.0	30.0	14.0	35.1	
Actuated g/C Ratio	0.19	0.37	0.37	0.14	0.32		0.08	0.26	0.26	0.12	0.31	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	342	703	598	246	573		137	486	413	186	531	
v/s Ratio Prot	c0.19	c0.35		0.14	0.32		0.06	c0.26		c0.12	0.26	
v/s Ratio Perm			0.04						0.07			
v/c Ratio	0.99	0.95	0.11	0.98	0.99		0.72	0.99	0.27	1.00	0.86	
Uniform Delay, d1	46.4	34.9	23.5	49.4	38.8		51.8	42.3	33.8	50.5	37.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	46.1	21.5	0.1	52.5	34.2		16.2	37.2	0.4	66.0	12.8	
Delay (s)	92.5	56.4	23.6	101.8	72.9		68.0	79.6	34.1	116.5	50.3	
Level of Service	F	E	C	F	E		E	E	C	F	D	
Approach Delay (s)		64.7			81.5			66.2			69.1	
Approach LOS		E			F			E			E	

Intersection Summary			
HCM Average Control Delay	70.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Lakeview Dr & Lake Washington Blvd

Potala Village
2012 With-Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	132	216	318	63	15	97	626	757	3	485	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
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
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1881	1599	1805	1845		1787	1881	1599	1805	1900	1615
Flt Permitted	0.70	1.00	1.00	0.40	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1323	1881	1599	769	1845		1787	1881	1599	1805	1900	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	68	140	230	338	67	16	103	666	805	3	516	53
RTOR Reduction (vph)	0	0	195	0	8	0	0	0	0	0	0	33
Lane Group Flow (vph)	68	140	35	338	75	0	103	666	805	3	516	20
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt		Perm	pm+pt			Prot		Free	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2					Free			8
Actuated Green, G (s)	19.3	13.2	13.2	39.8	29.7		9.0	44.2	100.1	1.1	36.3	36.3
Effective Green, g (s)	21.3	15.2	15.2	41.8	31.7		11.0	46.2	100.1	3.1	38.3	38.3
Actuated g/C Ratio	0.21	0.15	0.15	0.42	0.32		0.11	0.46	1.00	0.03	0.38	0.38
Clearance Time (s)	4.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	314	286	243	565	584		196	868	1599	56	727	618
v/s Ratio Prot	0.02	0.07		c0.14	0.04		0.06	c0.35		0.00	0.27	
v/s Ratio Perm	0.03		0.02	c0.11					c0.50			0.01
v/c Ratio	0.22	0.49	0.14	0.60	0.13		0.53	0.77	0.50	0.05	0.71	0.03
Uniform Delay, d1	32.2	38.9	36.8	21.2	24.4		42.1	22.5	0.0	47.1	26.2	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	1.3	0.3	1.7	0.1		2.5	4.1	1.1	0.4	3.2	0.0
Delay (s)	32.6	40.2	37.1	22.9	24.5		44.6	26.6	1.1	47.5	29.4	19.3
Level of Service	C	D	D	C	C		D	C	A	D	C	B
Approach Delay (s)		37.4			23.2			14.7			28.5	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.1	Sum of lost time (s)	3.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: NE 38th Street & Lake Street

Potala Village
2012 With-Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	11	37	158	3	126	5	1284	120	57	972	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.88			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1648			1776	1583	1805	1900	1615	1787	3573	
Flt Permitted	0.37	1.00			0.67	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	695	1648			1249	1583	1805	1900	1615	1787	3573	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	17	12	40	170	3	135	5	1381	129	61	1045	3
RTOR Reduction (vph)	0	33	0	0	0	113	0	0	24	0	0	0
Lane Group Flow (vph)	17	19	0	0	173	22	5	1381	105	61	1048	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6			2		2			4			
Actuated Green, G (s)	22.4	22.4			22.4	22.4	1.2	107.2	107.2	6.4	112.4	
Effective Green, g (s)	24.4	24.4			24.4	24.4	2.2	109.2	109.2	7.4	114.4	
Actuated g/C Ratio	0.16	0.16			0.16	0.16	0.01	0.73	0.73	0.05	0.76	
Clearance Time (s)	5.0	5.0			5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	113	268			203	258	26	1383	1176	88	2725	
v/s Ratio Prot		0.01					0.00	c0.73		c0.03	0.29	
v/s Ratio Perm	0.02				c0.14	0.01			0.07			
v/c Ratio	0.15	0.07			0.85	0.09	0.19	1.00	0.09	0.69	0.38	
Uniform Delay, d1	53.9	53.2			61.0	53.3	73.0	20.3	5.9	70.2	6.0	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.1			27.5	0.1	3.6	23.9	0.2	21.0	0.4	
Delay (s)	54.5	53.3			88.5	53.5	76.6	44.2	6.1	91.2	6.4	
Level of Service	D	D			F	D	E	D	A	F	A	
Approach Delay (s)		53.6			73.2			41.0			11.1	
Approach LOS		D			E			D			B	

Intersection Summary			
HCM Average Control Delay	33.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: I-405 SB Ramp & NE 72nd Pl

Potala Village
2012 With-Project Conditions

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	266	272	947	115	211	648
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5		3.5	3.5	3.5	3.5
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.93		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1728		1863	1583	1770	1863
Flt Permitted	0.98		1.00	1.00	0.09	1.00
Satd. Flow (perm)	1728		1863	1583	166	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	289	296	1029	125	229	704
RTOR Reduction (vph)	40	0	0	45	0	0
Lane Group Flow (vph)	545	0	1029	80	229	704
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Turn Type				Perm	pm+pt	
Protected Phases	4		2		1	6
Permitted Phases				2	6	
Actuated Green, G (s)	32.9		39.3	39.3	49.8	49.8
Effective Green, g (s)	34.9		41.3	41.3	51.8	51.8
Actuated g/C Ratio	0.38		0.45	0.45	0.56	0.56
Clearance Time (s)	4.5		5.5	5.5	5.5	5.5
Vehicle Extension (s)	3.5		4.0	4.0	2.5	3.5
Lane Grp Cap (vph)	651		830	705	214	1041
v/s Ratio Prot	c0.32		c0.55		c0.08	0.38
v/s Ratio Perm				0.05	0.52	
v/c Ratio	0.84		1.24	0.11	1.07	0.68
Uniform Delay, d1	26.3		25.7	15.0	25.4	14.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	9.4		118.1	0.1	81.3	1.8
Delay (s)	35.7		143.8	15.1	106.8	16.3
Level of Service	D		F	B	F	B
Approach Delay (s)	35.7		129.9			38.5
Approach LOS	D		F			D

Intersection Summary			
HCM Average Control Delay	77.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	92.7	Sum of lost time (s)	9.5
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: I-405 NB Ramp & 116th Avenue NE

Potala Village
2012 With-Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	821	0	104	1	1	4	436	359	0	0	153	549
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5		4.0		4.5	5.0			5.0	5.0
Lane Util. Factor	1.00		1.00		0.95		1.00	1.00			0.95	0.95
Frt	1.00		0.85		0.89		1.00	1.00			0.91	0.85
Flt Protected	0.95		1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1787		1599		1600		1787	1881			1633	1519
Flt Permitted	0.95		1.00		0.99		0.14	1.00			1.00	1.00
Satd. Flow (perm)	1787		1599		1600		254	1881			1633	1519
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	933	0	118	1	1	5	495	408	0	0	174	624
RTOR Reduction (vph)	0	0	30	0	7	0	0	0	0	0	31	295
Lane Group Flow (vph)	933	0	88	0	0	0	495	408	0	0	380	92
Heavy Vehicles (%)	1%	1%	1%	100%	100%	100%	1%	1%	1%	1%	1%	1%
Turn Type	Prot		custom	Perm			pm+pt					Perm
Protected Phases	8				7		5	2			6	
Permitted Phases			8	7			2					6
Actuated Green, G (s)	35.5		35.5		1.0		55.1	55.1			25.1	25.1
Effective Green, g (s)	35.5		35.5		1.0		55.1	55.1			25.1	25.1
Actuated g/C Ratio	0.34		0.34		0.01		0.52	0.52			0.24	0.24
Clearance Time (s)	4.5		4.5		4.0		4.5	5.0			5.0	5.0
Vehicle Extension (s)	2.5		2.5		3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	604		540		15		505	986			390	363
v/s Ratio Prot	c0.52						c0.24	0.22			0.23	
v/s Ratio Perm			0.05		0.00		c0.28					0.06
v/c Ratio	1.54		0.16		0.00		0.98	0.41			0.97	0.25
Uniform Delay, d1	34.8		24.4		51.6		30.1	15.2			39.7	32.4
Progression Factor	1.00		1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	253.3		0.1		0.1		34.8	0.3			38.4	0.4
Delay (s)	288.1		24.5		51.7		64.9	15.5			78.1	32.8
Level of Service	F		C		D		E	B			E	C
Approach Delay (s)		258.5			51.7			42.6			56.1	
Approach LOS		F			D			D			E	

Intersection Summary			
HCM Average Control Delay	128.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	105.1	Sum of lost time (s)	13.0
Intersection Capacity Utilization	106.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
9: NE 70th Street & 116th Avenue NE

Potala Village
2012 With-Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	236	477	345	265	380	26	300	582	374	15	60	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1881	1599	1805	1882		1770	1863	1583	1787	1671	
Flt Permitted	0.28	1.00	1.00	0.11	1.00		0.30	1.00	1.00	0.16	1.00	
Satd. Flow (perm)	526	1881	1599	203	1882		552	1863	1583	308	1671	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	257	518	375	288	413	28	326	633	407	16	65	190
RTOR Reduction (vph)	0	0	163	0	2	0	0	0	81	0	90	0
Lane Group Flow (vph)	257	518	212	288	439	0	326	633	326	16	165	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt		pm+ov	pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		
Actuated Green, G (s)	43.3	32.5	51.2	51.7	36.7		46.1	39.7	39.7	23.8	22.4	
Effective Green, g (s)	47.3	34.5	55.2	54.5	38.7		48.1	41.7	41.7	27.8	24.4	
Actuated g/C Ratio	0.44	0.32	0.51	0.50	0.36		0.44	0.38	0.38	0.26	0.22	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	378	598	857	353	671		477	715	608	125	375	
v/s Ratio Prot	0.08	0.28	0.05	c0.13	0.23		c0.13	c0.34		0.00	0.10	
v/s Ratio Perm	0.22		0.09	c0.28			0.17		0.21	0.03		
v/c Ratio	0.68	0.87	0.25	0.82	0.65		0.68	0.89	0.54	0.13	0.44	
Uniform Delay, d1	21.7	34.9	15.0	28.3	29.3		21.9	31.2	26.0	31.5	36.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.8	12.5	0.2	13.5	2.3		4.0	12.6	0.9	0.5	0.8	
Delay (s)	26.5	47.4	15.2	41.8	31.6		25.9	43.8	26.9	32.0	37.1	
Level of Service	C	D	B	D	C		C	D	C	C	D	
Approach Delay (s)		32.2			35.7			34.5			36.8	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	34.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	108.6	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
10: Site Access & Lake Street

Potala Village
2012 With-Project Conditions

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	25	20	766	36	30	422
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	27	21	815	38	32	449
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1347	834			853	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1347	834			853	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	94			96	
cM capacity (veh/h)	162	371			795	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	48	853	481
Volume Left	27	0	32
Volume Right	21	38	0
cSH	216	1700	795
Volume to Capacity	0.22	0.50	0.04
Queue Length 95th (ft)	21	0	3
Control Delay (s)	26.4	0.0	1.1
Lane LOS	D		A
Approach Delay (s)	26.4	0.0	1.1
Approach LOS	D		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

Appendix E: Transportation Concurrency Test

CITY OF KIRKLAND
123 FIFTH AVENUE ● KIRKLAND, WASHINGTON 98033-6189 ● (425) 587-3000

DEPARTMENT OF PUBLIC WORKS
MEMORANDUM

To: Planning Department

From: Thang Nguyen, Transportation Engineer

Date: November 29, 2010

Subject: Potala Village Development

The purpose of this memo is to inform you that the proposed Potala Village development has passed traffic concurrency. This memo will serve as the concurrency test notice.

Project Description

The applicant is proposing to redevelop a current 1,500 square foot building. Portion of the existing building (1,000 square feet) is a restaurant and the other is vacant. The applicant proposed to develop the site a mixed use comprise of a shopping center and multi-family use. The proposed redevelopment will comprise of 164 apartment units and 9,028 square feet of shopping center. The project is located at the southeast corner of Lake Street/10th Avenue and comprise of two parcels 1006 and 1020 Lake Street. One driveway into an underground parking garage is proposed off Lake Street. Compared to the existing trip generation for the site, the proposed project is anticipated to generate 1,243 additional daily trips, 89 additional AM peak hour trips and 120 additional PM peak hour trips.

The proposed project passed traffic concurrency. This memo will serve as the concurrency test notice for the proposed project. Per *Section 25.10.020 Procedures* of the KMC, this Concurrency Test Notice will expire in one year (November 29, 2011) unless a development permit and certificate of concurrency are issued or an extension is granted.

EXPIRATION

The concurrency test notice shall expire and a new concurrency test application is required unless:

1. A complete SEPA checklist, traffic impact analysis and all required documentation are submitted to the City within 90 calendar days of the concurrency test notice.

2. A Certificate of Concurrency is issued or an extension is requested and granted by the Public Works Department within one year of issuance of the concurrency test notice. (A Certificate of Concurrency is issued at the same time a development permit or building permit is issued if the applicant holds a valid concurrency test notice.)

3. A Certificate of Concurrency shall expire six years from the date of issuance of the concurrency test notice unless all building permits are issued for buildings approved under the concurrency test notice.

APPEALS

The concurrency test notice may be appealed by the public or agency with jurisdiction. The concurrency test notice is subject to an appeal until the SEPA review process is complete and the appeal deadline has passed. Concurrency appeals are heard before the Hearing Examiner along with any applicable SEPA appeal. For more information, refer to the Kirkland Municipal Code, Title 25. If you have any questions, please call me at x3869.

cc: Advantage
File

1) Project ID:	**Potala Village**	**4) Transportation Concurrency Status**	**6) Transportation Concurrency Certificate Date:**
2) Project Description:	164 apartments and 9,028 sf shopping center	PASS	
	Enter Exit Enter Exit	**5) Transportation Concurrency Test Date**	**7) Certificate of Occupancy Date**
3) Build-out Year:	2012 factor = 1	29-Nov-10	

SUMMARY OF TRAFFIC IMPACTS

8) Daily Trips	**PM Peak Trips:**	120 (76, 44)	**Impacted Subarea(s):**	SE, E, W	**TAZ:** 252

Signalized Intersection PM Peak Traffic Impact

		Project PM Peak Turning Volumes												PM Peak	Daily Trips	Sum of	Vol.
		Eastbound			Northbound			Southbound			Westbound						
Code	Intersection	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				
	Lake Street/ Project Driveway						30	46			18		26	120			
	Lake Street/ 10th Avenue					7	20		11		35			73			
	State Street/10th Avenue	2		18	31					4				55			
														0			
108	Lake St/Kirkland Ave					7			11					18			
209	Market St/7th Ave					7			11					18			
211	Market St/15th Ave					7			11					18			
205	Market St/Forbes Creek					7			11					18			
201	98th Ave NE/Juanita Dr					7			9	2				18			
106	Central Way/3rd St						1				3			4			
111	Kirkland Ave/3rd Ave					1	1		3		1			6			
103	State St/NE 68th St				18								31	49			
104	108th Ave NE/NE 68th St		18									31		49			
102	Lake Wash/Lakeview Dr					30			18					48			
101	Lake Wash/NE 38th Pl					30			18					48			
411	NE 72nd Pl/I-405 SB Ramp					11	7		19		11			48			
410	116th Ave NE/I-405 Ramp	11								7				18			
407	NE 70th St/116th Ave NE	2	2	7	11					4		4		30			
	#N/A													0			

Transportation Concurency Test

	LOS Standards		*LOS with Project Impacts*			
Subarea No	A= Max. Intersection LOS	B=Average 2013 V/C	a=No. exceeding 1.4	b=Average V/C	**a <= A?**	**b<= B?**
Southwest (1xx)	1.4	0.90	0		yes	yes
Northwest (2xx)	1.4	0.94	0		yes	yes
Northeast (3xx)	1.4	0.92	0		yes	yes
East(4xx)	1.4	1.07	0		yes	yes

TEST RESULTS

Result: **PASS**

* Based on Critical Movement, Planning Method TRC #212.
1. Number of intersection exceeding Average V/C LOS Standard (2022)
1. Sixth Year Target Average V/C ratio, see step 6, part 1 of the guidelines

1) Project ID:	**Potala Village**	**4) Transportation Concurrency Status**	**6) Transportation Concurrency Certificate Date:**
2) Project Description:	164 apartments and 9,028 sf shopping center	PASS	
		5) Transportation Concurrency Test Date	**7) Certificate of Occupancy Date**
3) Build-out Year:	2012	29-Nov-10	

	0	**0**	**0**	**0**	**0**	**OF TRAFFI**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
8) Daily Trips	0	**PM Peak Trips:**	120 (76, 44)			**Impacted Subarea(s):**	SE, E, W			**TAZ:**	252						

Signalized Intersection PM Peak Traffic Impact

		Project PM Peak Turning Volumes												PM Peak	Daily Trips	Sum of	Vol.
		Eastbound			Northbound			Southbound			Westbound						
Code	Intersection	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				
401	*Lake Street/ Project Driveway*						30	46			18		26	120		1172	0.85
412	Lake Street/ 10th Avenue					7	20		11		35			73		0	#DIV/0!
402	State Street/10th Avenue	2		18	31					4				55		1320	0.96
409														0		1182	0.83
108	Lake St/Kirkland Ave					7			11					18		828	0.55
209	Market St/7th Ave					7			11					18		0	0.00
211	Market St/15th Ave					7			11					18		0	0.00
205	Market St/Forbes Creek					7			11					18		934	0.66
201	98th Ave NE/Juanita Dr					7			9	2				18		1222	0.89
106	Central Way/3rd St						1				3			4		1069	0.78
111	Kirkland Ave/3rd Ave					1	1		3		1			6		0	0.00
103	State St/NE 68th St				18								31	49		976	0.71
104	108th Ave NE/NE 68th St		18									31		49		1570	1.14
102	Lake Wash/Lakeview Dr					30			18					48		1066	0.78
101	Lake Wash/NE 38th Pl					30			18					48		1535	1.08
411	NE 72nd Pl/I-405 SB Ramp					11	7		19		11			48		1325	0.93
410	116th Ave NE/I-405 Ramp	11								7				18		1363	0.96
407	NE 70th St/116th Ave NE	2	2	7	11					4		4		30		1305	0.95
	#N/A													0		#N/A	#N/A

Transportation Concurency Test

	LOS Standards		***LOS with Project Impacts***			
Subarea No	A= Max. Intersection LOS	B=Average 2013 V/C	a=No. exceeding 1.4	b=Average V/C	**a <= A?**	**b<= B?**
Southwest (1xx)	1.4	0.90	0		yes	yes
Northwest (2xx)	1.4	0.94	0		yes	yes
Northeast (3xx)	1.4	0.92	0		yes	yes
East(4xx)	1.4	1.07	0		yes	yes

TEST RESULTS

Result: **PASS**

* Based on Critical Movement, Planning Method TRC #212.
1. Number of intersection exceeding Average V/C LOS Standard (2012)
1. Sixth Year Target Average V/C ratio, see step 6, part 1 of the guidelines