CALLISON

March 5, 2012

Mr. Peter Spir
Associate Planner
City of West Linn
22500 Salamo Rd.
West Linn, OR 97068

Re: Chase – Cedar Oak & Willamette, 19080 Willamette Drive, West Linn, OR
210461.89
Class II Design Review Application – Additional Information Submittal

Dear Mr. Peter Spir:

In our original submittal letter dated February 23, 2012 we indicated that we would be submitting the following materials under separate cover. Additionally, a CD with all of our Class II Design Review Application materials was requested. We also have updated our site plan drawing to include approximate locations of buildings and property lines for adjacent properties. Please find the following enclosed:

CLASS II DESIGN REVIEW APPLICATION:

3-copies	Preliminary Signage Package
3-copies	Traffic Impact Analysis
3-copies	Neighborhood Meeting Minutes (Robinwood Neighborhood Association)
1-CD	Class II Design Review Application Materials – Electronic Files
3-copies	Site Plan, A0.1, revision date 2/29/12

With regard to the preliminary signage morph, it should be noted that the night time view of the front elevation includes blue awnings underneath the storefront canopy. The night time elevations were for lighting representational purposes only. Please refer to the building elevations originally submitted with the application for accurate building elevation information. Please also note that the illuminated chevrons shown at either side of the front and rear elevations in the night time view are only intended to be raised embellishments in the cement plaster, as shown on page 2 of the signage morph

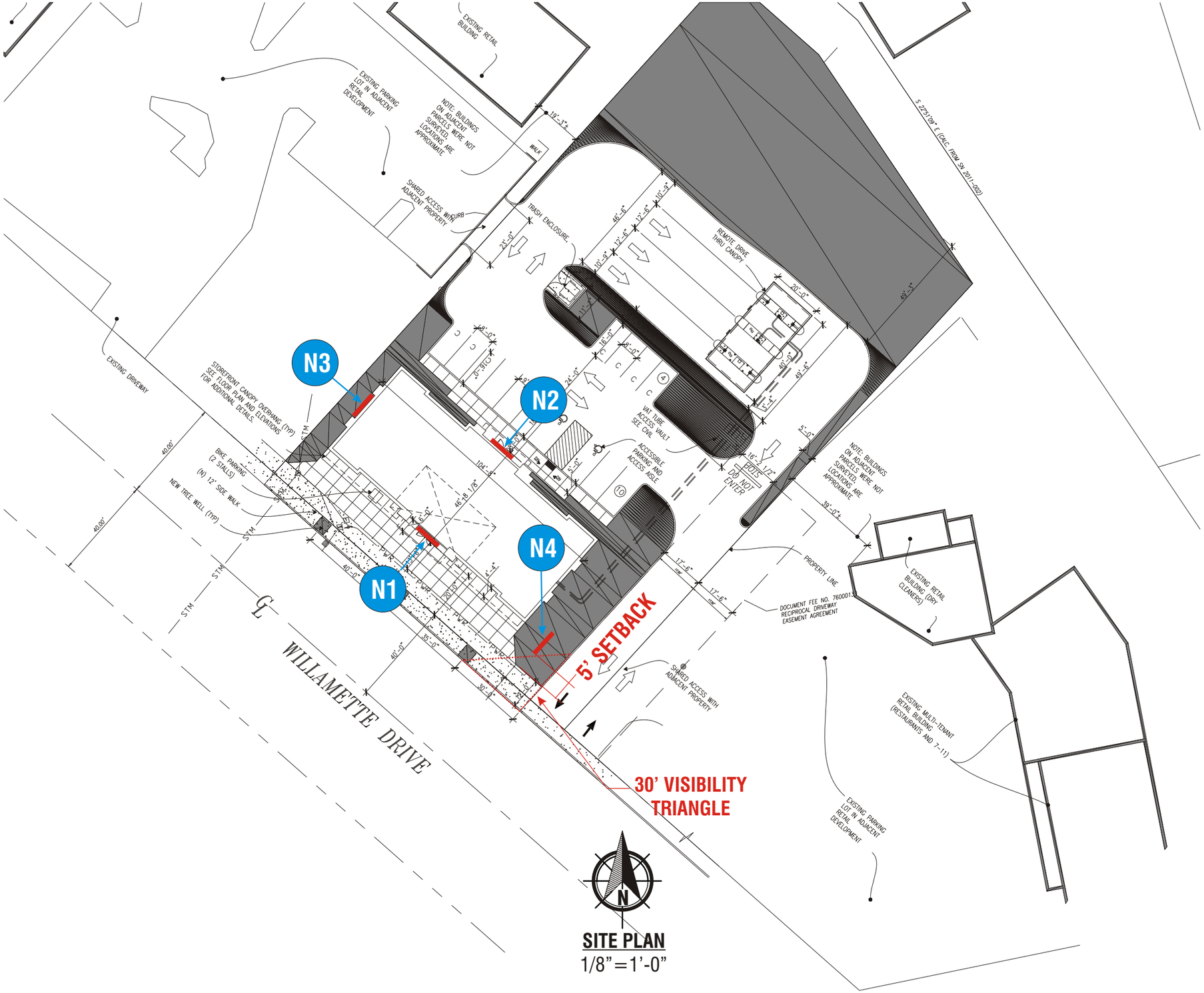
If any additional materials or information are required for the review of this application please do not hesitate to let me know.

Sincerely,

Hans Christiansen
Associate

Enclosure

1420 FIFTH AVENUE #2400 SEATTLE, WASHINGTON 98101-2343
T 206 623 4646 F 206 623 4625 www.callison.com



SITE PLAN
1/8"=1'-0"

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JP Morgan Chase Bank #26668

Cedar Oak Dr and Wilamette Dr
SW Cedar Oak Drive and Wilamette Drive
West Linn, OR. 97068

Date: 3/1/12
Salesperson: Arthur Navarro
Coordinator: Lisa Brevard
Designer: Scott Moller
Scale: As noted

Revisions

CUSTOMER APPROVAL

Customer Signature Date

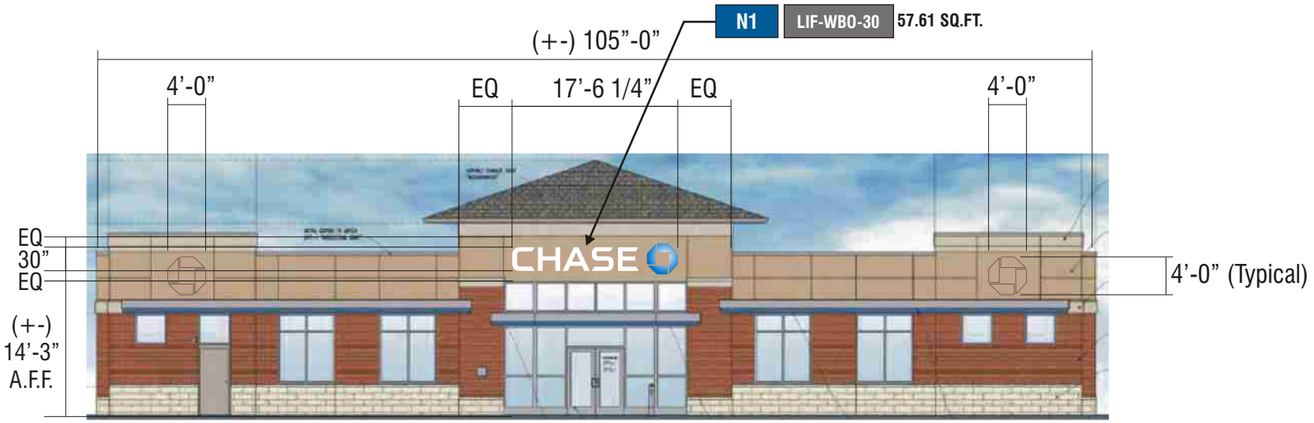
COPY, COLORS & SIZES

Signtech does NOT provide primary electrical to sign location - ***RESPONSIBILITY OF OTHERS!***

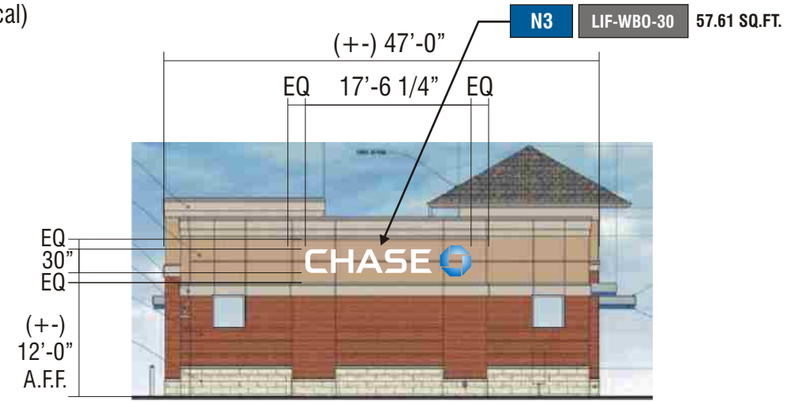
Customer Signature Date

Drawing Number: Building Signage
Work Order Number: 52474

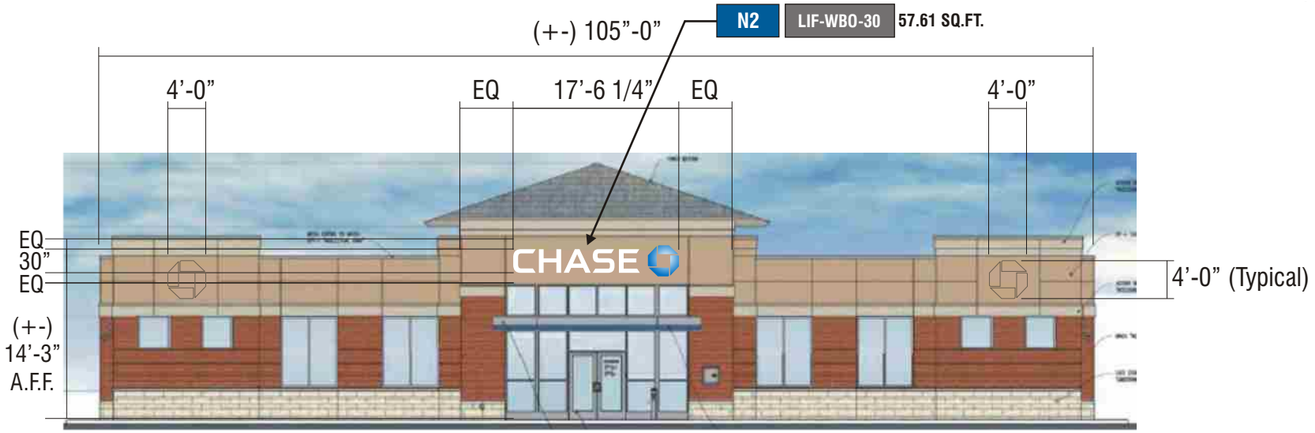
SIGNAGE OVERVIEW



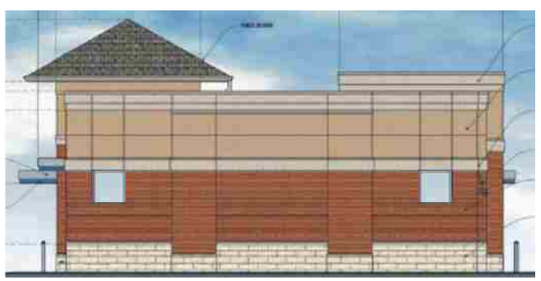
SOUTH ELEVATION **SCALE: 1/16”=1’-0”**



WEST ELEVATION **SCALE: 1/16”=1’-0”**



NORTH ELEVATION **SCALE: 1/16”=1’-0”**



EAST ELEVATION **SCALE: 1/16”=1’-0”**

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JP Morgan Chase Bank #26668

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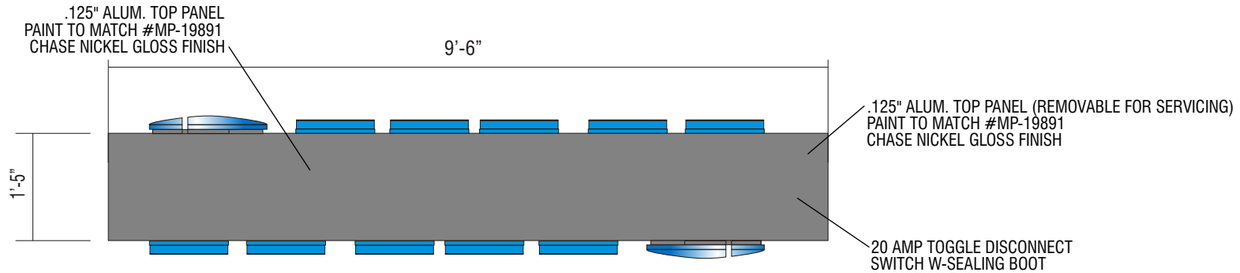
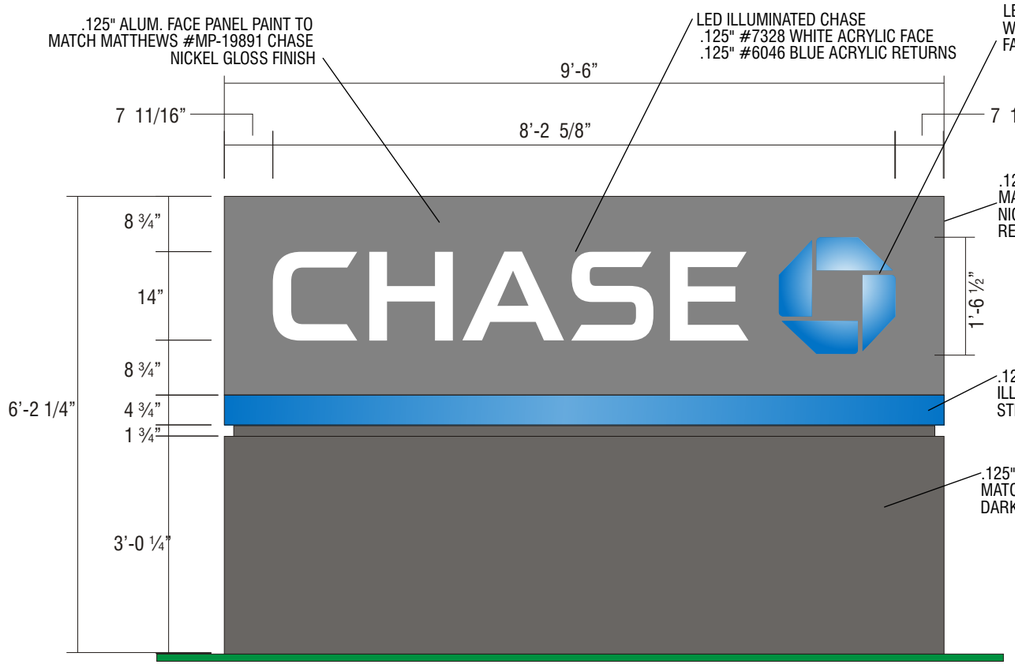
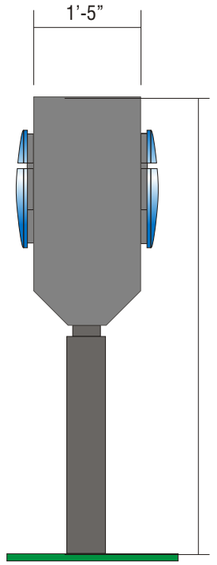


TOP VIEW SCALE: 1/2"=1'-0"



FRONT VIEW SCALE: 1/2"=1'-0"



END VIEW SCALE: 1/2"=1'-0"

N4 **SIGN TYPE** M-25 **25 SQ.FT.**

MANUFACTURE AND INSTALL ONE (1) ILLUMINATED MONUMENT SIGN

NOTES:

1. Design is based on 90 mph 3 sec gust design wind speed per IBC 2006. Exposure C.
2. Caisson & vertical foundations are based on a safe lateral soil bearing pressure minimum of 300 psf per foot of depth. Soil report was not furnished. Allowable bearing pressure should be verified prior to placement of concrete. Do not place foundation in fill.
3. Concrete shall be mixed to attain a minimum compressive strength of 3000 psi in 28 days.
4. Steel support members shall be free from defects and shall meet ASTM A500 grade B with a minimum yield strength of 46000 psi for tube. Steel plate and angle shall meet ASTM A36. Aluminum shapes be extruded from 6061-T6 alloy. Aluminum sheet shall be 3003-H14 alloy. Aluminum plate shall be 5052-H34 alloy.
5. Structural bolts shall be zinc coated A325 unless otherwise noted. All other fasteners shall be stainless steel or otherwise coated to prevent corrosion.
6. Anchor bolts shall be cut from A36 round stock. Exposed surfaces shall be galvanized or coated to prevent corrosion.
7. All voids between column base plate and foundation surface shall be completely filled with high strength, non-shrink grout.
8. Welds shall be made with E70xx electrodes for steel and a 4000 series filler for aluminum by persons qualified in accordance with AWS standards within the past two years.
9. Steel reinforcing bars shall conform to ASTM 615 grade 60 with deformations in accordance with ASTM A-305. Welding of reinforcing bars is prohibited.
10. This design is prototypical and should not be used for site specific applications unless deemed suitable by a competent Professional Engineer.

ALL EXPOSED FASTENER HEADS SHALL BE PAINTED TO MATCH THE EXTERIOR CABINET FINISH

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ARCHITECTURAL NIGHT ILLUMINATION

FRONT ELEVATION

REAR ELEVATION

RIGHT ELEVATION

LEFT ELEVATION

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KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

February 28, 2012 Project #: 12149

Hans Christiansen
CALLISON
1420 Fifth Avenue #2400
Seattle, WA 98101-2343

RE: Transportation Impact Analysis Report for the Proposed West Linn Chase Bank - West Linn, Oregon

Dear Mr. Christiansen,

This letter report presents the results of the transportation impact analysis prepared for the proposed Chase Bank in West Linn, Oregon. This study concludes that the proposed bank can be developed while maintaining acceptable traffic operations and safety at the study intersections. Additional details of the methodology, findings and recommendations are provided herein.

INTRODUCTION

Chase Bank is proposing to construct a 4,324 square foot drive-in bank on a parcel previously occupied by a nursery/garden store. The site is located on the east side of OR 43 in West Linn, north of the OR 43/Cedar Oak Drive. The site is bound by other commercial developments to the north and south, and backs to residential parcels to the east. Figure 1 shows the site vicinity map.

Estimated full build-out of the development is expected by 2013. Access to the site is proposed via a single existing full movement driveway on OR 43. This driveway is shared with adjacent land uses. Alternative access to OR 43 and to Cedar Oak Drive is provided via existing shared access with the retail development north and south of the site. Figure 2 shows the proposed development plan and access locations.

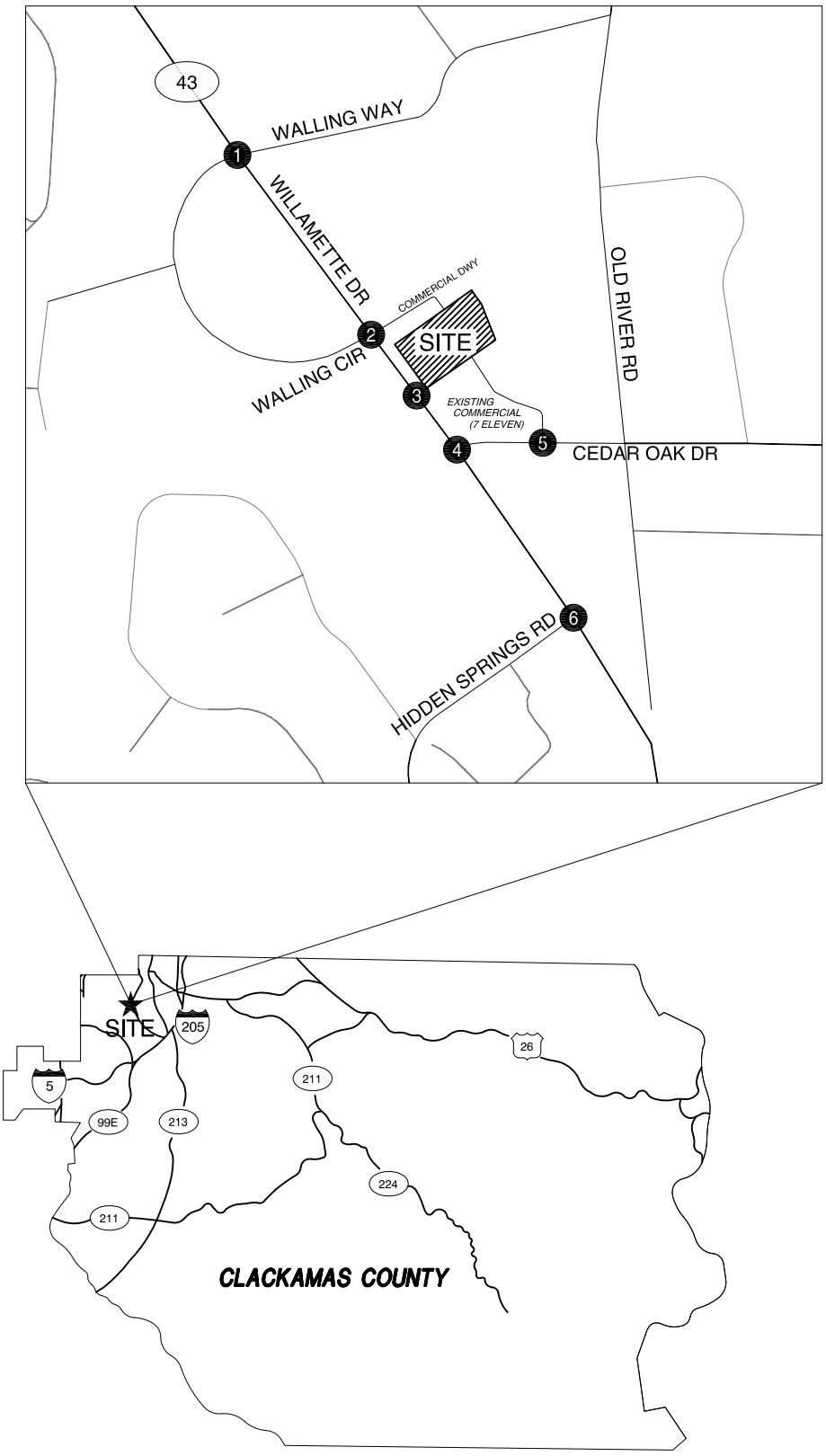
Findings

- Under year 2012 existing traffic conditions, all of the study intersections operate within Oregon Department of Transportation (ODOT) mobility standards during the weekday a.m. and p.m. peak hours.
- Under year 2013 background traffic conditions, all of the study intersections operate within ODOT mobility standards during the weekday a.m. and p.m. peak hours.
- The proposed development is estimated to generate approximately 640 weekday daily trips of which approximately 55 trips (30 inbound, 25 outbound) will occur during the weekday a.m. peak hour and approximately 110 trips (55 inbound, 55 outbound) during the weekday p.m. peak hour.

- Adequate intersection sight distance is available at the existing site access driveway.
- The estimated City of West Linn street System Development Charge (SDC) for this project is $34,048.

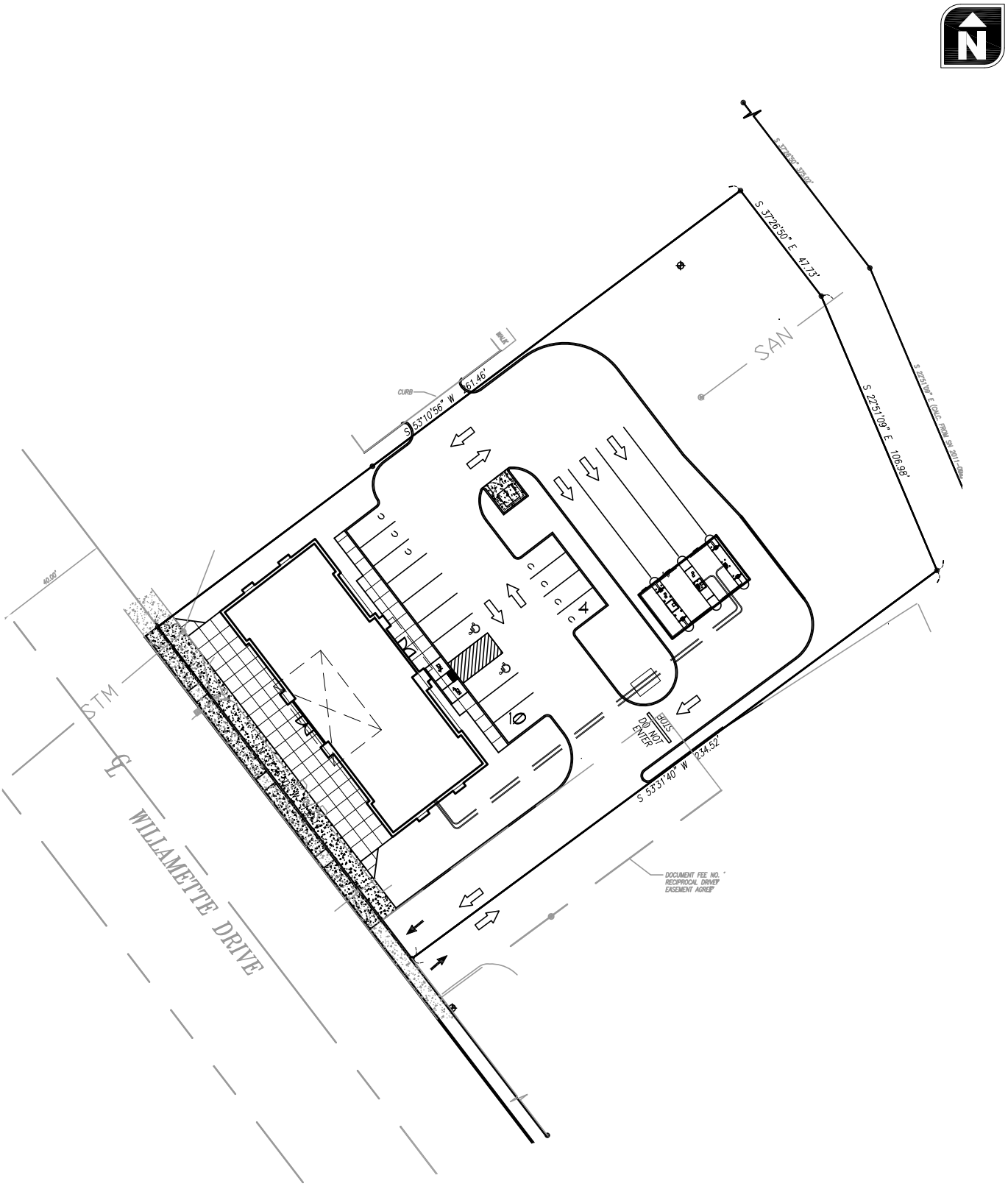
Recommendations

- It is recommended that landscaping, signage and any new above ground utilities along the site frontage be located and maintained to provide a clear sight line to the north and south from the site driveway. Intersection sight distance should be verified once the project is constructed.
- It is recommended that cross access locations between the adjacent commercial properties be maintained.



SITE VICINITY MAP
WEST LINN, OREGON

FIGURE
1



SITE PLAN PROVIDED BY OLSON ENGINEERING (2/8/2012)

PROPOSED SITE PLAN
WEST LINN, OREGON

FIGURE **2**

Recommendations

- It is recommended that landscaping, signage and any new above ground utilities along the site frontage be located and maintained to provide a clear sight line to the north and south from the site driveway. Intersection sight distance should be verified once the project is constructed.
- It is recommended that cross access locations between the adjacent commercial properties be maintained.

Scope of the Letter

This analysis determines the transportation-related impacts associated with the proposed Chase Bank development. The study intersections and overall project scope were developed based on discussions with the ODOT and City of West Linn staff. Operational analyses were performed at the following intersections:

- OR 43/Walling Circle (north intersection)
- OR 43/Walling Circle (south intersection)
- OR 43/Cedar Oak Drive
- OR 43/Future Chase Bank Driveway (site-access driveway)
- Cedar Oak Drive/South Commercial Driveway (7-11 Driveway)
- OR 43/Hidden Spring Road

This report addresses the following transportation issues:

- Year 2012 base traffic conditions during the weekday a.m. and p.m. peak hours;
- Crash data analysis for a 5-year period within the study area;
- Trip generation and distribution estimates for the proposed development;
- Year 2013 background traffic conditions during the weekday a.m. and p.m. peak hours, including traffic from expected regional growth in the site vicinity and any other in-process/approved developments but not the proposed development.
- Build-out year 2013 total traffic conditions, including traffic from the proposed development and expected regional growth in the site vicinity during the weekday a.m. and p.m. peak hours;
- Intersection sight distance at the proposed access driveway to OR 43;
- Oregon Highway Design Manual (HDM) turn lane warrant analysis for the proposed site access driveway;
- 95th percentile queue estimates; and,
- Conclusions and recommendations.

2012 EXISTING TRAFFIC CONDITIONS

The 2012 existing traffic conditions analysis identifies site conditions and the current operational and geometric characteristics of roadways within the study area. The purpose of this section is to establish a base condition to compare with future conditions.

Transportation Facilities

As indicated in Figure 1, the study site is located adjacent to OR 43, a three-lane principal arterial running north-south along the western property line. Cedar Oak Drive, a two-lane collector, is located 250 feet south of the site. Table 1 provides a summary of adjacent roadway facilities and regional roadway facilities that are specifically included in the operations analysis of this report.

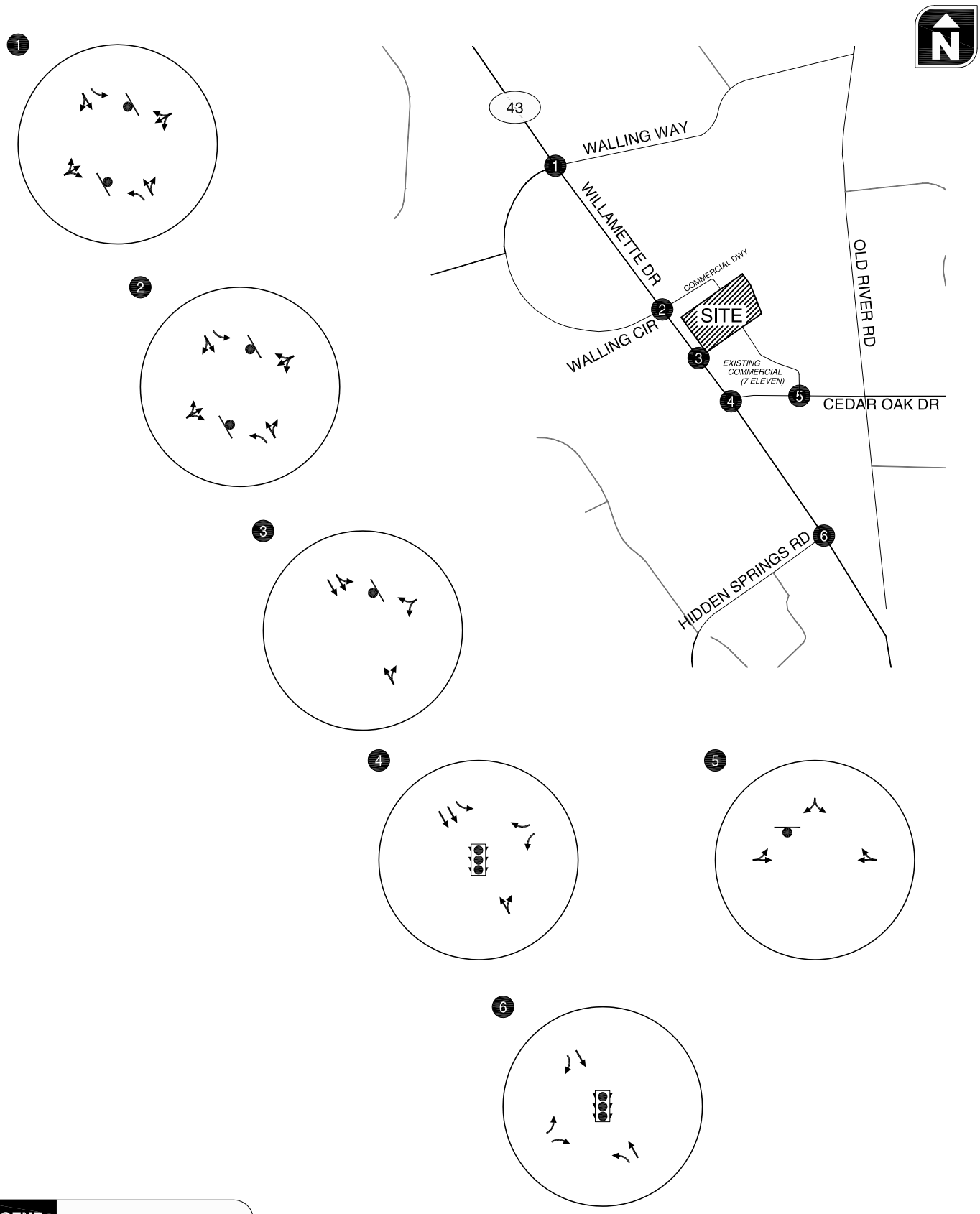
Table 1 Existing Transportation Facilities and Roadway Designations

Roadway	Classification[1]	Cross Section	Posted Speed	Side-walks?	Bicycle Lanes?	On-Street Parking?
OR 43	Principal Arterial	3/4[2]	35 mph	Partial	Yes	Partial
Walling Circle	Local Roadway	2	25 mph	Partial	No	Partial
Cedar Oak Drive	Collector	2	25 mph	Partial	No	Partial
Hidden Springs Road	Arterial	2	25 mph	Yes	No	No

[1] Per West Linn, OR 2008 Transportation System Plan – Figure 3-5, Existing Functional Classification (Reference 1)

[2] OR 43 is a three-lane road (one travel in each direction with a two-way left-turn lane) within the study area, except for the section between Cedar Oak Drive and Hidden Springs Road, where an additional southbound right-turn lane is added.

Figure 3 illustrates the location of the study intersections, as well as existing lane configurations and traffic control devices associated with each study intersection.



LEGEND

- STOP SIGN
- TRAFFIC SIGNAL

EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES WEST LINN, OREGON

FIGURE 3

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

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Pedestrian and Bicycle Facilities

Sidewalks are available on the east side of OR 43 throughout the study area. Sidewalks are present on both sides of Walling Circle, Cedar Oak Drive and Hidden Springs Road within 200 feet of OR 43, and on at least one side of those three streets to within a minimum an additional 100 feet. Bicycle lanes are present on OR 43 within the study area. No bicycle facilities are present on Walling Circle, Cedar Oak Drive and Hidden Springs Road.

Transit Service

Trimet bus route 35: *Macadam* operates seven days a week on OR 43. This route provides service between Oregon City, West Linn, Lake Oswego, and Portland on weekdays during the morning peak period at approximately 25-minute headways, during the weekday mid-day peak period at approximately 30-minute headways, the weekday evening at approximately 30-minute headways, on Saturdays at approximately 40-minute headways, and on Sunday at approximately 50-minute headways.

Traffic Volumes and Peak Hour Operations

Based on available traffic information, the types of land uses in the area, and typical commuter traffic patterns, the weekday a.m. and p.m. peak time periods represent the most critical time periods for analysis. The traffic operations analysis focused on the average weekday a.m. and p.m. peak hours of commuter traffic on the adjacent street system.

To evaluate the current transportation system conditions within the site vicinity, manual turning movement counts were obtained for the study intersections on a mid-week day in January 2012. These counts were conducted during the weekday morning (7:00 - 9:00 a.m.) and evening (4:00 - 6:00 p.m.) hours. The turning movement counts from the weekday a.m. and p.m. peak hours were summarized and rounded to the nearest five vehicles per hour. The weekday morning peak hour was found to occur between 7:30 and 8:30 a.m. while the evening peak hour was found to occur between 4:40 and 5:40 p.m.

Design Hour Volumes

Per the procedures identified in the ODOT Analysis Procedures Manual (AMP), seasonal growth factors were applied to the existing volumes to determine the 30 Highest Design Hour Volumes (DHV) on OR 43. There are no Automatic Traffic Recorders (ATR) within the study area, as such the Characteristic ATR method in the ODOT Analysis Procedures Manual was used. Based upon this methodology, a seasonal factor of 1.18 was added to the raw traffic volumes to arrive at the 30 DHV. Attachment *"A" contains the traffic count sheets and characteristic ATR methodology calculations used in this study.*

Current Levels of Service

All level-of-service analyses described in this report were performed in accordance with the procedures stated in the 2000 *Highway Capacity Manual* (Reference 2). A description of level of

service and the criteria by which they are determined is presented in *Attachment "B."* Attachment "B" also indicates how level of service is measured and what is generally considered the acceptable range of level of service.

To ensure that this analysis was based on a reasonable worst-case scenario, the peak 15-minute flow rate during the weekday a.m. and p.m. peak hours was used in the evaluation of all intersection levels of service. For this reason, the analysis reflects conditions that are only likely to occur for fifteen minutes out of each average peak hour. The traffic conditions during all other weekday hours will likely operate under better conditions than those described in this report.

Signalized Intersections

The OR 43/Cedar Oak Drive and OR 43/Hidden Springs Road intersections are signalized. OR 43 is owned and operated by ODOT. For ODOT controlled intersections, the amended *1999 Oregon Highway Plan* (Reference 3) requires a volume-to-capacity (v/c) ratio of 0.99 during the peak hour traffic condition.

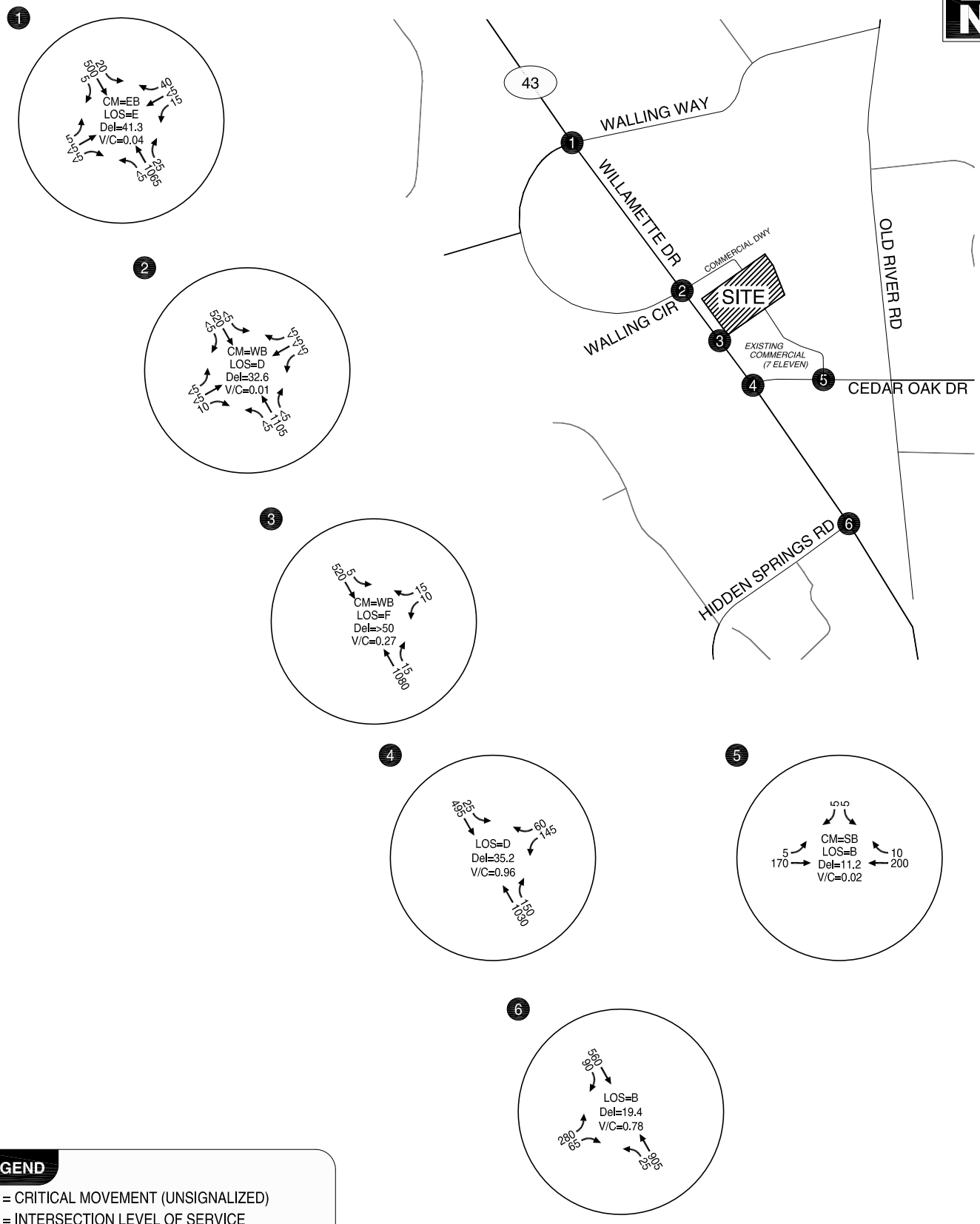
Using the weekday a.m. and p.m. peak hour traffic volumes, v/c ratios, average delays, and levels of service (LOS) were calculated for the signalized study intersections as shown in Figure 3. As indicated in the figure, the signalized study intersections all currently operate acceptably during the weekday a.m. and p.m. peak hours.

Unsignalized Intersections

The remaining study intersections are unsignalized, including the existing site driveway. For ODOT controlled intersections, the amended *1999 Oregon Highway Plan* (Reference 3) requires a v/c ratio of 0.99 for the major movements and a volume-to-capacity ratio of 0.90 for the minor movements during the peak hour traffic condition.

The critical movements at each of the unsignalized study intersections currently operate acceptably during the weekday a.m. and p.m. peak hours.

Figure 4 and Figure 5 illustrate the existing conditions weekday a.m. and p.m. peak hour level of service results at each of the study intersections. For unsignalized intersections the results shown represent the critical movement v/c and LOS. *Attachment "C" includes the existing conditions traffic operations worksheets.*



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

EXISTING TRAFFIC CONDITIONS
WEEKDAY AM PEAK HOUR VOLUMES
WEST LINN, OREGON

FIGURE 4

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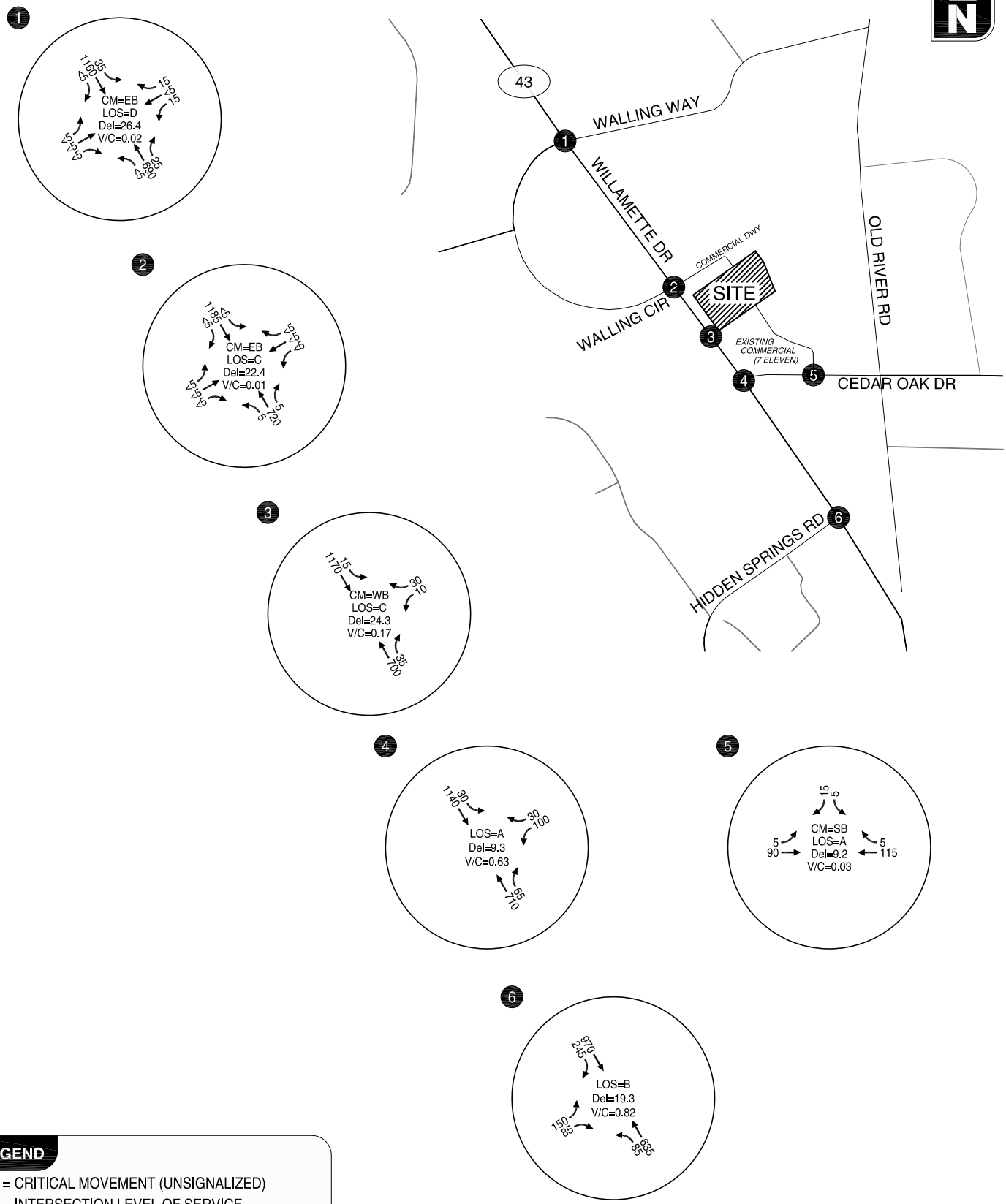


LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

EXISTING TRAFFIC CONDITIONS
WEEKDAY PM PEAK HOUR VOLUMES
WEST LINN, OREGON

FIGURE 5

Traffic Safety

Crash data from each of the study intersections was reviewed in an effort to identify potential intersection safety issues. Crash records from January 1, 2006 to December 31, 2010 were obtained from ODOT. A summary of the crash data is provided in Table 2.

Table 2 Study Intersection Crash Histories (2006-2010)

Intersection	Number of Crashes	Collision Type				Severity	
		Turn/Side-Swipe	Angle	Rear End	Fixed Object/ Other	Property Damage Only	Personal Injury
OR 43/Walling Circle North	2	1	0	1	0	1	1
OR 43/Cedar Oak Drive	28	8	0	20	0	17	11
OR 43/Hidden Springs Road	35	6	1	28	0	23	12

Crash rates of intersections are often expressed in crashes per million entering vehicles (MEV) for evaluation purposes. Typically, a crash rate exceeding 1.0 indicates a location requiring further investigation retailed to traffic safety. Crash rate calculations are presented in Table 3.

Table 3 Study Intersection Crash Rates (2006-2010)

Intersection	Number of Crashes	Crashes per Year	Peak Hour TEV	MEV / Year	Crashes / MEV
OR 43/Walling Circle North	2	0.4	1,959	7.15	0.06
OR 43/Cedar Oak Drive	28	5.6	2,111	7.71	0.73
OR 43/Hidden Springs Road	35	7	2,269	8.28	0.85

TEV = Total Entering Volumes
MEV = Million Entering Vehicles

The crash data were evaluated to determine if there are any operational or geometric deficiencies that are potentially contributing to the crash patterns. The OR 43/Cedar Oak Drive and OR 43/Hidden Springs Road intersections have a high proportion of turning movement and rear-end collisions. A close inspection of the collisions did not reveal any specific directional patterns or other variables that would require mitigation. The crash history at each of the study intersections does not indicate inherent safety issues requiring mitigation. It is important to note that our review of crash data in the study area did not reveal any crashes occurring at the existing site access driveway to OR 43.

A review of the ODOT Safety Priority Index System (SPIS) revealed that the OR 43/Cedar Oak Drive intersection is identified as a SPIS intersections. Conversations with ODOT staff indicated that there is currently no formal plan for mitigation of this intersection. *Attachment "D" includes the crash data summary worksheets.*

TRANSPORTATION IMPACT ANALYSIS

The transportation impact analysis identifies how the study area's transportation system will operate with the development of the subject property in the bank's opening year. The impact of traffic generated by the proposed development during typical weekday a.m. and p.m. peak hour was examined and summarized in the remainder of this report.

Planned Transportation Improvements and Developments

A review of the City of *West Linn 2008 Transportation System Plan* (TSP) and the *Highway 43 Conceptual Design Plan (Reference 4)* were reviewed to determine if there are any future plans to increase capacity on OR 43 in the site vicinity. While opportunities to widen OR 43 to a five-lane cross section along the corridor were considered in the TSP and Design Plan, both documents maintain the existing three-lane cross section for the corridor to maintain the roadway character, meet concerns of the community and due to existing right-of-way constraints.

Currently the only long range project identified within the study area includes realigning the existing shopping center driveway on the west side of OR 43 to become the west leg of the OR 43/Cedar Oak Drive intersection. Conversations with City of West Linn staff have revealed that there are no current in process developments in the vicinity of this project.

2013 Background Traffic Conditions

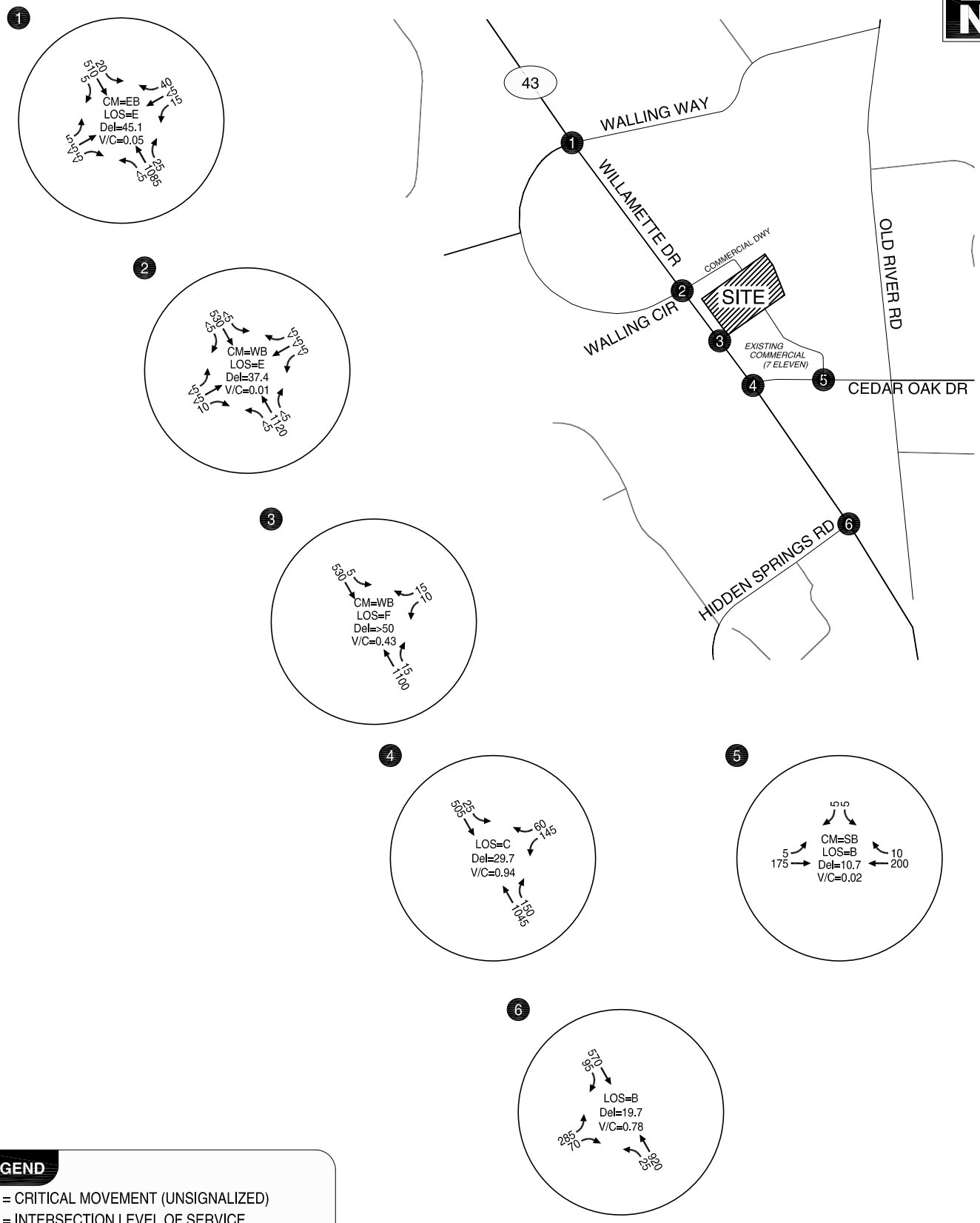
The background traffic analysis identifies how the study area's transportation system will operate in the year the development is expected to be completed and occupied. This analysis includes traffic growth due to development within the study area and from general growth in the region, but does not include traffic from the proposed bank.

Traffic Volumes

Year 2013 background traffic volumes were developed by applying an annual growth factor to the 2012 base traffic volumes. The growth factor on OR 43 was derived using ODOT's 2030 Future Year Volume Table. Comparing the base year (2009) and future year (2030) forecasted volumes for the nearest two locations within the site vicinity, traffic volumes on OR 43 are projected to grow at an average annual growth rate of 1.6 percent. As such, base year 2012 volumes were grown by 1.6 percent to arrive at 2013 background traffic volumes.

Level of Service Analysis

During the 2013 background traffic conditions, all study intersections are forecast to operate at acceptable levels during the weekday a.m. and p.m. peak hours. Figure 6 and Figure 7 illustrate the year 2013 background traffic operations at each study intersection. *Attachment "E" contains the year 2013 background traffic conditions analysis worksheets.*

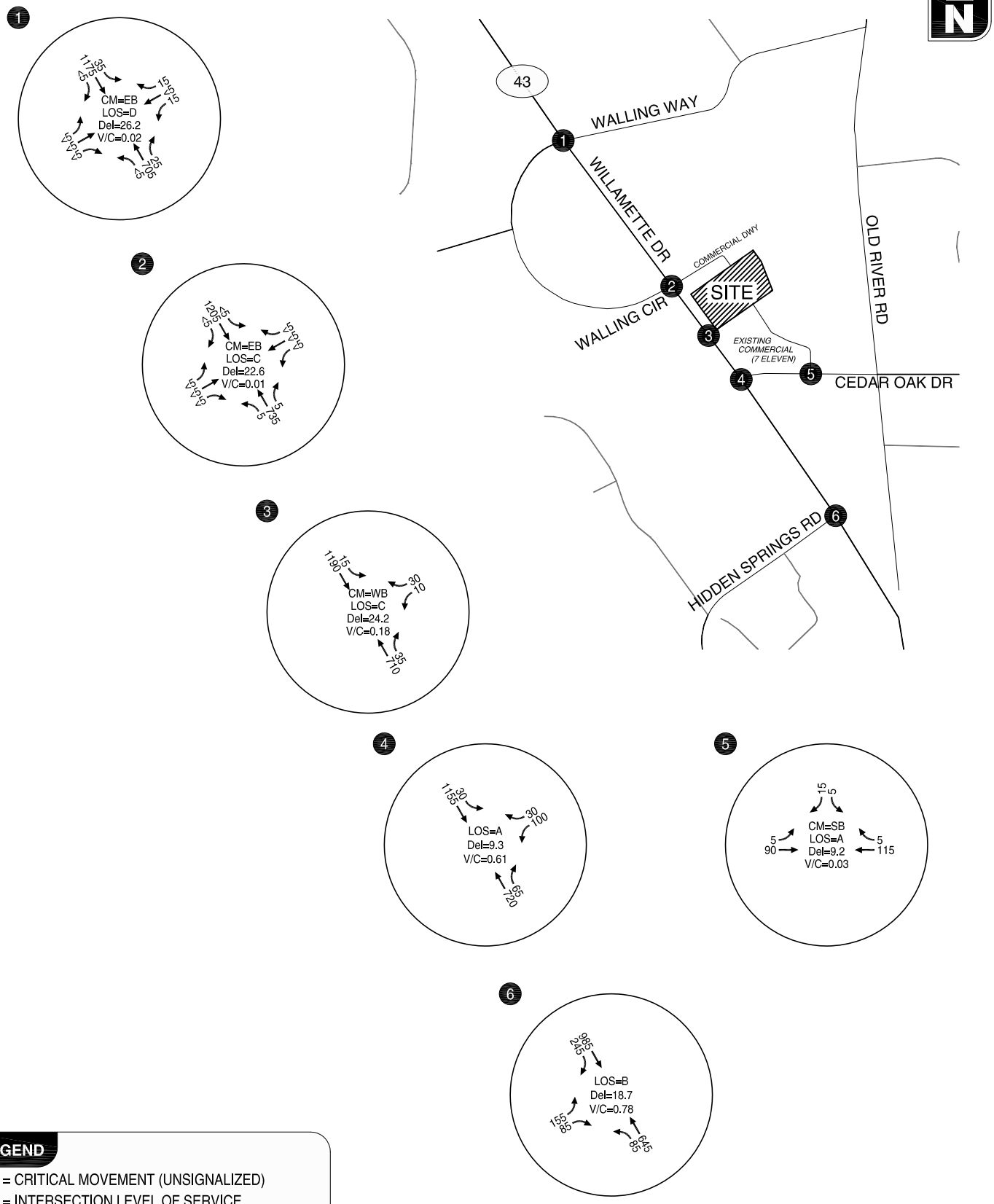


LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

BACKGROUND TRAFFIC CONDITIONS
WEEKDAY AM PEAK HOUR VOLUMES
WEST LINN, OREGON

FIGURE 6



LEGEND

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BACKGROUND TRAFFIC CONDITIONS
WEEKDAY PM PEAK HOUR VOLUMES
WEST LINN, OREGON

FIGURE 7

Proposed Development Plan

Chase Bank is proposing to construct a 4,324 square foot drive-in bank on a parcel previously occupied by a garden store. The site is located on the east side of OR 43 in West Linn, north of the OR 43/Cedar Oak Drive.

Trip Generation

Estimates of weekday daily, weekday a.m. and p.m. peak hour vehicle trip ends for the proposed bank were calculated from empirical observations made at other similar developments. These observations were obtained from the standard reference, *Trip Generation: 8th Edition*, published by the Institute of Transportation Engineers (ITE) (Reference 5). It is important to note that the average trip rates provided in ITE Trip Generation represent a conservative estimate of traffic associated with banks based on a review of actual bank trip generation data for other locations around the Pacific Northwest.

A portion of the traffic generated by the proposed bank will be pass-by trips from OR 43. The pass-by trip rates used in for the bank were obtained from the ITE *Trip Generation Handbook (Reference 6).* The Handbook specifies a pass-by rate of approximately 47-percent.

Table 4 summarizes the estimated number of trips that will be generated during a typical weekday as well as during the weekday a.m. and p.m. peak hours. Also shown is the reduction taken to account for pass-by traffic at the site.

Table 4 Estimated Trip Generation

Land Use	ITE Code	Size (Sq. ft.)	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
Drive-in Bank	912	4,324	640	55	30	25	110	55	55
- Pass-by reduction (47%)			*(300)*	*(20)*	*(10)*	*(10)*	*(50)*	*(25)*	*(25)*
Net new trips			**340**	**35**	**20**	**15**	**60**	**30**	**30**

As shown in Table 4, the proposed development is estimated to generate approximately 640 weekday daily trips of which approximately 55 trips (30 inbound, 25 outbound) will occur during the weekday a.m. peak hour and approximately 110 trips (55 inbound, 55 outbound) during the weekday p.m. peak hour.

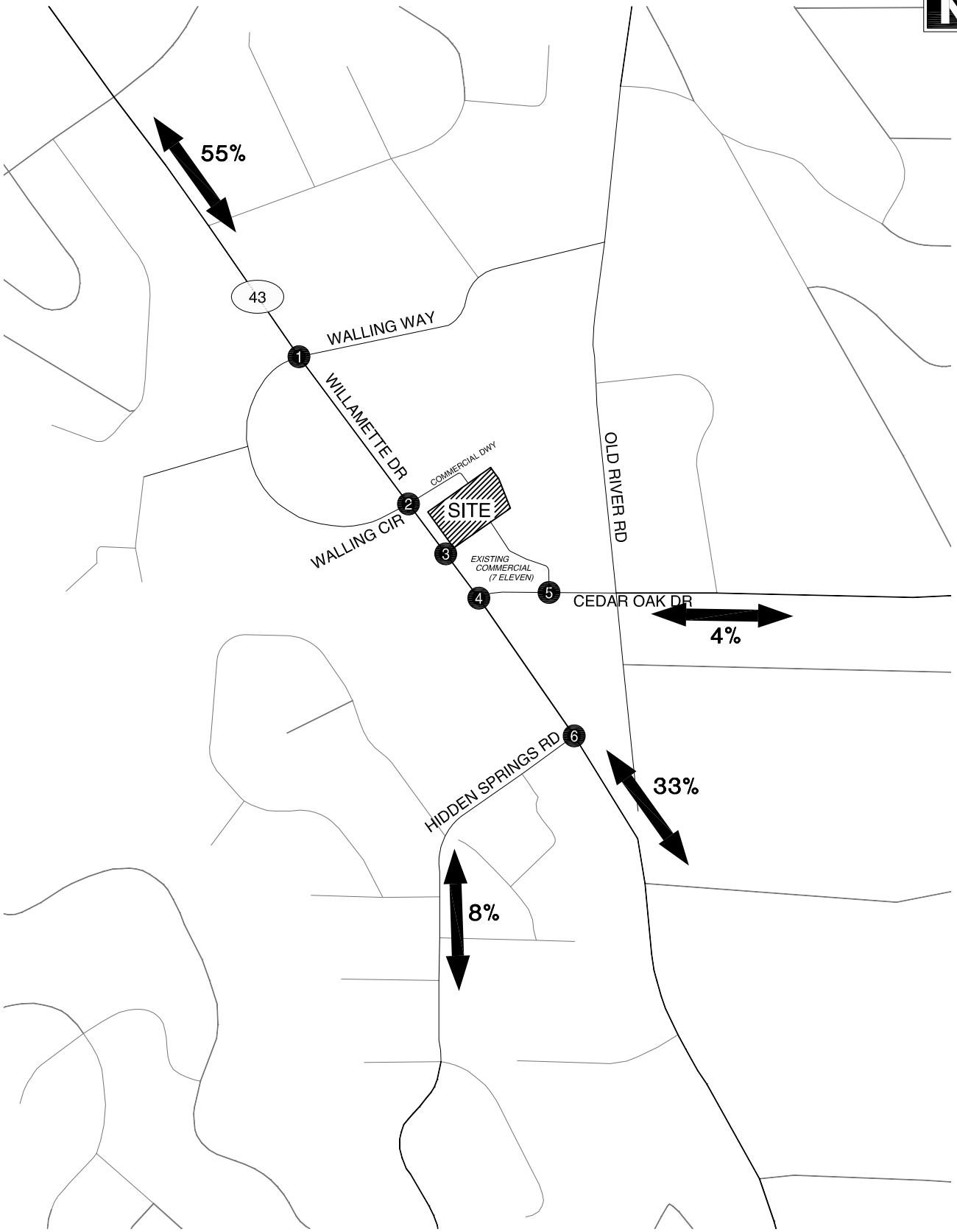
Note that no trip credit was assumed in the analysis for capacity assessment purposes; provision of the trip credit for the previous use will be considered for calculation of the City's System Development Charges (SDC's) and is discussed later in this letter.

Trip Distribution and Assignment

The distribution of site-generated trips onto the study area roadway system was analyzed by evaluating existing peak hour directional travel characteristics in the site vicinity. These characteristics are based on existing turning movement counts at the study intersections and a

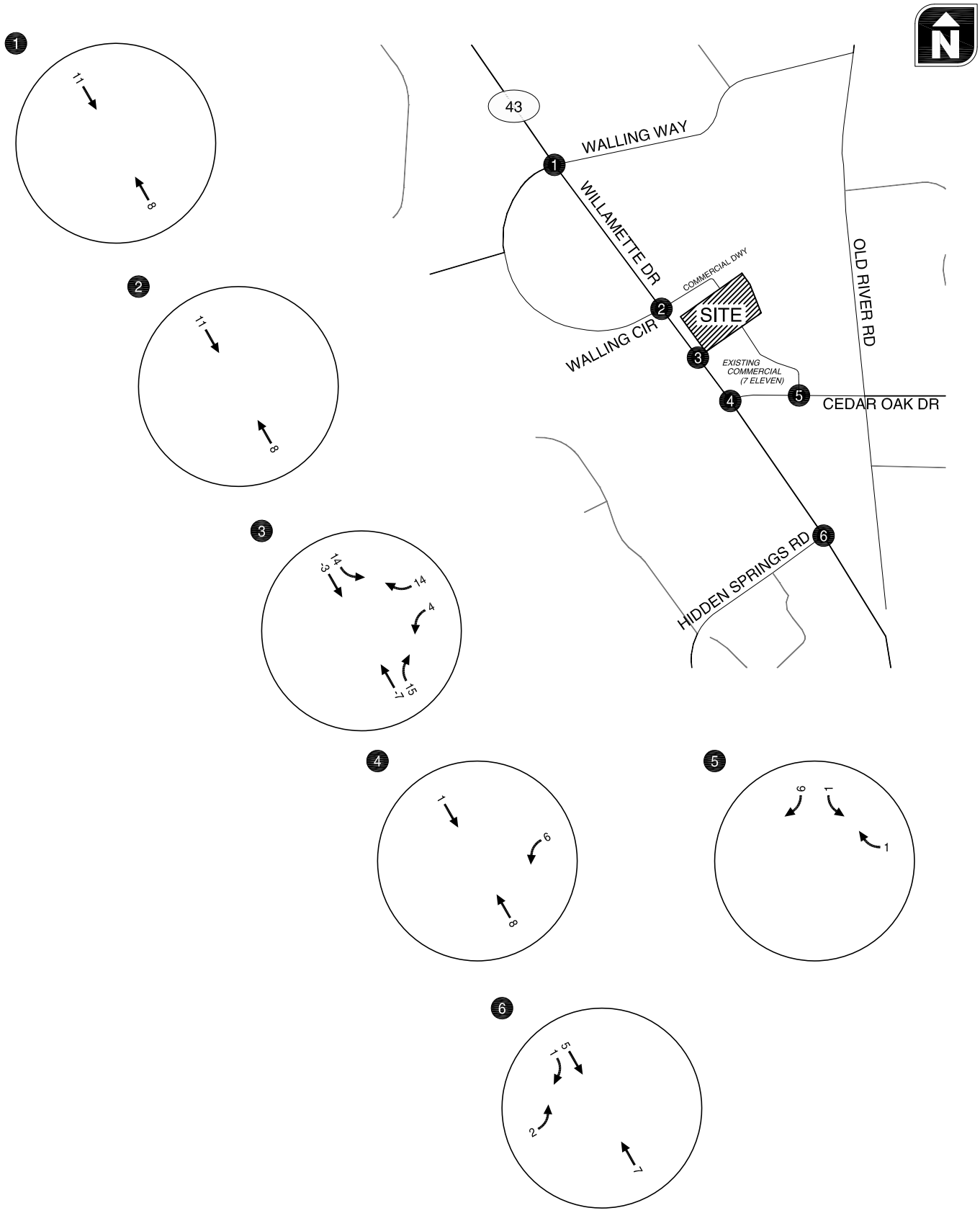
select link analysis prepared using Metro's regional transportation planning model. Figure 8 illustrates the resulting estimated trip distribution pattern.

The estimated site-generated traffic was assigned to the surrounding transportation system based on the trip distribution pattern. The weekday a.m. and p.m. site generated traffic assignments at the study area intersections are shown in Figure 9 and 10, respectively. It was assumed that a portion of traffic with southbound OR 43 destinations would exit the site via the signal at the OR 43/Cedar Oak Drive intersection.



ESTIMATED TRIP DISTRIBUTION PATTERN
WEST LINN, OREGON

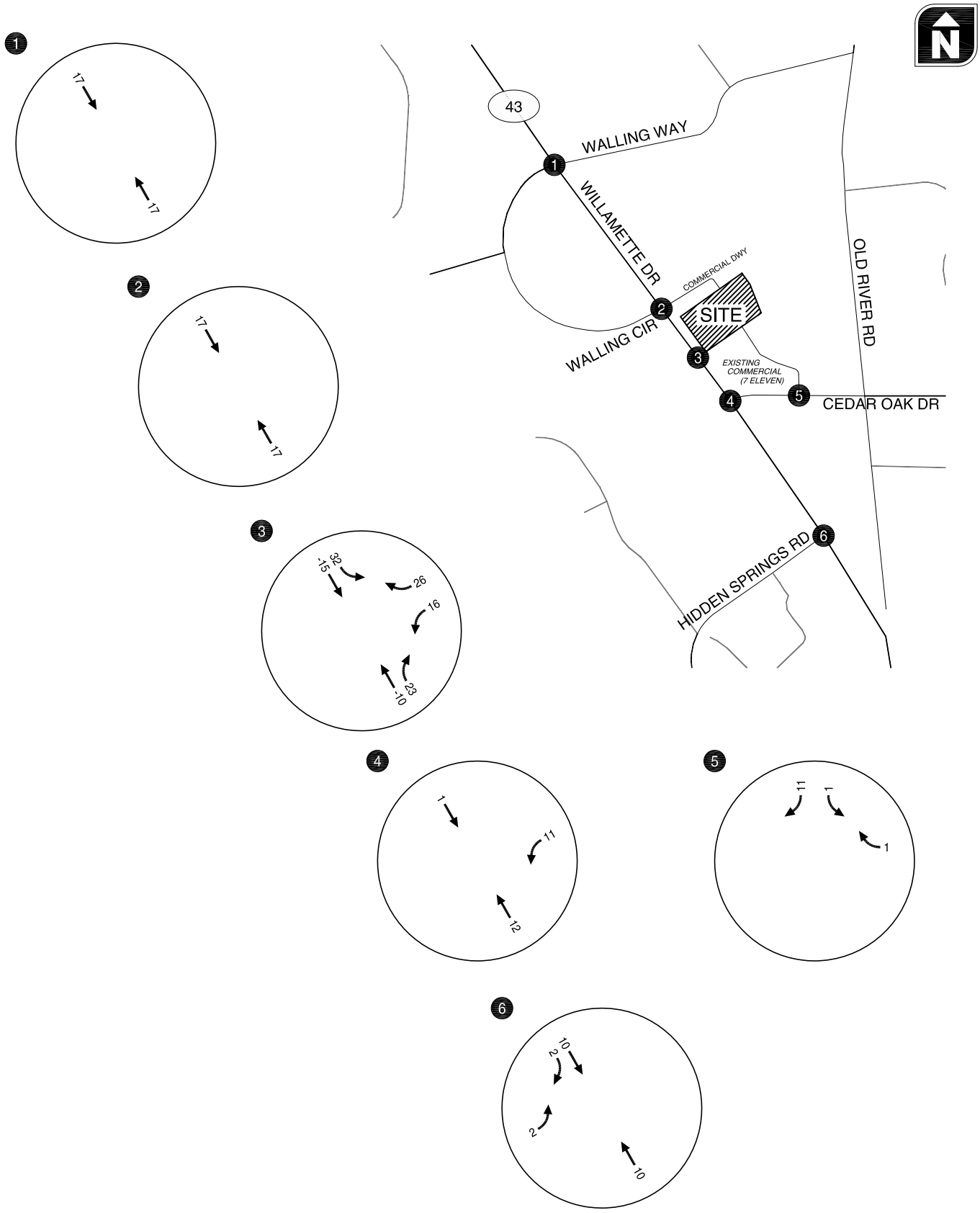
FIGURE 8



NOTE: NEGATIVE VOLUMES REPRESENT PASS-BY TRIPS

SITE-GENERATED TRAFFIC
WEEKDAY AM PEAK HOUR VOLUMES
WEST LINN, OREGON

FIGURE 9



NOTE: NEGATIVE VOLUMES REPRESENT PASS-BY TRIPS

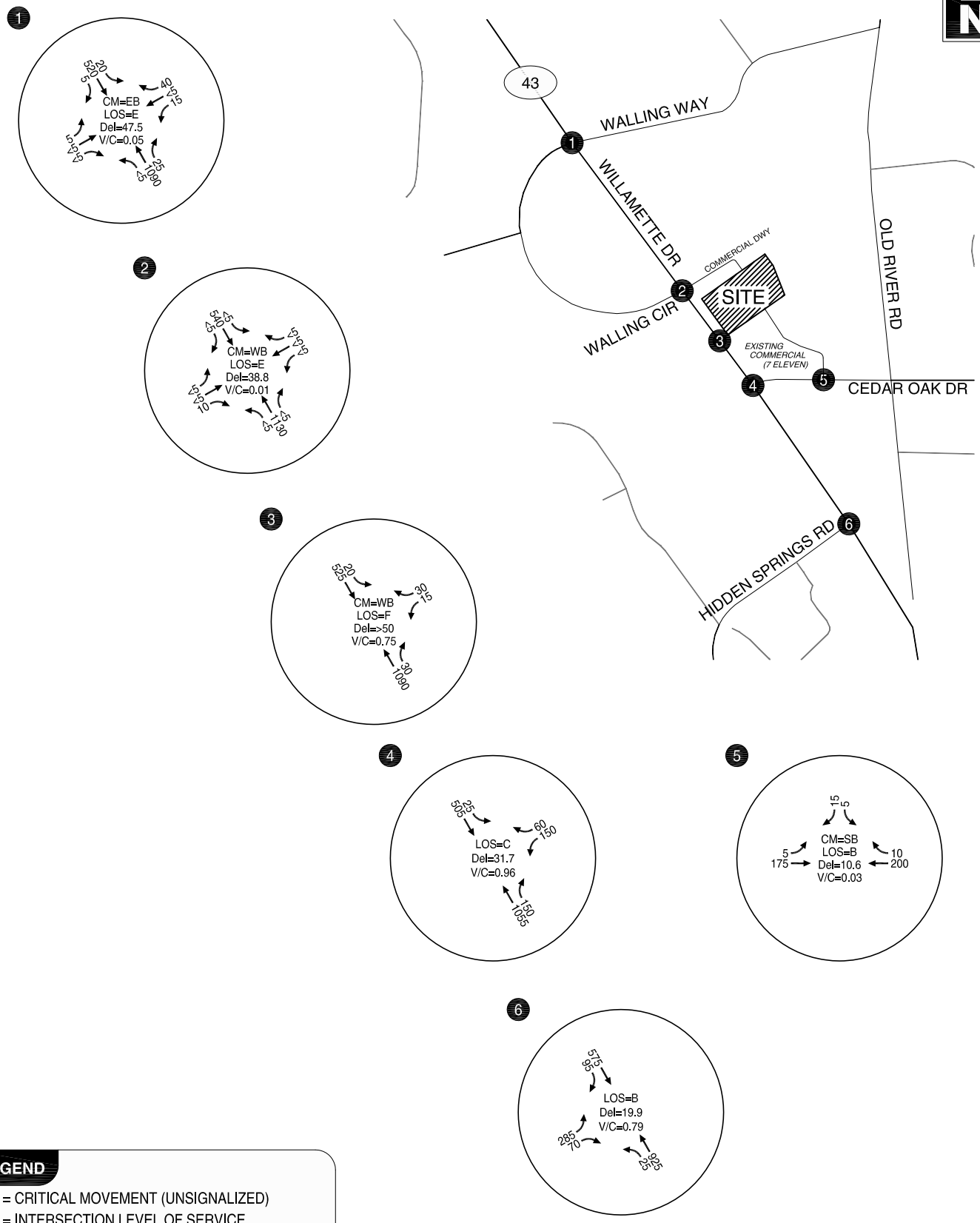
SITE-GENERATED TRAFFIC
WEEKDAY PM PEAK HOUR VOLUMES
WEST LINN, OREGON

FIGURE **10**

Year 2013 Total Traffic Conditions

The year 2013 total traffic volumes include traffic from the development of the proposed bank. The estimated site-generated traffic shown in Figures 9 and 10 were added to the 2013 background traffic shown in Figures 6 and 7 to arrive at the year 2013 total traffic volumes shown in Figure 11 and 12.

Figures 11 and 12 summarize the operational analysis results for the study intersections during the 2013 total weekday a.m. and p.m. peak hours. As shown in the figures, all study intersections are forecast to operate at acceptable levels during the weekday a.m. and p.m. peak with inclusion of the proposed bank. *Attachment "F" contains the year 2012 total traffic conditions analysis worksheets.*



LEGEND

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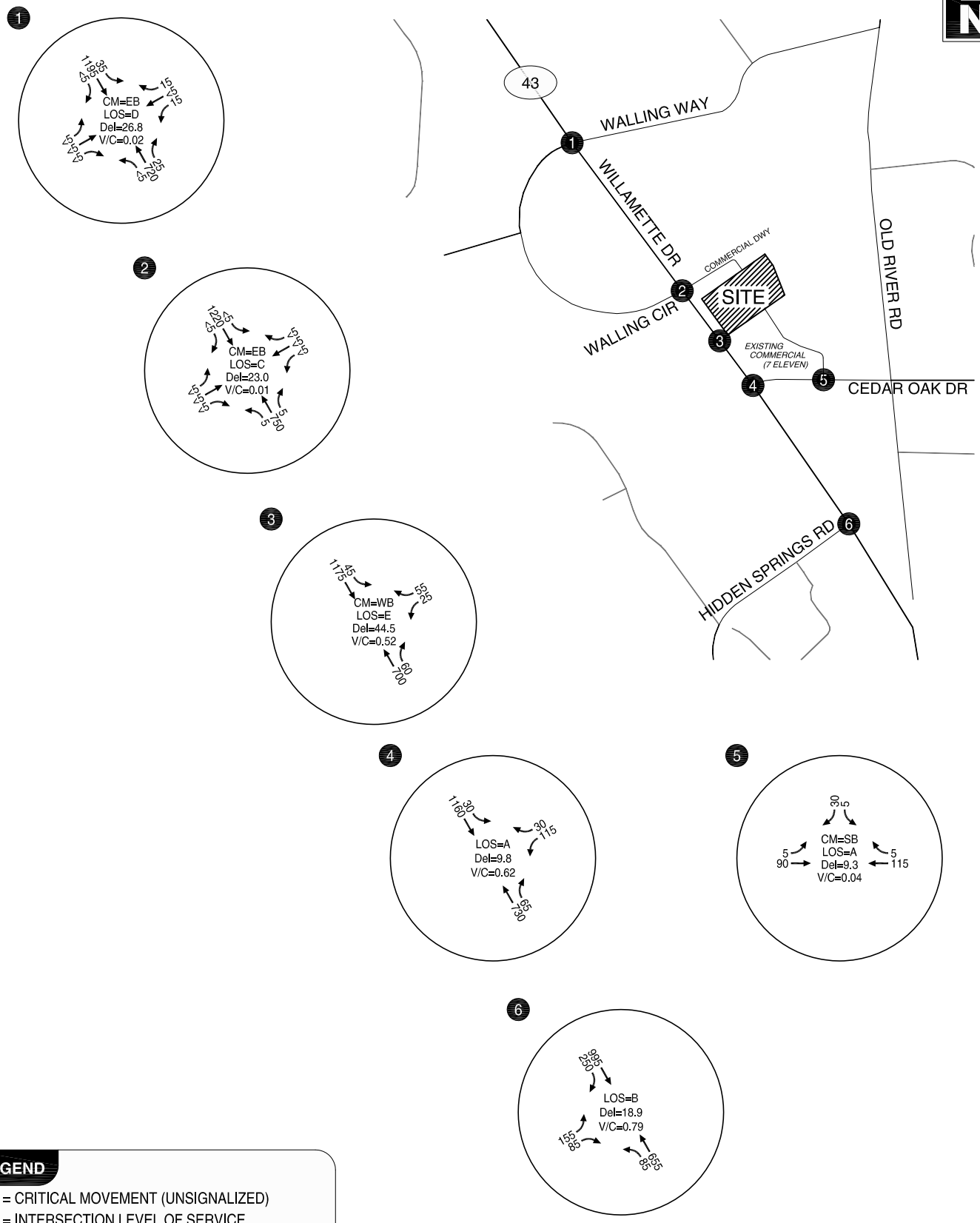
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

TOTAL TRAFFIC CONDITIONS
WEEKDAY AM PEAK HOUR VOLUMES
WEST LINN, OREGON

FIGURE **11**

H:\projfile\12149 - West Linn Chase Bank\dwgs\figs\12149_Fig01.dwg Feb 24, 2012 - 10:54am - ddaly Layout Tab: 11



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

TOTAL TRAFFIC CONDITIONS
WEEKDAY PM PEAK HOUR VOLUMES
WEST LINN, OREGON

FIGURE **12**

QUEUEING ANALYSIS

A 95th percentile vehicle queuing analysis based on Synchro was performed at the signalized study intersections to further evaluate background levels of congestion and ensure that adequate vehicle storage space is available with full build out of the proposed bank. Table 5 provides a summary of the queuing analysis.

Table 5 Background and Total Traffic Conditions Queuing Analysis

Intersection	Movement	95th Percentile Queue Length (feet)						Available Storage (feet)
		Background Conditions		Total Conditions				
		AM Peak Hour	PM Peak Hour	AM Peak Hour	Change[5]	PM Peak Hour	Change[5]	
OR 43/Cedar Oak Drive	WB Right	35	35	35	-	35	-	30[1]
	WB Left	165	125	175	+10	135	+10	100
	SB Through	60	190	60	-	190	-	140[2]
	SB Left	40	50	40	-	50	-	100
	NB Through	1,195	500	1,210	+15	500	-	450[3]
OR 43/Hidden Springs Road	EB Right	35	45	35	-	45	-	165
	EB Left	280	180	280	-	180	-	165
	SB Through	430	960	435	+5	980	+20	450[3]
	NB Left	40	110	40	-	110	-	150
	NB Through	620	235	630	+10	240	+5	515[4]
	SB Right	10	10	10	-	10	-	450[3]

All lengths have been rounded to the nearest 5 feet.

1 – Distance from the stop bar to access driveway.

2 – Distance to the bank access driveway.

3 – Distance between the OR 43/Cedar Oak and OR 43 Hidden Springs intersections.

4 – Distance to the nearest intersection.

5 – Indicates difference in 95th percentile queue length as a result of development.

As shown in Table 5, the background levels of traffic on OR 43 produce 95th percentile vehicle queues that exceed available storage in some locations, predominantly for the northbound and southbound movements on OR 43 during the respective weekday a.m. and p.m. peak hours. It is important to note that the proposed bank development results in a negligible increase to the background condition vehicle queues at these intersections.

95th percentile queues for the westbound movements at the site access driveway were reviewed to determine the potential level of on-site congestion. During the weekday p.m. peak hour the forecast 95th percentile queue for this movement is approximately 75 feet. Based on a review of the site plan adequate storage space exists for this queue.

As discussed earlier in this letter, access to the site is proposed via one full access driveway to OR 43. In addition, access to the OR 43/Cedar Oak Drive traffic signal is available via cross access between the proposed bank site and the adjacent commercial property to the south. It is

recommended that cross access locations be maintained to provide drivers access to the traffic signal at the OR 43/Cedar Oak Drive intersection.

INTERSECTION SIGHT DISTANCE

A site visit was conducted in February 2012 to determine intersection sight distance at the proposed site driveway. OR 43 has a posted speed limit of 35 mph in this section. The guidebook, *Geometric Design of Highways and Streets, 2011, 6th Edition*, published by the American Association of State Highway and Transportation Officials (AASHTO) (Reference 7) was used to determine the necessary intersection sight distance. Based on the posted speed of 35 mph, 390 feet of sight distance is necessary at the intersection. These standards entail that measurements be based on an estimated driver eye height of 3.5 feet and an object height based on a vehicle height of 4.35 feet above the road; and is assumed to be 10 feet from the near edge of pavement to the front of a stopped vehicle. (Actual measurements are taken 15 feet from the edge of travel way).

Photos were taken to show the sight distances from the proposed driveways as follows in Exhibit 1 and Exhibit 2.

Exhibit-1 Site Driveway

Site Driveway Looking South on OR 43

Site Driveway Looking North on OR 43

Existing intersection sight distance was field measured to be greater than 600 feet facing north and south direction on OR 43. Based on a review of the site plan, it appears that the building setback will be sufficient to maintain a clear line of site from the driveway to the north and south. It is recommended that landscaping, signage and any new above ground utilities along the site frontage be carefully selected to maintain a clear sight line to the north and south from the site driveway. It is also recommended that sight distance be verified once the project is constructed.

TURN LANE ANALYSIS

Warrants for a right turn lane were evaluated at the site driveway to OR 43. The analysis was based on criterion provided in the ODOT Highway Design Manual Appendix F (Reference 8) during the weekday p.m. peak hour, the combination of right-turn volume, coupled with the approaching Design Hour Volume (DHV) in the outside lane meets the volume criteria for installation of a right turn lane at this location.

The proximity of the site access driveway to the OR 43/Cedar Oak Drive intersection limits the ability to develop a standard right turn per the ODOT Highway Design Manual. Potential interaction with the existing bike lane would complicate installation of a right turn lane. Providing a right turn lane at the site driveway is not consistent with the character of OR 43 in the site vicinity and as such, provision of a right turn lane is not recommended at this time. *Attachment "G" contains the turn lane warrant analysis worksheets.*

CITY OF WEST LINN SYSTEM DEVELOPMENT CHARGES (SDC's)

For the purposes of calculating the City's SDC for this project, supplemental trip generation for other bank developments around the Pacific Northwest was reviewed. In April 2012, Jake Traffic Engineering (JTE) prepared the *Marylhurst Key Bank Trip Generation and System Development Charge Letter,* documenting trip generation data and the SDC calculation for this site. The JTE study concluded that similar drive-in banks in the Pacific Northwest generate 10.17 to 14.90 weekday p.m. peak hour trips per thousand square feet. *Attachment H contains a copy of the JTE Trip generation and SDC study.*

Assuming these average trip generation rates, and assuming the ITE pass-by rate of 47% the proposed Chase Bank generates 34 net new weekday p.m. peak hour trips (4,324 s.f./1,000 s.f. x 14.90 x 53%).

The previous use on the site included a 9,400 Nursery Garden Center. The *Trip Generation Handbook* does not supply data for pass-by trips associated with the Nursery Garden Center; however, information provided in the JTE study indicated that a 10% pass-by factor would be appropriate. Assuming the rates provided in ITE Trip Generation, the trip generation estimate for the previous Nursery Garden Center is 32 net new weekday p.m. peak hour trips (9,400 s.f./1,000 s.f. x 3.80 x 90%).

Comparing trips associated with the prior and proposed land uses, the proposed Chase Bank is estimated to generate approximately 2 additional net new weekday p.m. peak hour trips.

The City of West Linn Street SDC table (effective January 26, 2012) indicates a retail SDC rate of $17,024 per net new trip. Based on the proposed Chase bank trip generation and credit described above, the total street SDC for this project is estimated to be $34,048. The City of West Linn will make the final street SDC determination.

FINDINGS AND RECOMMENDATIONS

Based on the results of this analysis the proposed West Linn Chase Bank development can be accommodated on the surrounding roadway network. Pertinent findings are as follows:

Findings

- Under year 2012 existing traffic conditions, all of the study intersections operate within ODOT mobility standards during the weekday a.m. and p.m. peak hours.
- Under year 2013 background traffic conditions, all of the study intersections operate within ODOT mobility standards during the weekday a.m. and p.m. peak hours.
- The proposed development is estimated to generate approximately 640 weekday daily trips of which approximately 55 trips (30 inbound, 25 outbound) will occur during the weekday a.m. peak hour and approximately 110 trips (55 inbound, 55 outbound) during the weekday p.m. peak hour.
- Adequate intersection sight distance is available at the existing site access driveway.
- The estimated City of West Linn Street SDC for this project is $34,048.

Recommendations

- It is recommended that landscaping, signage and any new above ground utilities along the site frontage be located and maintained to provide a clear sight line to the north and south from the site driveway. Intersection sight distance should be verified once the project is constructed.
- It is recommended that cross access locations between the adjacent commercial properties be maintained.

We trust this letter adequately addresses the transportation related impact associated with the proposed West Linn Chase Bank development. If you have any questions or comments regarding this letter, please call us at (503) 228-5230.

Sincerely,
KITTELSON & ASSOCIATES, INC.

Dave Daly, P.E.
Engineer

Chris Brehmer, P.E.
Principal Engineer

References

1. City of West Linn, 2008 Transportation System Plan. 2008.
2. Transportation Research Board. *Highway Capacity Manual*. 2000.
3. Oregon Department of Transportation. *Oregon Highway Plan 1999.* 2011.
4. City of West Linn, *OR 43 Concept Design Plan*. 2008
5. Institute of Transportation Engineers. *Trip Generation, Eighth Edition.* 2008.
6. Institute of Transportation Engineers. *Trip Generation Handbook, Second Edition.* 2004.
7. American Association of State Highway Transportation Officials, *Geometric Design of Highways and Streets, 6th Edition.* 2011
8. Oregon Department of Transportation, *Highway Design Manual*. 2010

Attachments

Attachment A – Traffic Count Worksheets

Attachment B – Level of Service Description and Criteria

Attachment C – 2012 Existing Traffic Conditions Worksheets

Attachment D – Crash Data

Attachment E – 2013 Background Traffic Conditions Worksheets

Attachment F – 2013 Total Traffic Conditions Worksheets

Attachment G –Turn Lane Warrant Worksheets

Attachment H – April 2010 JTE Key Bank Trip Generation and SDC Letter

Attachment A
Traffic Count Worksheets

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

LOCATION: OR 43 -- Hidden Springs Rd

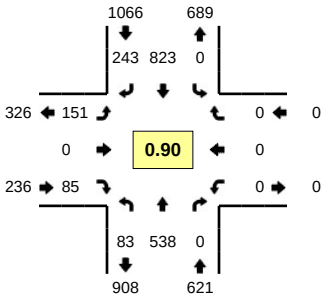
QC JOB #: 10706612

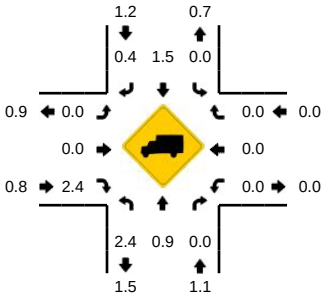
CITY/STATE: West Linn, OR

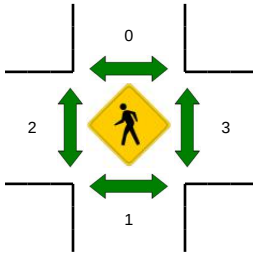
DATE: Tue, Jan 31 2012

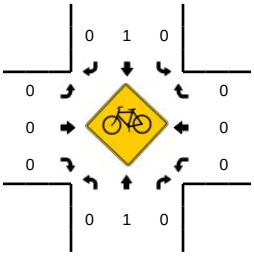
Peak-Hour: 4:40 PM -- 5:40 PM

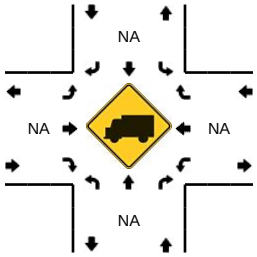
Peak 15-Min: 5:10 PM -- 5:25 PM

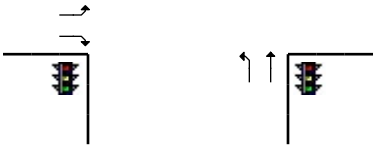


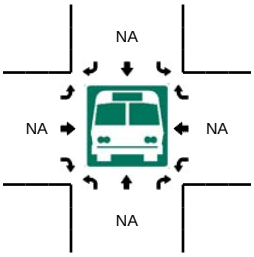












5-Min Count Period Beginning At	OR 43 (Northbound)				OR 43 (Southbound)				Hidden Springs Rd (Eastbound)				Hidden Springs Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	33	0	0	0	44	13	0	14	0	10	0	0	0	0	0	118	
4:05 PM	9	50	0	0	0	45	18	0	17	0	3	0	0	0	0	0	142	
4:10 PM	6	47	0	0	0	68	20	0	13	0	6	0	0	0	0	0	160	
4:15 PM	5	50	0	0	0	65	15	0	11	0	8	0	0	0	0	0	154	
4:20 PM	9	33	0	0	0	64	11	0	11	0	3	0	0	0	0	0	131	
4:25 PM	8	42	0	0	0	49	8	0	18	0	4	0	0	0	0	0	129	
4:30 PM	8	36	0	0	0	66	15	0	11	0	6	0	0	0	0	0	142	
4:35 PM	9	34	0	0	0	66	12	0	18	0	7	0	0	0	0	0	146	
4:40 PM	9	46	0	0	0	56	18	0	15	0	10	0	0	0	0	0	154	
4:45 PM	9	42	0	0	0	57	12	0	15	0	8	0	0	0	0	0	143	
4:50 PM	8	46	0	0	0	74	24	0	12	0	7	0	0	0	0	0	171	
4:55 PM	7	45	0	0	0	62	14	0	13	0	6	0	0	0	0	0	147	1737
5:00 PM	5	38	0	0	0	54	20	0	10	0	7	0	0	0	0	0	134	1753
5:05 PM	6	52	0	0	0	66	19	0	6	0	8	0	0	0	0	0	157	1768
5:10 PM	11	47	0	0	0	78	21	0	11	0	4	0	0	0	0	0	172	1780
5:15 PM	8	57	0	0	0	84	25	0	14	0	5	0	0	0	0	0	193	1819
5:20 PM	5	52	0	0	0	72	18	0	14	0	11	0	0	0	0	0	172	1860
5:25 PM	2	40	0	0	0	78	24	0	8	0	7	0	0	0	0	0	159	1890
5:30 PM	5	28	0	0	0	77	28	0	15	0	2	0	0	0	0	0	155	1903
5:35 PM	8	45	0	0	0	65	20	0	18	0	10	0	0	0	0	0	166	1923
5:40 PM	3	39	0	0	0	56	14	0	16	0	10	0	0	0	0	0	138	1907
5:45 PM	2	49	0	0	0	50	19	0	10	0	2	0	0	0	0	0	132	1896
5:50 PM	8	46	0	0	0	64	28	0	19	0	2	0	0	0	0	0	167	1892
5:55 PM	6	39	0	0	0	55	19	0	9	0	8	0	0	0	0	0	136	1881

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	96	624	0	0	0	936	256	0	156	0	80	0	0	0	0	0	2148
Heavy Trucks	0	4	0		0	4	0		0	0	8		0	0	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/8/2012 10:47 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

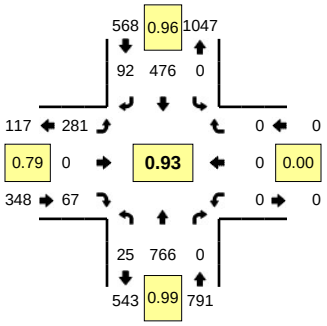
Method for determining peak hour: Total Entering Volume

LOCATION: OR 43 -- Hidden Springs Rd

QC JOB #: 10706611

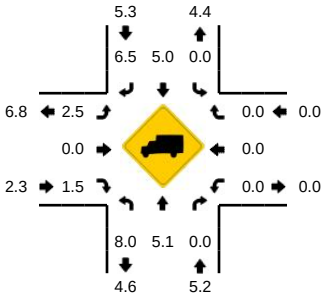
CITY/STATE: West Linn, OR

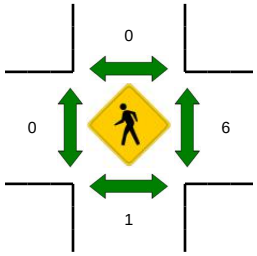
DATE: Tue, Jan 31 2012

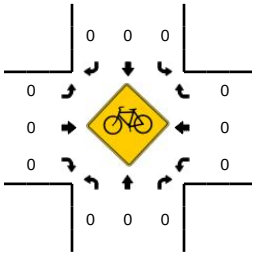


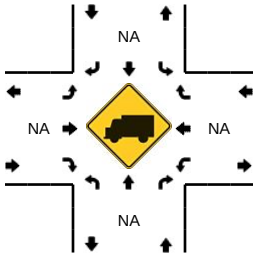
Peak-Hour: 7:30 AM -- 8:30 AM

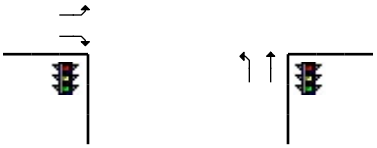
Peak 15-Min: 7:40 AM -- 7:55 AM

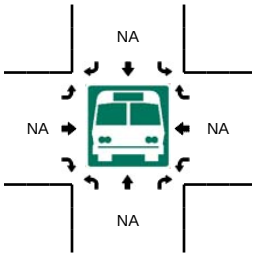












5-Min Count Period Beginning At	OR 43 (Northbound)				OR 43 (Southbound)				Hidden Springs Rd (Eastbound)				Hidden Springs Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	28	0	0	0	25	6	0	19	0	3	0	0	0	0	0	81	
7:05 AM	1	56	0	0	0	26	3	0	14	0	2	0	0	0	0	0	102	
7:10 AM	1	68	0	0	0	38	2	0	21	0	1	0	0	0	0	0	131	
7:15 AM	0	54	0	0	0	26	2	0	33	0	3	0	0	0	0	0	118	
7:20 AM	2	76	0	0	0	37	2	0	16	0	5	0	0	0	0	0	138	
7:25 AM	3	65	0	0	0	32	2	0	32	0	5	0	0	0	0	0	139	
7:30 AM	1	72	0	0	0	34	2	0	28	0	7	0	0	0	0	0	144	
7:35 AM	1	65	0	0	0	30	4	0	34	0	6	0	0	0	0	0	140	
7:40 AM	2	68	0	0	0	38	12	0	29	0	3	0	0	0	0	0	152	
7:45 AM	3	65	0	0	0	33	4	0	41	0	4	0	0	0	0	0	150	
7:50 AM	3	59	0	0	0	41	20	0	25	0	8	0	0	0	0	0	156	
7:55 AM	4	53	0	0	0	38	14	0	22	0	4	0	0	0	0	0	135	1586
8:00 AM	0	47	0	0	0	48	13	0	24	0	6	0	0	0	0	0	138	1643
8:05 AM	3	63	0	0	0	38	4	0	13	0	12	0	0	0	0	0	133	1674
8:10 AM	3	72	0	0	0	58	6	0	13	0	7	0	0	0	0	0	159	1702
8:15 AM	3	57	0	0	0	41	3	0	14	0	4	0	0	0	0	0	122	1706
8:20 AM	0	64	0	0	0	33	7	0	22	0	3	0	0	0	0	0	129	1697
8:25 AM	2	81	0	0	0	44	3	0	16	0	3	0	0	0	0	0	149	1707
8:30 AM	4	50	0	0	0	25	8	0	15	0	6	0	0	0	0	0	108	1671
8:35 AM	5	54	0	0	0	25	7	0	19	0	5	0	0	0	0	0	115	1646
8:40 AM	4	61	0	0	0	40	7	0	28	0	7	0	0	0	0	0	147	1641
8:45 AM	3	59	0	0	0	39	8	0	14	0	8	0	0	0	0	0	131	1622
8:50 AM	6	58	0	0	0	33	8	0	18	0	7	0	0	0	0	0	130	1596
8:55 AM	3	44	0	0	0	37	11	0	15	0	5	0	0	0	0	0	115	1576

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	32	768	0	0	0	448	144	0	380	0	60	0	0	0	0	0	1832
Heavy Trucks	4	32	0		0	16	4		8	0	0		0	0	0		64
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/8/2012 6:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 7 Eleven Dwy -- Cedar Oak Dr

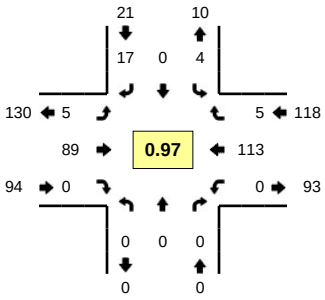
QC JOB #: 10706610

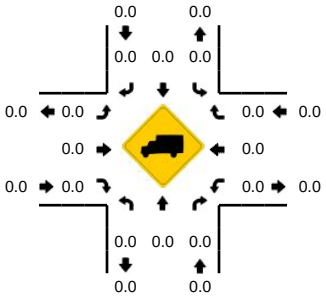
CITY/STATE: West Linn, OR

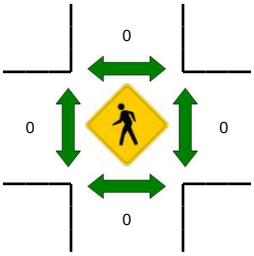
DATE: Tue, Jan 31 2012

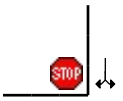
Peak-Hour: 4:40 PM -- 5:40 PM

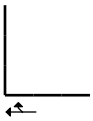
Peak 15-Min: 5:10 PM -- 5:25 PM

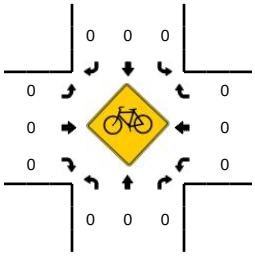


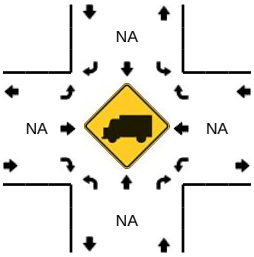


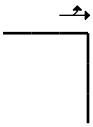


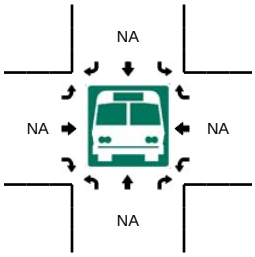












5-Min Count Period Beginning At	7 Eleven Dwy (Northbound)				7 Eleven Dwy (Southbound)				Cedar Oak Dr (Eastbound)				Cedar Oak Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	1	6	0	0	0	7	0	0	14	
4:05 PM	0	0	0	0	1	0	2	0	1	9	0	0	0	17	0	0	30	
4:10 PM	0	0	0	0	1	0	3	0	4	6	0	0	0	4	0	0	18	
4:15 PM	0	0	0	0	0	0	5	0	0	9	0	0	0	11	0	0	25	
4:20 PM	0	0	0	0	1	0	2	0	2	6	0	0	0	5	0	0	16	
4:25 PM	0	0	0	0	0	0	1	0	1	3	0	0	0	7	2	0	14	
4:30 PM	0	0	0	0	1	0	3	0	2	8	0	0	0	11	0	0	25	
4:35 PM	0	0	0	0	0	0	3	0	2	9	0	0	0	6	1	0	21	
4:40 PM	0	0	0	0	0	0	3	0	1	9	0	0	0	10	1	0	24	
4:45 PM	0	0	0	0	1	0	1	0	0	7	0	0	0	10	0	0	19	
4:50 PM	0	0	0	0	1	0	2	0	1	6	0	0	0	7	0	0	17	
4:55 PM	0	0	0	0	0	0	2	0	0	6	0	0	0	3	0	0	11	234
5:00 PM	0	0	0	0	0	0	1	0	0	6	0	0	0	7	0	0	14	234
5:05 PM	0	0	0	0	0	0	2	0	1	8	0	0	0	14	2	0	27	231
5:10 PM	0	0	0	0	0	0	2	0	0	8	0	0	0	9	0	0	19	232
5:15 PM	0	0	0	0	1	0	2	0	0	6	0	0	0	12	0	0	21	228
5:20 PM	0	0	0	0	0	0	2	0	1	6	0	0	0	11	0	0	20	232
5:25 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	6	0	0	13	231
5:30 PM	0	0	0	0	1	0	0	0	0	10	0	0	0	16	0	0	27	233
5:35 PM	0	0	0	0	0	0	0	0	1	10	0	0	0	8	2	0	21	233
5:40 PM	0	0	0	0	1	0	0	0	0	7	0	0	0	9	0	0	17	226
5:45 PM	0	0	0	0	0	0	3	0	0	9	0	0	0	3	2	0	17	224
5:50 PM	0	0	0	0	2	0	3	0	1	14	0	0	0	10	1	0	31	238
5:55 PM	0	0	0	0	0	0	3	0	1	5	0	0	0	8	1	0	18	245

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	0	0	0	4	0	24	0	4	80	0	0	0	128	0	0	240
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/8/2012 10:47 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

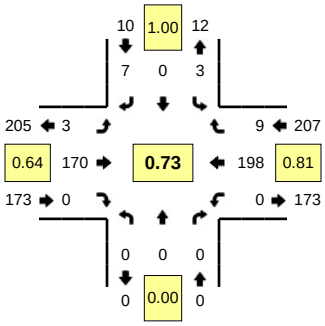
Method for determining peak hour: Total Entering Volume

LOCATION: 7 Eleven Dwy -- Cedar Oak Dr

QC JOB #: 10706609

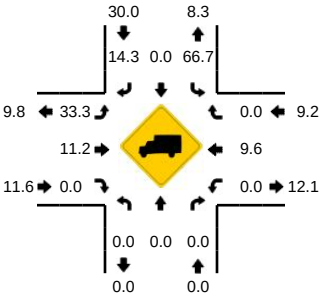
CITY/STATE: West Linn, OR

DATE: Tue, Jan 31 2012

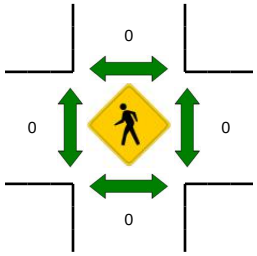


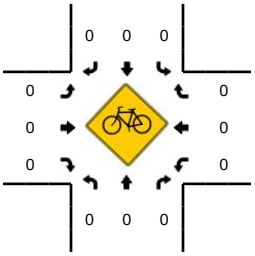
Peak-Hour: 7:30 AM -- 8:30 AM

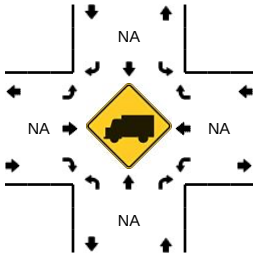
Peak 15-Min: 7:40 AM -- 7:55 AM

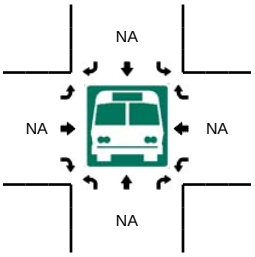


Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES









5-Min Count Period Beginning At	7 Eleven Dwy (Northbound)				7 Eleven Dwy (Southbound)				Cedar Oak Dr (Eastbound)				Cedar Oak Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	1	0	0	9	0	0	0	10	3	0	23	
7:05 AM	0	0	0	0	0	0	2	0	2	4	0	0	0	6	0	0	14	
7:10 AM	0	0	0	0	0	0	2	0	1	3	0	0	0	7	1	0	14	
7:15 AM	0	0	0	0	0	0	1	0	1	8	0	0	0	6	0	0	16	
7:20 AM	0	0	0	0	0	0	1	0	1	10	0	0	0	11	0	0	23	
7:25 AM	0	0	0	0	0	0	0	0	0	8	0	0	0	1	0	0	9	
7:30 AM	0	0	0	0	0	0	0	0	0	15	0	0	0	7	0	0	22	
7:35 AM	0	0	0	0	0	0	0	0	1	16	0	0	0	13	0	0	30	
7:40 AM	0	0	0	0	0	0	0	0	0	23	0	0	0	15	1	0	39	
7:45 AM	0	0	0	0	0	0	1	0	0	32	0	0	0	20	1	0	54	
7:50 AM	0	0	0	0	0	0	0	0	0	13	0	0	0	27	0	0	40	
7:55 AM	0	0	0	0	3	0	2	0	0	7	0	0	0	27	3	0	42	326
8:00 AM	0	0	0	0	0	0	0	0	0	13	0	0	0	13	3	0	29	332
8:05 AM	0	0	0	0	0	0	1	0	0	9	0	0	0	22	1	0	33	351
8:10 AM	0	0	0	0	0	0	1	0	0	9	0	0	0	13	0	0	23	360
8:15 AM	0	0	0	0	0	0	1	0	2	10	0	0	0	12	0	0	25	369
8:20 AM	0	0	0	0	0	0	1	0	0	11	0	0	0	18	0	0	30	376
8:25 AM	0	0	0	0	0	0	0	0	0	12	0	0	0	11	0	0	23	390
8:30 AM	0	0	0	0	0	0	1	0	0	6	0	0	0	15	0	0	22	390
8:35 AM	0	0	0	0	0	0	2	0	1	6	0	0	0	11	1	0	21	381
8:40 AM	0	0	0	0	0	0	1	0	0	8	0	0	0	7	1	0	17	359
8:45 AM	0	0	0	0	0	0	0	0	1	4	0	0	0	10	0	0	15	320
8:50 AM	0	0	0	0	1	0	1	0	1	5	0	0	0	8	0	0	16	296
8:55 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	17	0	0	20	274

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	0	0	0	0	0	4	0	0	272	0	0	0	248	8	0	532
Heavy Trucks	0	0	0		0	0	0		0	24	0		0	36	0		60
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/8/2012 6:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

LOCATION: OR 43 -- Kasch's Dwy

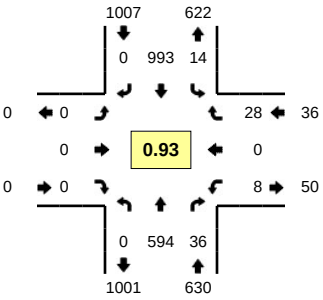
QC JOB #: 10706608

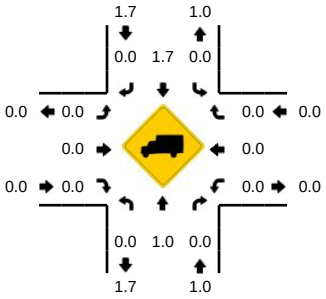
CITY/STATE: West Linn, OR

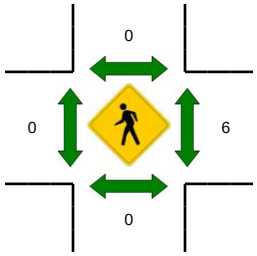
DATE: Tue, Jan 31 2012

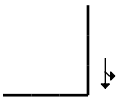
Peak-Hour: 4:40 PM -- 5:40 PM

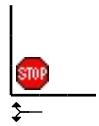
Peak 15-Min: 5:10 PM -- 5:25 PM

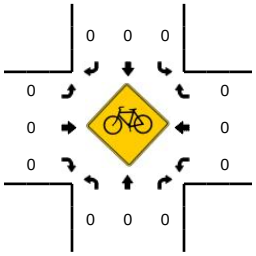


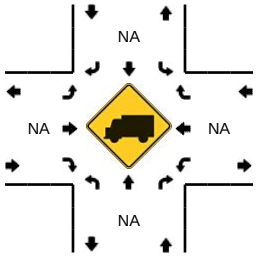


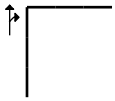


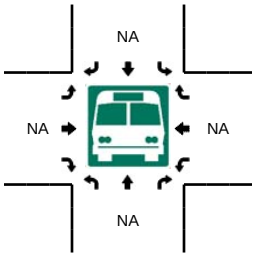












5-Min Count Period Beginning At	OR 43 (Northbound)				OR 43 (Southbound)				Kasch's Dwy (Eastbound)				Kasch's Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	42	2	0	3	56	0	0	0	0	0	0	0	0	4	0	107	
4:05 PM	0	46	2	0	3	56	0	0	0	0	0	0	1	0	4	0	112	
4:10 PM	0	54	3	0	6	78	0	0	0	0	0	0	0	0	3	0	144	
4:15 PM	0	57	2	0	1	68	0	0	0	0	0	0	0	0	1	0	129	
4:20 PM	0	39	2	0	3	76	0	0	0	0	0	0	1	0	1	0	122	
4:25 PM	0	47	1	0	0	49	0	0	0	0	0	0	0	0	5	0	102	
4:30 PM	0	51	0	0	2	76	0	0	0	0	0	0	0	0	1	0	130	
4:35 PM	0	40	1	0	1	77	0	0	0	0	0	0	1	0	0	0	120	
4:40 PM	0	51	4	0	1	66	0	0	0	0	0	0	0	0	1	0	123	
4:45 PM	0	46	3	0	2	74	0	0	0	0	0	0	1	0	6	0	132	
4:50 PM	0	56	4	0	2	89	0	0	0	0	0	0	0	0	1	0	152	
4:55 PM	0	56	2	0	1	77	0	0	0	0	0	0	0	0	1	0	137	1510
5:00 PM	0	42	2	0	2	72	0	0	0	0	0	0	2	0	1	0	121	1524
5:05 PM	0	51	3	0	1	78	0	0	0	0	0	0	0	0	3	0	136	1548
5:10 PM	0	47	3	0	2	87	0	0	0	0	0	0	1	0	3	0	143	1547
5:15 PM	0	60	6	0	1	91	0	0	0	0	0	0	1	0	2	0	161	1579
5:20 PM	0	52	0	0	1	88	0	0	0	0	0	0	2	0	4	0	147	1604
5:25 PM	0	39	6	0	1	94	0	0	0	0	0	0	0	0	1	0	141	1643
5:30 PM	0	42	1	0	0	96	0	0	0	0	0	0	1	0	4	0	144	1657
5:35 PM	0	52	2	0	0	81	0	0	0	0	0	0	0	0	1	0	136	1673
5:40 PM	0	42	1	0	1	68	0	0	0	0	0	0	0	0	0	0	112	1662
5:45 PM	0	50	6	0	1	62	0	0	0	0	0	0	0	0	2	0	121	1651
5:50 PM	0	60	1	0	2	86	0	0	0	0	0	0	1	0	1	0	151	1650
5:55 PM	0	40	1	0	3	61	0	0	0	0	0	0	0	0	4	0	109	1622

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	636	36	0	16	1064	0	0	0	0	0	0	16	0	36	0	1804
Heavy Trucks	0	8	0		0	8	0		0	0	0		0	0	0		16
Pedestrians		0				0				0				12			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/8/2012 10:47 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

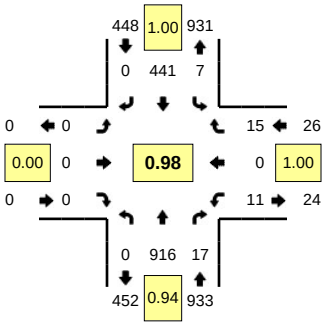
Method for determining peak hour: Total Entering Volume

LOCATION: OR 43 -- Kasch's Dwy

QC JOB #: 10706607

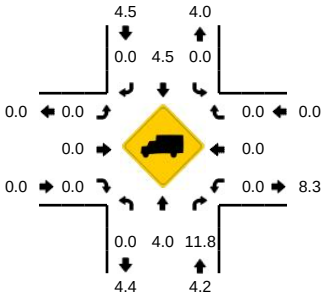
CITY/STATE: West Linn, OR

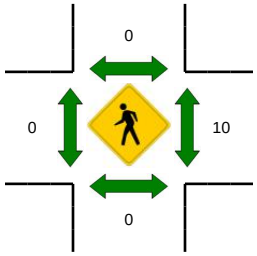
DATE: Tue, Jan 31 2012

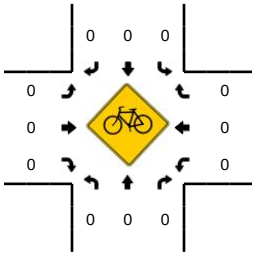


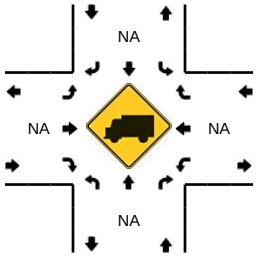
Peak-Hour: 7:30 AM -- 8:30 AM

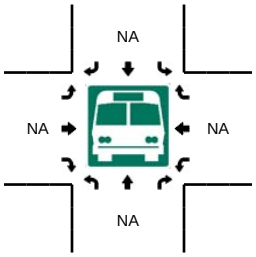
Peak 15-Min: 7:40 AM -- 7:55 AM











5-Min Count Period Beginning At	OR 43 (Northbound)				OR 43 (Southbound)				Kasch's Dwy (Eastbound)				Kasch's Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	46	0	0	1	24	0	0	0	0	0	0	1	0	1	0	73	
7:05 AM	0	58	2	0	2	25	0	0	0	0	0	0	0	0	3	0	90	
7:10 AM	0	84	3	0	1	32	0	0	0	0	0	0	0	0	2	0	122	
7:15 AM	0	74	0	0	0	26	0	0	0	0	0	0	1	0	3	0	104	
7:20 AM	0	91	1	0	0	33	0	0	0	0	0	0	0	0	2	0	127	
7:25 AM	0	86	1	0	0	34	0	0	0	0	0	0	0	0	3	0	124	
7:30 AM	0	84	1	0	0	31	0	0	0	0	0	0	0	0	1	0	117	
7:35 AM	0	79	1	0	0	32	0	0	0	0	0	0	1	0	0	0	113	
7:40 AM	0	83	1	0	0	42	0	0	0	0	0	0	0	0	1	0	127	
7:45 AM	0	73	3	0	0	24	0	0	0	0	0	0	0	0	3	0	103	
7:50 AM	0	87	1	0	3	38	0	0	0	0	0	0	1	0	0	0	130	
7:55 AM	0	73	1	0	0	35	0	0	0	0	0	0	2	0	0	0	111	1341
8:00 AM	0	55	2	0	0	41	0	0	0	0	0	0	2	0	3	0	103	1371
8:05 AM	0	75	4	0	1	32	0	0	0	0	0	0	2	0	3	0	117	1398
8:10 AM	0	77	1	0	1	55	0	0	0	0	0	0	0	0	2	0	136	1412
8:15 AM	0	66	1	0	1	37	0	0	0	0	0	0	1	0	1	0	107	1415
8:20 AM	0	76	1	0	0	37	0	0	0	0	0	0	0	0	0	0	114	1402
8:25 AM	0	88	0	0	1	37	0	0	0	0	0	0	2	0	1	0	129	1407
8:30 AM	0	55	5	0	0	23	0	0	0	0	0	0	0	0	1	0	84	1374
8:35 AM	0	64	4	0	1	22	0	0	0	0	0	0	0	0	2	0	93	1354
8:40 AM	0	80	1	0	0	43	0	0	0	0	0	0	2	0	3	0	129	1356
8:45 AM	0	77	2	0	0	37	0	0	0	0	0	0	0	0	3	0	119	1372
8:50 AM	0	73	1	0	0	37	0	0	0	0	0	0	0	0	1	0	112	1354
8:55 AM	0	54	1	0	0	36	0	0	0	0	0	0	0	0	2	0	93	1336

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	972	20	0	12	416	0	0	0	0	0	0	4	0	16	0	1440
Heavy Trucks	0	28	8		0	4	0		0	0	0		0	0	0		40
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/8/2012 6:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

LOCATION: OR 43 -- Cedar Oak Dr

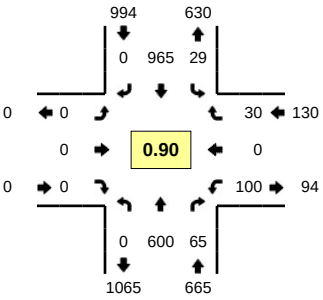
QC JOB #: 10706606

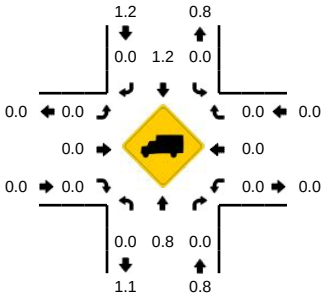
CITY/STATE: West Linn, OR

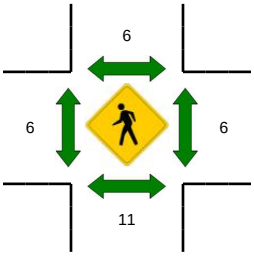
DATE: Tue, Jan 31 2012

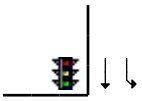
Peak-Hour: 4:40 PM -- 5:40 PM

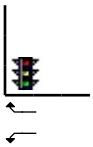
Peak 15-Min: 5:10 PM -- 5:25 PM

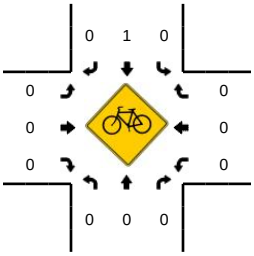


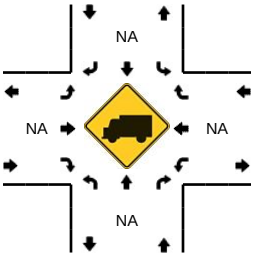


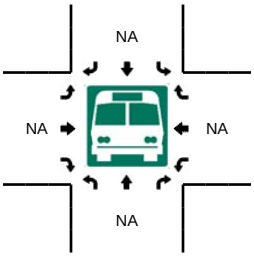












5-Min Count Period Beginning At	OR 43 (Northbound)				OR 43 (Southbound)				Cedar Oak Dr (Eastbound)				Cedar Oak Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	41	6	0	1	55	0	0	0	0	0	0	4	0	3	0	110	
4:05 PM	0	50	9	0	1	55	0	0	0	0	0	0	19	0	0	0	134	
4:10 PM	0	53	10	0	0	76	0	0	0	0	0	0	5	0	2	0	146	
4:15 PM	0	57	6	0	3	69	0	0	0	0	0	0	14	0	2	0	151	
4:20 PM	0	40	5	0	3	73	0	0	0	0	0	0	5	0	2	0	128	
4:25 PM	0	51	4	0	0	49	0	0	0	0	0	0	8	0	0	0	112	
4:30 PM	0	44	4	0	6	67	0	0	0	0	0	0	10	0	4	0	135	
4:35 PM	0	41	8	0	3	78	0	0	0	0	0	0	8	0	1	0	139	
4:40 PM	0	53	8	0	2	62	0	0	0	0	0	0	10	0	3	0	138	
4:45 PM	0	44	6	0	1	67	0	0	0	0	0	0	8	0	3	0	129	
4:50 PM	0	60	3	0	4	87	0	0	0	0	0	0	4	0	5	0	163	
4:55 PM	0	50	3	0	3	76	0	0	0	0	0	0	4	0	1	0	137	1622
5:00 PM	0	43	4	0	2	72	0	0	0	0	0	0	6	0	2	0	129	1641
5:05 PM	0	50	7	0	2	68	0	0	0	0	0	0	13	0	3	0	143	1650
5:10 PM	0	49	7	0	1	93	0	0	0	0	0	0	10	0	1	0	161	1665
5:15 PM	0	64	5	0	1	91	0	0	0	0	0	0	10	0	4	0	175	1689
5:20 PM	0	52	5	0	2	88	0	0	0	0	0	0	12	0	1	0	160	1721
5:25 PM	0	42	4	0	3	87	0	0	0	0	0	0	4	0	2	0	142	1751
5:30 PM	0	39	6	0	4	96	0	0	0	0	0	0	12	0	4	0	161	1777
5:35 PM	0	54	7	0	4	78	0	0	0	0	0	0	7	0	1	0	151	1789
5:40 PM	0	42	7	0	0	68	0	0	0	0	0	0	7	0	2	0	126	1777
5:45 PM	0	59	7	0	2	62	0	0	0	0	0	0	6	0	0	0	136	1784
5:50 PM	0	54	12	0	3	81	0	0	0	0	0	0	11	0	2	0	163	1784
5:55 PM	0	41	3	0	3	59	0	0	0	0	0	0	11	0	0	0	117	1764

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	660	68	0	16	1088	0	0	0	0	0	0	128	0	24	0	1984
Heavy Trucks	0	4	0		0	8	0		0	0	0		0	0	0		12
Pedestrians		8				4				0				8			20
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/8/2012 10:47 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

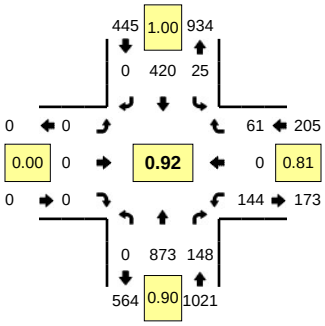
Method for determining peak hour: Total Entering Volume

LOCATION: OR 43 -- Cedar Oak Dr

QC JOB #: 10706605

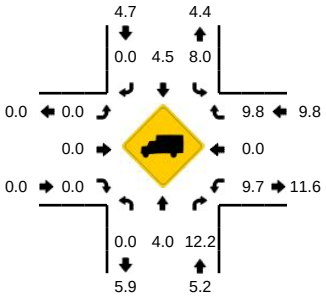
CITY/STATE: West Linn, OR

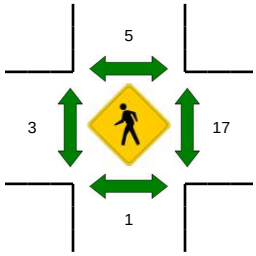
DATE: Tue, Jan 31 2012

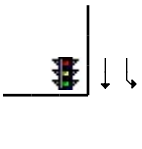


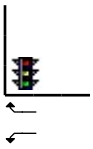
Peak-Hour: 7:30 AM -- 8:30 AM

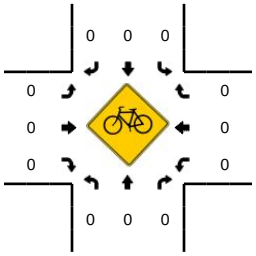
Peak 15-Min: 7:40 AM -- 7:55 AM

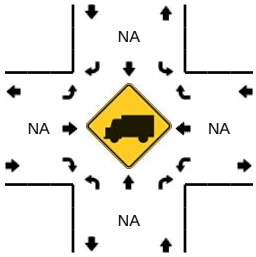


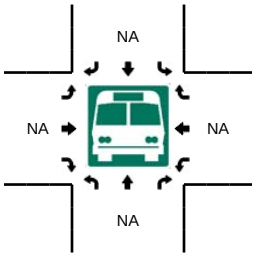












5-Min Count Period Beginning At	OR 43 (Northbound)				OR 43 (Southbound)				Cedar Oak Dr (Eastbound)				Cedar Oak Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	40	8	0	1	23	0	0	0	0	0	0	5	0	6	0	83	
7:05 AM	0	59	5	0	1	22	0	0	0	0	0	0	6	0	2	0	95	
7:10 AM	0	79	4	0	0	33	0	0	0	0	0	0	6	0	3	0	125	
7:15 AM	0	74	8	0	1	27	0	0	0	0	0	0	6	0	1	0	117	
7:20 AM	0	85	8	0	3	28	0	0	0	0	0	0	7	0	5	0	136	
7:25 AM	0	85	7	0	1	36	0	0	0	0	0	0	1	0	0	0	130	
7:30 AM	0	83	13	0	2	30	0	0	0	0	0	0	4	0	3	0	135	
7:35 AM	0	77	15	0	2	28	0	0	0	0	0	0	10	0	3	0	135	
7:40 AM	0	80	20	0	3	39	0	0	0	0	0	0	10	0	5	0	157	
7:45 AM	0	69	28	0	4	25	0	0	0	0	0	0	16	0	5	0	147	
7:50 AM	0	75	13	0	0	36	0	0	0	0	0	0	16	0	11	0	151	
7:55 AM	0	66	7	0	0	34	0	0	0	0	0	0	21	0	8	0	136	1547
8:00 AM	0	54	12	0	1	43	0	0	0	0	0	0	11	0	2	0	123	1587
8:05 AM	0	74	7	0	2	32	0	0	0	0	0	0	16	0	7	0	138	1630
8:10 AM	0	74	7	0	2	52	0	0	0	0	0	0	10	0	4	0	149	1654
8:15 AM	0	63	8	0	4	35	0	0	0	0	0	0	8	0	5	0	123	1660
8:20 AM	0	74	7	0	4	31	0	0	0	0	0	0	14	0	5	0	135	1659
8:25 AM	0	84	11	0	1	35	0	0	0	0	0	0	8	0	3	0	142	1671
8:30 AM	0	52	6	0	0	27	0	0	0	0	0	0	9	0	7	0	101	1637
8:35 AM	0	62	5	0	2	21	0	0	0	0	0	0	7	0	6	0	103	1605
8:40 AM	0	84	4	0	4	41	0	0	0	0	0	0	7	0	1	0	141	1589
8:45 AM	0	75	4	0	1	37	0	0	0	0	0	0	7	0	3	0	127	1569
8:50 AM	0	76	4	0	2	37	0	0	0	0	0	0	7	0	2	0	128	1546
8:55 AM	0	52	3	0	0	36	0	0	0	0	0	0	11	0	6	0	108	1518

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	896	244	0	28	400	0	0	0	0	0	0	168	0	84	0	1820
Heavy Trucks	0	24	20		4	4	0		0	0	0		20	0	16		88
Pedestrians		0				0				4				8			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 2/8/2012 6:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

LOCATION: OR 43 -- Walling Circle/Retail Center Dwy

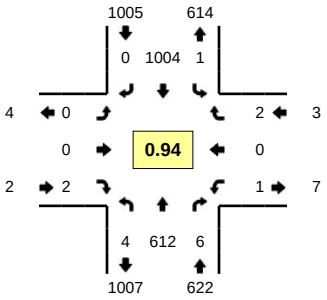
QC JOB #: 10706604

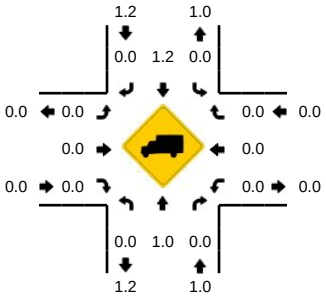
CITY/STATE: West Linn, OR

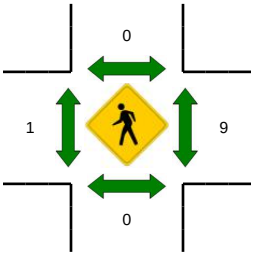
DATE: Tue, Jan 31 2012

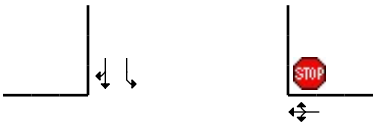
Peak-Hour: 4:40 PM -- 5:40 PM

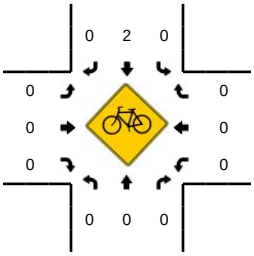
Peak 15-Min: 5:10 PM -- 5:25 PM

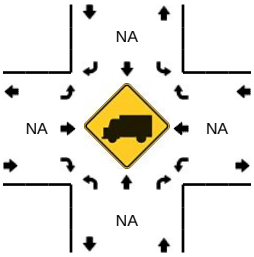


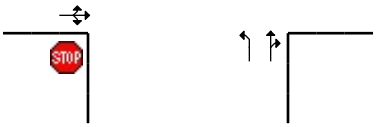


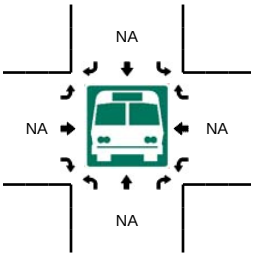












5-Min Count Period Beginning At	OR 43 (Northbound)				OR 43 (Southbound)				Walling Circle/Retail Center Dwy (Eastbound)				Walling Circle/Retail Center Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	47	0	0	0	61	0	0	0	0	0	0	0	0	0	0	108	
4:05 PM	1	46	0	0	0	63	0	0	0	0	0	0	0	0	0	0	110	
4:10 PM	1	58	0	0	0	83	0	0	0	0	0	0	0	0	0	0	142	
4:15 PM	2	53	0	0	0	70	0	0	0	0	0	0	0	0	0	0	125	
4:20 PM	0	40	0	0	0	77	0	0	0	0	1	0	0	0	0	0	118	
4:25 PM	1	53	0	0	0	48	0	0	1	0	0	0	0	0	0	0	103	
4:30 PM	0	53	0	0	0	78	0	0	0	0	0	0	0	0	0	0	131	
4:35 PM	0	39	0	0	0	75	0	0	0	0	0	0	0	0	0	0	114	
4:40 PM	0	48	1	0	1	64	0	0	0	0	0	0	0	0	0	0	114	
4:45 PM	0	54	0	0	0	77	0	0	0	0	2	0	0	0	1	0	134	
4:50 PM	0	68	0	0	0	83	0	0	0	0	0	0	0	0	0	0	151	
4:55 PM	1	47	0	0	0	85	0	0	0	0	0	0	0	0	0	0	133	1483
5:00 PM	0	45	0	0	0	70	0	0	0	0	0	0	0	0	0	0	115	1490
5:05 PM	1	53	1	0	0	82	0	0	0	0	0	0	0	0	0	0	137	1517
5:10 PM	0	49	0	0	0	90	0	0	0	0	0	0	0	0	1	0	140	1515
5:15 PM	1	58	0	0	0	91	0	0	0	0	0	0	0	0	0	0	150	1540
5:20 PM	0	57	0	0	0	88	0	0	0	0	0	0	0	0	0	0	145	1567
5:25 PM	1	37	3	0	0	96	0	0	0	0	0	0	0	0	0	0	137	1601
5:30 PM	0	48	0	0	0	98	0	0	0	0	0	0	0	0	0	0	146	1616
5:35 PM	0	48	1	0	0	80	0	0	0	0	0	0	1	0	0	0	130	1632
5:40 PM	0	46	0	0	0	72	0	0	0	0	0	0	1	0	0	0	119	1637
5:45 PM	0	50	0	0	0	60	0	0	0	0	0	0	0	0	0	0	110	1613
5:50 PM	0	62	0	0	0	88	0	0	0	0	0	0	0	0	0	0	150	1612
5:55 PM	0	43	0	0	0	64	0	0	0	0	1	0	0	0	0	0	108	1587

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	4	656	0	0	0	1076	0	0	0	0	0	0	0	0	4	0	1740
Heavy Trucks	0	4	0		0	4	0		0	0	0		0	0	0		8
Pedestrians		0				0				0				20			20
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments: South

Report generated on 2/8/2012 10:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

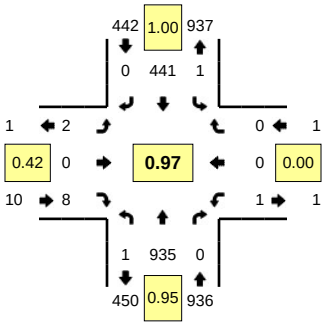
Method for determining peak hour: Total Entering Volume

LOCATION: OR 43 -- Walling Circle/Retail Center Dwy

QC JOB #: 10706603

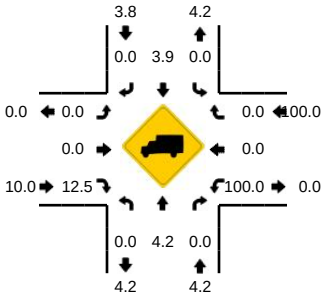
CITY/STATE: West Linn, OR

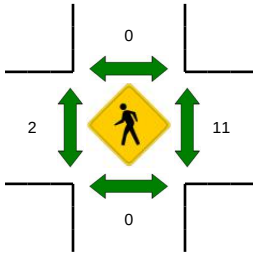
DATE: Tue, Jan 31 2012

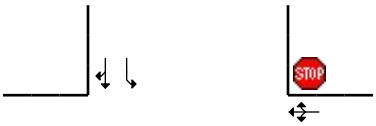


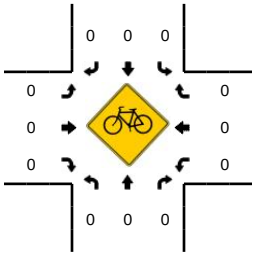
Peak-Hour: 7:30 AM -- 8:30 AM

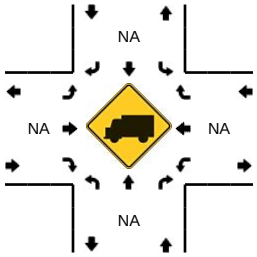
Peak 15-Min: 7:40 AM -- 7:55 AM

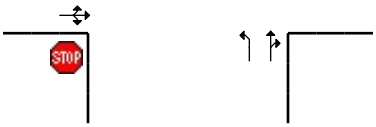


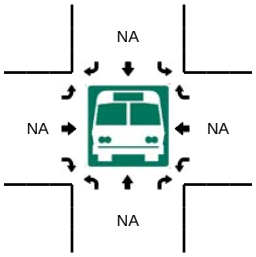












5-Min Count Period Beginning At	OR 43 (Northbound)				OR 43 (Southbound)				Walling Circle/Retail Center Dwy (Eastbound)				Walling Circle/Retail Center Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	47	1	0	0	24	0	0	0	0	0	0	0	0	0	0	72	
7:05 AM	0	61	0	0	0	30	0	0	0	0	0	0	0	0	0	0	91	
7:10 AM	0	86	0	0	0	31	0	0	0	0	0	0	0	0	0	0	117	
7:15 AM	0	75	0	0	0	26	0	0	0	0	0	0	0	0	0	0	101	
7:20 AM	0	67	0	0	0	18	0	0	0	0	1	0	0	0	0	0	86	
7:25 AM	0	90	0	0	0	35	0	0	0	0	0	0	0	0	0	0	125	
7:30 AM	0	87	0	0	0	30	0	0	0	0	1	0	0	0	0	0	118	
7:35 AM	0	78	0	0	0	29	0	0	0	0	2	0	0	0	0	0	109	
7:40 AM	0	86	0	0	0	39	0	0	0	0	3	0	0	0	0	0	128	
7:45 AM	0	75	0	0	0	24	0	0	2	0	0	0	0	0	0	0	101	
7:50 AM	0	86	0	0	0	41	0	0	0	0	1	0	0	0	0	0	128	
7:55 AM	0	75	0	0	0	35	0	0	0	0	0	0	0	0	0	0	110	1286
8:00 AM	0	57	0	0	0	42	0	0	0	0	0	0	0	0	0	0	99	1313
8:05 AM	0	78	0	0	0	34	0	0	0	0	0	0	0	0	0	0	112	1334
8:10 AM	0	77	0	0	0	54	0	0	0	0	1	0	0	0	0	0	132	1349
8:15 AM	0	68	0	0	0	38	0	0	0	0	0	0	0	0	0	0	106	1354
8:20 AM	0	80	0	0	1	36	0	0	0	0	0	0	1	0	0	0	118	1386
8:25 AM	1	88	0	0	0	39	0	0	0	0	0	0	0	0	0	0	128	1389
8:30 AM	0	58	0	0	0	26	0	0	0	0	0	0	0	0	0	0	84	1355
8:35 AM	0	65	0	0	0	23	0	0	0	0	0	0	0	0	0	0	88	1334
8:40 AM	0	83	1	0	0	41	0	0	0	0	0	0	0	0	0	0	125	1331
8:45 AM	0	80	0	0	0	37	0	0	0	0	0	0	0	0	0	0	117	1347
8:50 AM	1	73	0	0	0	39	0	0	1	0	1	0	0	0	0	0	115	1334
8:55 AM	0	59	0	0	0	34	0	0	0	0	1	0	0	0	0	0	94	1318

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	988	0	0	0	416	0	0	8	0	16	0	0	0	0	0	1428
Heavy Trucks	0	32	0		0	4	0		0	0	0		0	0	0		36
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments: South

Report generated on 2/8/2012 6:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

LOCATION: OR 43 -- Walling Circle

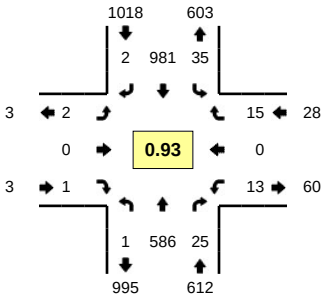
QC JOB #: 10706602

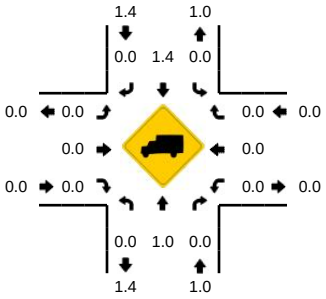
CITY/STATE: West Linn, OR

DATE: Tue, Jan 31 2012

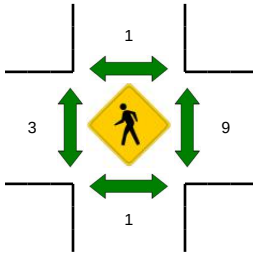
Peak-Hour: 4:40 PM -- 5:40 PM

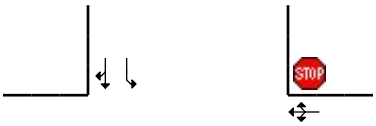
Peak 15-Min: 5:10 PM -- 5:25 PM

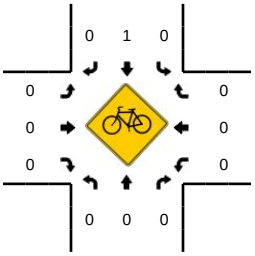


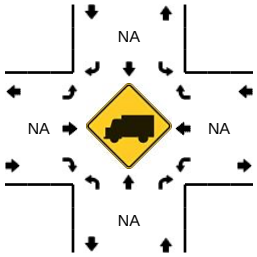


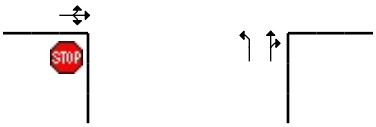
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

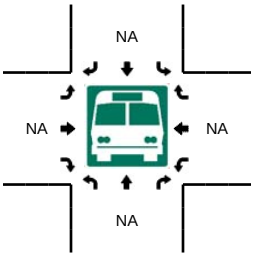












5-Min Count Period Beginning At	OR 43 (Northbound)				OR 43 (Southbound)				Walling Circle (Eastbound)				Walling Circle (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	46	1	0	4	56	0	0	0	0	0	0	1	0	1	0	109	
4:05 PM	0	48	0	0	2	67	0	0	0	0	0	0	1	0	2	0	120	
4:10 PM	0	54	5	0	6	73	1	0	0	0	0	0	3	0	3	0	145	
4:15 PM	0	51	0	0	0	67	0	0	0	0	0	0	1	0	1	0	120	
4:20 PM	0	37	2	0	5	72	1	0	0	0	0	0	4	0	4	0	125	
4:25 PM	0	54	1	0	2	48	0	0	0	0	0	0	1	0	1	0	107	
4:30 PM	0	44	5	0	2	80	0	0	0	0	0	0	0	0	0	0	131	
4:35 PM	0	34	6	0	3	75	0	0	0	0	0	0	4	0	3	0	125	
4:40 PM	0	46	1	0	1	69	1	0	0	0	0	0	0	0	1	0	119	
4:45 PM	0	54	1	0	1	72	0	0	0	0	0	0	2	0	0	0	130	
4:50 PM	0	65	4	0	4	82	0	0	0	0	0	0	0	0	2	0	157	
4:55 PM	0	40	1	0	3	83	0	0	0	0	0	0	0	0	3	0	130	1518
5:00 PM	0	47	0	0	3	65	0	0	0	0	1	0	2	0	0	0	118	1527
5:05 PM	1	47	2	0	2	83	0	0	0	0	0	0	1	0	2	0	138	1545
5:10 PM	0	52	2	0	5	90	0	0	0	0	0	0	1	0	2	0	152	1552
5:15 PM	0	51	3	0	2	86	0	0	1	0	0	0	2	0	0	0	145	1577
5:20 PM	0	59	2	0	4	77	0	0	0	0	0	0	4	0	4	0	150	1602
5:25 PM	0	35	4	0	4	98	1	0	0	0	0	0	0	0	0	0	142	1637
5:30 PM	0	47	2	0	2	100	0	0	1	0	0	0	0	0	0	0	152	1658
5:35 PM	0	43	3	0	4	76	0	0	0	0	0	0	1	0	1	0	128	1661
5:40 PM	0	48	0	0	2	75	1	0	0	0	0	0	1	0	1	0	128	1670
5:45 PM	0	43	2	0	1	53	0	0	0	0	0	0	0	0	0	0	99	1639
5:50 PM	0	58	4	0	5	89	0	0	0	0	0	0	0	0	0	0	156	1638
5:55 PM	0	44	2	0	3	60	1	0	0	0	0	0	3	0	2	0	115	1623

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	648	28	0	44	1012	0	0	4	0	0	0	28	0	24	0	1788
Heavy Trucks	0	8	0		0	8	0		0	0	0		0	0	0		16
Pedestrians		0				0				0				16			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments: North

Report generated on 2/8/2012 10:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

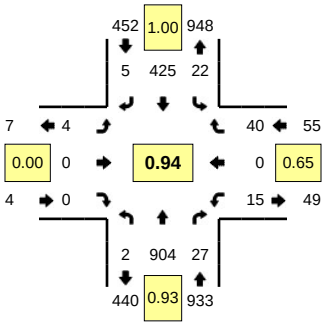
Method for determining peak hour: Total Entering Volume

LOCATION: OR 43 -- Walling Circle

QC JOB #: 10706601

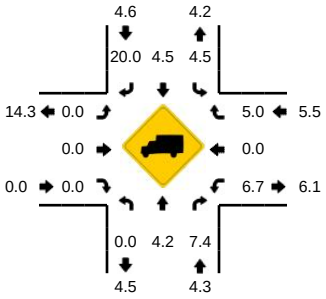
CITY/STATE: West Linn, OR

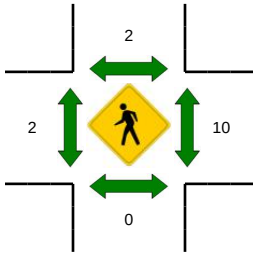
DATE: Tue, Jan 31 2012

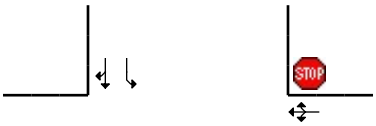


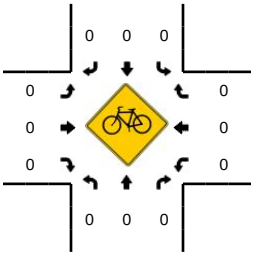
Peak-Hour: 7:30 AM -- 8:30 AM

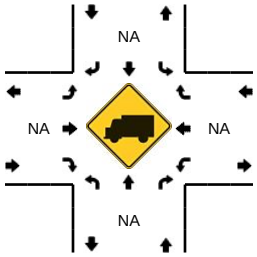
Peak 15-Min: 7:40 AM -- 7:55 AM

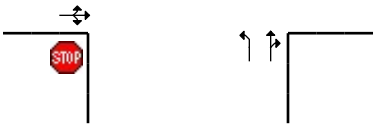


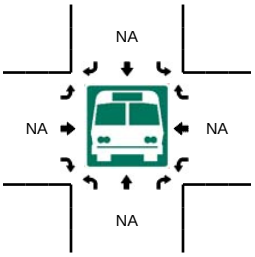












5-Min Count Period Beginning At	OR 43 (Northbound)				OR 43 (Southbound)				Walling Circle (Eastbound)				Walling Circle (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	45	5	0	1	21	0	0	1	0	1	0	2	0	2	0	78	
7:05 AM	0	58	2	0	4	29	0	0	0	0	0	0	0	0	6	0	99	
7:10 AM	0	84	1	0	3	27	1	0	0	0	0	0	0	0	2	0	118	
7:15 AM	0	72	4	0	1	26	0	0	0	0	0	0	0	0	2	0	105	
7:20 AM	0	89	4	0	2	33	0	0	0	0	0	0	1	0	2	0	131	
7:25 AM	0	83	3	0	1	33	0	0	1	0	0	0	1	0	4	0	126	
7:30 AM	0	89	1	0	1	31	0	0	0	0	0	0	0	0	2	0	124	
7:35 AM	0	73	3	0	3	30	1	0	0	0	0	0	0	0	3	0	113	
7:40 AM	0	83	4	0	3	41	0	0	0	0	0	0	1	0	2	0	134	
7:45 AM	0	74	3	0	6	20	0	0	0	0	0	0	0	0	5	0	108	
7:50 AM	1	86	0	0	4	36	1	0	0	0	0	0	6	0	7	0	141	
7:55 AM	0	75	1	0	0	38	2	0	0	0	0	0	1	0	5	0	122	1399
8:00 AM	1	50	4	0	1	40	0	0	1	0	0	0	2	0	4	0	103	1424
8:05 AM	0	76	2	0	0	32	1	0	0	0	0	0	0	0	2	0	113	1438
8:10 AM	0	72	2	0	2	51	0	0	1	0	0	0	2	0	3	0	133	1453
8:15 AM	0	64	4	0	0	34	0	0	1	0	0	0	2	0	4	0	109	1457
8:20 AM	0	79	1	0	0	36	0	0	0	0	0	0	1	0	0	0	117	1443
8:25 AM	0	83	2	0	2	36	0	0	1	0	0	0	0	0	3	0	127	1444
8:30 AM	0	59	0	0	1	27	0	0	0	0	0	0	0	0	2	0	89	1409
8:35 AM	1	64	2	0	0	23	0	0	0	0	0	0	1	0	6	0	97	1393
8:40 AM	0	79	1	0	0	43	0	0	0	0	0	0	0	0	5	0	128	1387
8:45 AM	0	78	3	0	3	33	0	0	0	0	0	0	1	0	3	0	121	1400
8:50 AM	0	73	0	0	0	39	0	0	0	0	0	0	2	0	1	0	115	1374
8:55 AM	0	62	0	0	3	32	0	0	0	0	0	0	1	0	3	0	101	1353

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	4	972	28	0	52	388	4	0	0	0	0	0	28	0	56	0	1532
Heavy Trucks	0	36	0		4	4	0		0	0	0		0	0	4		48
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments: North

Report generated on 2/8/2012 6:53 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Attachment B
Level of Service
Description

LEVEL OF SERVICE CONCEPT

Level of Service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Six grades are used to denote the various Level of Service from A to F.[1]

SIGNALIZED INTERSECTIONS

The six level of service grades are described qualitatively for signalized intersections in **Table B1**. Additionally, **Table B2** identifies the relationship between level of service and average control delay per vehicle. Control delay is defined to include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Using this definition, level of service D is generally considered to represent the minimum acceptable design standard.

TABLE B1: LEVEL OF SERVICE DEFINITIONS (SIGNALIZED INTERSECTIONS)

Level of Service	Average Delay per Vehicle
A	Very low average control delay, less than 10 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average control delay is greater than 10 seconds per vehicle and less than or equal to 20 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for a level of service A, causing higher levels of average delay.
C	Average control delay is greater than 20 seconds per vehicle and less than or equal to 35 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average control delay is greater than 35 seconds per vehicle and less than or equal to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average control delay is greater than 55 seconds per vehicle and less than or equal to 80 seconds per vehicle. This is usually considered to be the limit of acceptable delay. These high delay values generally (but not always) indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average control delay is in excess of 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values.

[1] Most of the material in this appendix is adapted from the Transportation Research Board, *Highway Capacity Manual*, (2000).

TABLE B2: LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

UNSIGNALIZED INTERSECTIONS

Unsignalized intersections include two way stop controlled (TWSC) and all way stop controlled (AWSC) intersections. The *2000 Highway Capacity Manual* provides models for estimating control delay at both TWSC and AWSC intersections. A qualitative description of the various service levels associated with an unsignalized intersection is presented in **Table B3**. A quantitative definition of level of service for unsignalized intersections is presented in **Table B4**. Using this definition, Level of Service E is generally considered to represent the minimum acceptable design standard.

TABLE B3: LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service	Average Delay per Vehicle to Minor Street
A	Nearly all drivers find freedom of operation. Very seldom is there more than one vehicle in queue.
B	Some drivers begin to consider the delay an inconvenience. Occasionally there is more than one vehicle in queue.
C	Many times there is more than one vehicle in queue. Most drivers feel restricted, but not objectionably so.
D	Often there is more than one vehicle in queue. Drivers feel quite restricted.
E	Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. There is almost always more than one vehicle in queue. Drivers find the delays approaching intolerable levels.
F	Forced flow. Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection.

TABLE B4: LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10.0 and ≤15.0
C	>15.0 and ≤25.0
D	>25.0 and ≤35.0
E	>35.0 and ≤50.0
F	>50.0

It should be noted that the level of service criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, there are a number of driver behavior considerations that combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, while drivers on the minor street approaches to TWSC intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections than signalized intersections. For these reasons, it is considered that the control delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. While overall intersection level of service is calculated for AWSC intersections, level of service is only calculated for the minor approaches and the major street left turn movements at TWSC intersections. No delay is assumed to the major street through movements. For TWSC intersections, the overall intersection level of service remains undefined: level-of-service is only calculated for each minor street lane.

In the performance evaluation of TWSC intersections, it is important to consider other measures of effectiveness (MOE's) in addition to delay, such as v/c ratios for individual movements, average queue lengths, and 95th-percentile queue lengths. By focusing on a single MOE for the worst movement only, such as delay for the minor-street left turn, users may make inappropriate traffic control decisions. The potential for making such inappropriate decisions is likely to be particularly pronounced when the HCM level-of-service thresholds are adopted as legal standards.

VOLUME-TO-CAPACITY CONCEPT

The *Highway Capacity Manual 2000* defines capacity as "the maximum number of vehicles that can pass a certain point during a specified period under prevailing roadway, traffic, and control conditions." Capacity analysis examines segments or points (such as signalized intersections) of a facility under uniform traffic, roadway, and control conditions. These conditions determine capacity; therefore, segments with different prevailing conditions will have different capacities. Capacity is not the absolute maximum flow rate – driver characteristics vary from region to region, and the absolute maximum capacity can vary from day to day and location to location.

SIGNALIZED INTERSECTIONS

Capacity at signalized intersections is defined for each lane group. The lane group capacity is the maximum hourly rate at which vehicles can reasonably be expected to pass through the intersection under prevailing conditions. The ratio of flow rate to capacity (v/c), often called the volume to capacity ratio, is typically referred as to the degree of saturation. The critical v/c ratio (also known as the intersection v/c ratio) depends on the conflicting critical lane flow rates and the signal phasing, and considers only the lane groups that have the highest flow ratio (v/s) for a given signal phase.

The *Oregon Highway Plan* Action 1F.6 identifies maximum v/c thresholds for signalized intersections for areas within and outside of MPO areas. These are summarized below in **Table E5** and **Table E6**.

TABLE E5 – MAXIMUM VOLUME-TO-CAPACITY RATIOS FOR PEAK HOUR OPERATING CONDITIONS[1]

Maximum Volume-To-Capacity Ratios Outside Metro[2]							
Highway Category	Inside Urban Growth Boundary					Outside Urban Growth Boundary	
	STAs	MPO	Non-MPO outside of STAs where non-freeway posted speed <= 35 mph, or a Designated UBA	Non-MPO outside of STAs where non-freeway speed limit > 35 mph	Non-MPO where non-freeway speed limit >= 45 mph	Unincorporated Communities	Rural Lands
Interstate Highways	N/A	0.80	N/A	0.70	0.70	0.70	0.70
Statewide Expressways	N/A	0.80	0.70	0.70	0.70	0.70	0.70
Freight Route on a Statewide Highway	0.85	0.80	0.80	0.75	0.70	0.70	0.70
Statewide (not a freight route)	0.90	0.85	0.85	0.80	0.75	0.75	0.70
Freight Route on a Regional or District Highway	0.90	0.85	0.85	0.80	0.75	0.75	0.70
Expressway on a Regional or District Highway	N/A	0.85	N/A	0.80	0.75	0.75	0.70
Regional Highways	0.95	0.85	0.85	0.80	0.75	0.75	0.70
District/Local Interest Roads	0.95	0.90	0.90	0.85	0.80	0.80	0.75

[1] For Portland Metro and the Rouge Valley MPO see also OHP Amendment 00-04 amended Table 7 regarding Metro and established Alternative Mobility Standards for the RVMPO. Where there is a conflict between the Table 6 standards and the established alternative mobility standards, the more tolerant standard (higher v/c ratio) applies. The OHP amendments establishing the RVMPO and Metro alternative standards are located on the web at:

[2] National Highway System (NHS) highway designation requirements are addressed in the Highway Design Manual (HDM)

TABLE E6 – MAXIMUM VOLUME-TO-CAPACITY RATIOS WITHIN PORTLAND METROPOLITAN REGION[1]

Location	Standard	
	1st Hour	2nd Hour
Central City **Regional Centers** **Town Centers** **Main Streets** **Station Communities**	1.1	0.99
Corridors[2] **Industrial Areas** **Intermodal Facilities** **Employment Areas** **Inner Neighborhoods** **Outer Neighborhoods**	0.99	0.99

Banfield Freeway[3] (from I-5 to I-205)	1.1	0.99
I-5 North[3] (from Marquam Bridge to Interstate Bridge)	1.1	0.99
Highway 99E[3] (from Lincoln Street to Highway 224 Interchange)	1.1	0.99
Sunset Highway[3] (from I-405 to Sylvan interchange)	1.1	0.99
Stadium Freeway[3] (from I-5 South to I-5 North)	1.1	0.99
Other Principal Arterial Routes **I-205[3]** **I-84 (east of I-205)** **I-5 (Marquam Bridge to Wilsonville)** **Highway 217[3]** **US 26 (west of Sylvan)** **Highway 30** **Tualatin Valley Hwy[3] (Cedar Hills Blvd. to Brookwood Avenue)** **Highway 224[3]** **Highway 47** **Highway 213** **242nd /US 26 in Gresham**	0.99	0.99
Areas of Special Concern	Areas with this designation are planned for mixed use development, but are also characterized by physical, environmental or other constraints that limit the range of acceptable transportation solutions for addressing a high level-of-service need, but where alternative routes for regional through-traffic are provided. In these areas, substitute performance measures are allowed by OAR.660.012.0060(1)(d). Provisions for determining the alternative performance measures are included in Section 6.7.7 of the 200 RTP. The OHP mobility standard for state highways in these areas applies until the alternative performance measures are adopted in local plans and approved by the Oregon Transportation Commission.	
Beaverton Regional Center **Highway 99W (I-5 to Tualatin Road)**	1.0 0.95	

Note: Maximum volume to capacity ratios for two hour peak hour operating conditions through a 20-year horizon for state highway sections within the Portland metropolitan area urban growth boundary.

[1] The volume to capacity ratios in the table are for the highest two consecutive hours or weekday traffic volumes. This is calculated by dividing the traffic volume for the average weekly two-hour PM peak by twice the hourly capacity.

[2] Corridors that are also state highways are 99W, Sandy Boulevard, Powell Boulevard, 82nd Avenue, North Portland Road, North Denver Street, Lombard Street, Hall Boulevard, Farmington Road, Canyon Road, Beaverton-Hillsdale Highway, Tualatin Valley Highway (from Hall Boulevard to Cedar Hills Boulevard and from Brookwood Street to E Street in Forest Grove), Scholls Ferry Road, 99E (from Milwaukie to Oregon City) and Highway 43.

[3] Thresholds shown are for interim purposes only; refinement plans for these corridors are required in Metro Regional Transportation Plan and will include a recommended motor vehicle performance policy for each corridor.

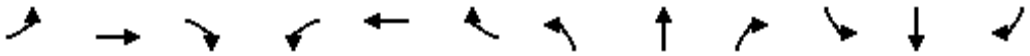
UNSIGNALIZED INTERSECTIONS

For unsignalized intersections, capacity is determined using a gap acceptance model which calculates the potential capacity of each minor traffic stream in accordance with Equation 17-3 in the *Highway*

Capacity Manual 2000. The potential capacity of a movement is a function of the conflicting flow rate expressed as an hourly rate, as well as the minor-street movement.

The *Oregon Highway Plan* Action 1F.1 identifies maximum v/c thresholds for unsignalized intersections. As stated on page 75, "At unsignalized intersections and road approaches, the volume-to-capacity ratios in Tables 6 and 7 shall not be exceeded for either of the state highway approaches that are not stopped. Approaches at which traffic must stop, or otherwise yield the right of way, shall be operated to maintain safe operation of the intersection and all of its approaches and shall not exceed the volume to capacity ratios for District/Local Interest Roads in Table 6 within the urban growth boundaries or 0.80 outside of urban growth boundaries."

Attachment C
2012 Existing Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	0	1	13	0	15	1	691	25	35	1158	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	2	0	1	14	0	16	1	743	27	38	1245	2
Pedestrians		3			9			4			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								1055				
pX, platoon unblocked	0.77	0.77		0.77	0.77	0.77				0.77		
vC, conflicting volume	2087	2106	1253	2093	2093	766	1250			779		
vC1, stage 1 conf vol	1325	1325		768	768							
vC2, stage 2 conf vol	762	781		1326	1326							
vCu, unblocked vol	2262	2286	1253	2270	2270	548	1250			564		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	91	100	96	100			95		
cM capacity (veh/h)	157	179	211	160	183	412	562			777		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	3	30	1	770	38	1247
Volume Left	2	14	1	0	38	0
Volume Right	1	16	0	27	0	2
cSH	172	238	562	1700	777	1700
Volume to Capacity	0.02	0.13	0.00	0.45	0.05	0.73
Queue Length 95th (ft)	1	11	0	0	4	0
Control Delay (s)	26.4	22.3	11.4	0.0	9.9	0.0
Lane LOS	D	C	B		A	
Approach Delay (s)	26.4	22.3	0.0		0.3	
Approach LOS	D	C				

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	77.3%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	1	0	2	4	722	6	1	1185	0
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	1	0	2	4	768	6	1	1261	0
Pedestrians		1			9							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								378				
pX, platoon unblocked	0.77	0.77		0.77	0.77	0.77				0.77		
vC, conflicting volume	2042	2056	1262	2054	2053	780	1262			783		
vC1, stage 1 conf vol	1264	1264		789	789							
vC2, stage 2 conf vol	779	792		1265	1264							
vCu, unblocked vol	2208	2225	1262	2223	2221	561	1262			565		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	99	100	99	99			100		
cM capacity (veh/h)	178	199	209	173	197	404	557			773		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	2	3	4	774	1	1261
Volume Left	0	1	4	0	1	0
Volume Right	2	2	0	6	0	0
cSH	209	280	557	1700	773	1700
Volume to Capacity	0.01	0.01	0.01	0.46	0.00	0.74
Queue Length 95th (ft)	1	1	1	0	0	0
Control Delay (s)	22.4	18.0	11.5	0.0	9.7	0.0
Lane LOS	C	C	B		A	
Approach Delay (s)	22.4	18.0	0.1		0.0	
Approach LOS	C	C				

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	77.4%	ICU Level of Service	D	
Analysis Period (min)	15			

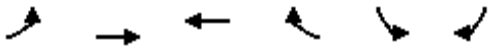
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	8	28	701	36	14	1172
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	9	30	754	39	15	1260
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			179			
pX, platoon unblocked	0.76	0.76			0.76	
vC, conflicting volume	1439	779			798	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1420	553			579	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	92			98	
cM capacity (veh/h)	96	365			761	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	39	792	435	840
Volume Left	9	0	15	0
Volume Right	30	39	0	0
cSH	225	1700	761	1700
Volume to Capacity	0.17	0.47	0.02	0.49
Queue Length 95th (ft)	15	0	2	0
Control Delay (s)	24.3	0.0	0.6	0.0
Lane LOS	C		A	
Approach Delay (s)	24.3	0.0	0.2	
Approach LOS	C			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	100	30	708	65	29	1139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.0		4.0	5.0
Lane Util. Factor	1.00	1.00	1.00		1.00	0.95
Frpb, ped/bikes	1.00	0.96	1.00		1.00	1.00
Flpb, ped/bikes	0.98	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1772	1557	1856		1805	3574
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1772	1557	1856		1805	3574
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	111	33	787	72	32	1266
RTOR Reduction (vph)	0	29	2	0	0	0
Lane Group Flow (vph)	111	4	857	0	32	1266
Confl. Peds. (#/hr)	11	6		6	6	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Turn Type		custom			Prot	
Protected Phases			6		5	2
Permitted Phases	4	4				
Actuated Green, G (s)	12.1	12.1	80.2		4.7	88.9
Effective Green, g (s)	12.1	12.1	80.2		4.7	88.9
Actuated g/C Ratio	0.11	0.11	0.73		0.04	0.81
Clearance Time (s)	4.0	4.0	5.0		4.0	5.0
Vehicle Extension (s)	2.3	2.3	5.0		2.3	5.0
Lane Grp Cap (vph)	195	171	1353		77	2888
v/s Ratio Prot			c0.46		0.02	c0.35
v/s Ratio Perm	c0.06	0.00				
v/c Ratio	0.57	0.02	0.63		0.42	0.44
Uniform Delay, d1	46.5	43.7	7.5		51.3	3.1
Progression Factor	1.00	1.00	0.98		1.00	1.00
Incremental Delay, d2	2.8	0.0	2.0		2.1	0.5
Delay (s)	49.2	43.7	9.4		53.4	3.6
Level of Service	D	D	A		D	A
Approach Delay (s)	48.0		9.4			4.8
Approach LOS	D		A			A

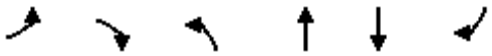
Intersection Summary			
HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	5	89	113	5	4	17
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	6	102	130	6	5	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		213				
pX, platoon unblocked						
vC, conflicting volume	136				247	133
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	136				247	133
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	1461				743	922

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	108	136	24
Volume Left	6	0	5
Volume Right	0	6	20
cSH	1461	1700	882
Volume to Capacity	0.00	0.08	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.4	0.0	9.2
Lane LOS	A		A
Approach Delay (s)	0.4	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	151	85	83	635	971	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1805	1547	1770	1881	1881	1575
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1805	1547	1770	1881	1881	1575
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	168	94	92	706	1079	270
RTOR Reduction (vph)	0	83	0	0	0	70
Lane Group Flow (vph)	168	11	92	706	1079	200
Confl. Peds. (#/hr)		1	2			2
Heavy Vehicles (%)	0%	2%	2%	1%	1%	0%
Turn Type		custom	Prot			Perm
Protected Phases			1	6	2	
Permitted Phases	4	4				2
Actuated Green, G (s)	13.4	13.4	8.6	87.6	75.0	75.0
Effective Green, g (s)	13.4	13.4	8.6	87.6	75.0	75.0
Actuated g/C Ratio	0.12	0.12	0.08	0.80	0.68	0.68
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3	2.3	5.0	5.0	5.0
Lane Grp Cap (vph)	220	188	138	1498	1283	1074
v/s Ratio Prot			c0.05	0.38	c0.57	
v/s Ratio Perm	c0.09	0.01				0.13
v/c Ratio	0.76	0.06	0.67	0.47	0.84	0.19
Uniform Delay, d1	46.8	42.7	49.3	3.7	13.1	6.4
Progression Factor	1.00	1.00	1.00	1.00	1.08	0.88
Incremental Delay, d2	13.6	0.1	9.9	1.1	6.3	0.4
Delay (s)	60.4	42.8	59.2	4.7	20.3	5.9
Level of Service	E	D	E	A	C	A
Approach Delay (s)	54.1			11.0	17.4	
Approach LOS	D			B	B	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	0	0	15	0	40	2	1067	27	22	502	5
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)	4	0	0	16	0	43	2	1135	29	23	534	5
Pedestrians		2			10						2	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		3.5			3.5						3.5	
Percent Blockage		0			1						0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								1055				
pX, platoon unblocked	0.34	0.34		0.34	0.34	0.34				0.34		
vC, conflicting volume	1769	1764	539	1745	1752	1161	541			1174		
vC1, stage 1 conf vol	586	586		1164	1164							
vC2, stage 2 conf vol	1184	1178		581	588							
vCu, unblocked vol	2285	2268	539	2212	2234	514	541			550		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.2	5.5							
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	100	90	100	77	100			93		
cM capacity (veh/h)	103	138	546	160	162	188	1035			342		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	4	59	2	1164	23	539
Volume Left	4	16	2	0	23	0
Volume Right	0	43	0	29	0	5
cSH	103	179	1035	1700	342	1700
Volume to Capacity	0.04	0.33	0.00	0.68	0.07	0.32
Queue Length 95th (ft)	3	33	0	0	5	0
Control Delay (s)	41.3	34.5	8.5	0.0	16.3	0.0
Lane LOS	E	D	A		C	
Approach Delay (s)	41.3	34.5	0.0		0.7	
Approach LOS	E	D				

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	73.5%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	0	8	1	0	0	1	1103	0	1	520	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	2	0	8	1	0	0	1	1137	0	1	536	0
Pedestrians		2			11							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								378				
pX, platoon unblocked	0.32	0.32		0.32	0.32	0.32				0.32		
vC, conflicting volume	1679	1690	538	1697	1690	1148	538			1148		
vC1, stage 1 conf vol	540	540		1150	1150							
vC2, stage 2 conf vol	1139	1150		546	540							
vCu, unblocked vol	2069	2104	538	2124	2104	383	538			383		
tC, single (s)	7.1	6.5	6.3	8.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		7.1	5.5							
tF (s)	3.5	4.0	3.4	4.4	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	98	99	100	100	100			100		
cM capacity (veh/h)	186	171	523	131	172	208	1038			370		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	10	1	1	1137	1	536
Volume Left	2	1	1	0	1	0
Volume Right	8	0	0	0	0	0
cSH	384	131	1038	1700	370	1700
Volume to Capacity	0.03	0.01	0.00	0.67	0.00	0.32
Queue Length 95th (ft)	2	1	0	0	0	0
Control Delay (s)	14.6	32.6	8.5	0.0	14.8	0.0
Lane LOS	B	D	A		B	
Approach Delay (s)	14.6	32.6	0.0		0.0	
Approach LOS	B	D				

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	73.1%	ICU Level of Service	D	
Analysis Period (min)	15			

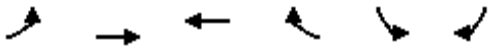
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	11	15	1081	17	7	520
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	11	15	1103	17	7	531
Pedestrians	10					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			179			
pX, platoon unblocked	0.31	0.31			0.31	
vC, conflicting volume	1401	1122			1130	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1179	268			297	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	93			98	
cM capacity (veh/h)	56	224			388	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	27	1120	184	354
Volume Left	11	0	7	0
Volume Right	15	17	0	0
cSH	98	1700	388	1700
Volume to Capacity	0.27	0.66	0.02	0.21
Queue Length 95th (ft)	25	0	1	0
Control Delay (s)	54.7	0.0	0.8	0.0
Lane LOS	F		A	
Approach Delay (s)	54.7	0.0	0.3	
Approach LOS	F			

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	144	61	1030	148	25	496
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.0		4.0	5.0
Lane Util. Factor	1.00	1.00	1.00		1.00	0.95
Frpb, ped/bikes	1.00	0.97	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1638	1421	1766		1671	3438
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1638	1421	1766		1671	3438
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	66	1120	161	27	539
RTOR Reduction (vph)	0	58	4	0	0	0
Lane Group Flow (vph)	157	8	1277	0	27	539
Confl. Peds. (#/hr)	1	5		17	17	
Heavy Vehicles (%)	10%	10%	4%	12%	8%	5%
Turn Type		custom			Prot	
Protected Phases			6		5	2
Permitted Phases	4	4				
Actuated Green, G (s)	12.1	12.1	70.4		4.5	78.9
Effective Green, g (s)	12.1	12.1	70.4		4.5	78.9
Actuated g/C Ratio	0.12	0.12	0.70		0.04	0.79
Clearance Time (s)	4.0	4.0	5.0		4.0	5.0
Vehicle Extension (s)	2.3	2.3	5.0		2.3	5.0
Lane Grp Cap (vph)	198	172	1243		75	2713
v/s Ratio Prot			c0.72		c0.02	0.16
v/s Ratio Perm	c0.10	0.01				
v/c Ratio	0.79	0.05	1.03		0.36	0.20
Uniform Delay, d1	42.7	38.9	14.8		46.4	2.6
Progression Factor	1.00	1.00	1.16		1.00	1.00
Incremental Delay, d2	18.4	0.1	28.2		1.7	0.2
Delay (s)	61.2	38.9	45.3		48.1	2.8
Level of Service	E	D	D		D	A
Approach Delay (s)	54.6		45.3			5.0
Approach LOS	D		D			A

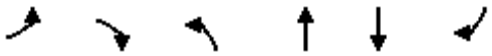
Intersection Summary			
HCM Average Control Delay	35.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	3	170	198	9	3	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	4	236	275	12	4	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		213				
pX, platoon unblocked						
vC, conflicting volume	288				526	281
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	288				526	281
tC, single (s)	4.4				7.1	6.3
tC, 2 stage (s)						
tF (s)	2.5				4.1	3.4
p0 queue free %	100				99	99
cM capacity (veh/h)	1116				414	730

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	240	288	14
Volume Left	4	0	4
Volume Right	0	12	10
cSH	1116	1700	594
Volume to Capacity	0.00	0.17	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.2	0.0	11.2
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	11.2
Approach LOS			B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	281	67	25	904	562	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1563	1671	1810	1810	1509
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1563	1671	1810	1810	1509
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	302	72	27	972	604	99
RTOR Reduction (vph)	0	58	0	0	0	37
Lane Group Flow (vph)	302	14	27	972	604	62
Confl. Peds. (#/hr)		1				
Heavy Vehicles (%)	2%	1%	8%	5%	5%	7%
Turn Type		custom	Prot			Perm
Protected Phases			1	6	2	
Permitted Phases	4	4				2
Actuated Green, G (s)	19.8	19.8	4.5	71.2	62.7	62.7
Effective Green, g (s)	19.8	19.8	4.5	71.2	62.7	62.7
Actuated g/C Ratio	0.20	0.20	0.04	0.71	0.63	0.63
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3	2.3	5.0	5.0	5.0
Lane Grp Cap (vph)	350	309	75	1289	1135	946
v/s Ratio Prot			0.02	c0.54	0.33	
v/s Ratio Perm	c0.17	0.01				0.04
v/c Ratio	0.86	0.05	0.36	0.75	0.53	0.07
Uniform Delay, d1	38.8	32.5	46.4	9.0	10.4	7.3
Progression Factor	1.00	1.00	1.00	1.00	0.83	0.38
Incremental Delay, d2	18.8	0.0	1.7	4.1	1.7	0.1
Delay (s)	57.6	32.5	48.1	13.1	10.4	2.9
Level of Service	E	C	D	B	B	A
Approach Delay (s)	52.8			14.0	9.4	
Approach LOS	D			B	A	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Attachment D
Crash Data

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

OR 43 (Hwy 003) from Walling Way to Hidden Springs plus 200 feet in all directions

January 1, 2006 through December 31, 2010

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2010														
REAR-END	0	0	7	7	0	0	0	6	0	7	0	2	1	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	0	1	0	1	1	0	0
TURNING MOVEMENTS	0	2	1	3	0	2	0	3	0	3	0	1	0	0
2010 TOTAL	0	2	9	11	0	2	0	9	1	10	1	4	1	0
YEAR: 2009														
REAR-END	0	4	7	11	0	7	0	8	3	10	1	3	0	0
TURNING MOVEMENTS	0	1	3	4	0	1	0	4	0	4	0	1	0	0
2009 TOTAL	0	5	10	15	0	8	0	12	3	14	1	4	0	0
YEAR: 2008														
REAR-END	0	7	7	14	0	7	0	13	1	14	0	3	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	0	0	0
2008 TOTAL	0	7	8	15	0	7	0	14	1	15	0	3	0	0
YEAR: 2007														
ANGLE	0	0	1	1	0	0	0	0	1	1	0	0	0	0
REAR-END	0	2	3	5	0	2	0	4	1	4	1	0	1	0
TURNING MOVEMENTS	0	1	1	2	0	2	0	1	1	0	2	0	0	0
2007 TOTAL	0	3	5	8	0	4	0	5	3	5	3	0	1	0
YEAR: 2006														
REAR-END	0	5	7	12	0	8	1	7	4	10	2	1	2	0
TURNING MOVEMENTS	0	2	2	4	0	3	0	4	0	3	1	2	0	0
2006 TOTAL	0	7	9	16	0	11	1	11	4	13	3	3	2	0
FINAL TOTAL	0	24	41	65	0	32	1	51	12	57	8	14	4	0

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

Attachment E
2013 Background Traffic Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	0	1	13	0	15	1	703	25	36	1176	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	0	1	15	0	18	1	740	26	38	1238	2
Pedestrians		3			9			4			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								1055				
pX, platoon unblocked	0.78	0.78		0.78	0.78	0.78				0.78		
vC, conflicting volume	2078	2095	1246	2083	2083	763	1243			775		
vC1, stage 1 conf vol	1318	1318		764	764							
vC2, stage 2 conf vol	761	777		1319	1319							
vCu, unblocked vol	2241	2262	1246	2247	2246	557	1243			572		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	91	100	96	100			95		
cM capacity (veh/h)	158	180	213	161	185	413	565			783		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	4	33	1	766	38	1240
Volume Left	2	15	1	0	38	0
Volume Right	1	18	0	26	0	2
cSH	173	239	565	1700	783	1700
Volume to Capacity	0.02	0.14	0.00	0.45	0.05	0.73
Queue Length 95th (ft)	2	12	0	0	4	0
Control Delay (s)	26.2	22.4	11.4	0.0	9.8	0.0
Lane LOS	D	C	B		A	
Approach Delay (s)	26.2	22.4	0.0		0.3	
Approach LOS	D	C				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	78.3%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	1	0	2	4	734	6	1	1204	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	2	1	0	2	4	773	6	1	1267	0
Pedestrians		1			9							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								378				
pX, platoon unblocked	0.78	0.78		0.78	0.78	0.78				0.78		
vC, conflicting volume	2054	2067	1268	2065	2064	785	1268			788		
vC1, stage 1 conf vol	1270	1270		793	793							
vC2, stage 2 conf vol	783	796		1272	1270							
vCu, unblocked vol	2212	2229	1268	2226	2225	581	1268			585		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	99	100	99	99			100		
cM capacity (veh/h)	177	198	207	172	196	399	554			771		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	2	4	4	779	1	1267
Volume Left	0	1	4	0	1	0
Volume Right	2	2	0	6	0	0
cSH	207	277	554	1700	771	1700
Volume to Capacity	0.01	0.01	0.01	0.46	0.00	0.75
Queue Length 95th (ft)	1	1	1	0	0	0
Control Delay (s)	22.6	18.2	11.5	0.0	9.7	0.0
Lane LOS	C	C	B		A	
Approach Delay (s)	22.6	18.2	0.1		0.0	
Approach LOS	C	C				

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	78.4%	ICU Level of Service	D	
Analysis Period (min)	15			

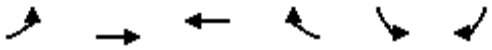
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	8	28	712	37	14	1190
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	9	33	749	39	15	1253
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			179			
pX, platoon unblocked	0.77	0.77			0.77	
vC, conflicting volume	1431	775			794	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1411	564			590	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	91			98	
cM capacity (veh/h)	99	365			767	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	42	788	432	835
Volume Left	9	0	15	0
Volume Right	33	39	0	0
cSH	229	1700	767	1700
Volume to Capacity	0.18	0.46	0.02	0.49
Queue Length 95th (ft)	17	0	1	0
Control Delay (s)	24.2	0.0	0.6	0.0
Lane LOS	C		A	
Approach Delay (s)	24.2	0.0	0.2	
Approach LOS	C			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	102	30	719	66	29	1157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5		3.5	4.5
Lane Util. Factor	1.00	1.00	1.00		1.00	0.95
Frpb, ped/bikes	1.00	0.96	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	1557	1856		1805	3574
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	1557	1856		1805	3574
Peak-hour factor, PHF	0.85	0.85	0.95	0.95	0.95	0.95
Adj. Flow (vph)	120	35	757	69	31	1218
RTOR Reduction (vph)	0	31	2	0	0	0
Lane Group Flow (vph)	120	4	824	0	31	1218
Confl. Peds. (#/hr)	11	6		6	6	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Turn Type		Perm			Prot	
Protected Phases	4		6		5	2
Permitted Phases		4				
Actuated Green, G (s)	12.9	12.9	79.5		4.6	88.1
Effective Green, g (s)	12.9	12.9	80.0		5.1	88.6
Actuated g/C Ratio	0.12	0.12	0.73		0.05	0.81
Clearance Time (s)	4.0	4.0	5.0		4.0	5.0
Vehicle Extension (s)	2.3	2.3	5.0		2.3	5.0
Lane Grp Cap (vph)	212	183	1350		84	2879
v/s Ratio Prot	c0.07		c0.44		0.02	c0.34
v/s Ratio Perm		0.00				
v/c Ratio	0.57	0.02	0.61		0.37	0.42
Uniform Delay, d1	45.9	43.0	7.4		50.9	3.2
Progression Factor	1.00	1.00	0.98		1.00	1.00
Incremental Delay, d2	2.5	0.0	1.9		1.6	0.5
Delay (s)	48.4	43.0	9.0		52.5	3.6
Level of Service	D	D	A		D	A
Approach Delay (s)	47.2		9.0			4.8
Approach LOS	D		A			A

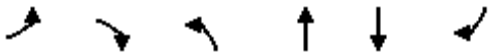
Intersection Summary			
HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	5	90	115	5	4	17
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	6	106	135	6	5	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		213				
pX, platoon unblocked						
vC, conflicting volume	141				256	138
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	141				256	138
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	1454				734	915

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	112	141	25
Volume Left	6	0	5
Volume Right	0	6	20
cSH	1454	1700	874
Volume to Capacity	0.00	0.08	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.4	0.0	9.2
Lane LOS	A		A
Approach Delay (s)	0.4	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	153	86	84	645	987	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1805	1547	1770	1881	1881	1575
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1805	1547	1770	1881	1881	1575
Peak-hour factor, PHF	0.90	0.90	0.95	0.95	0.95	0.95
Adj. Flow (vph)	170	96	88	679	1039	260
RTOR Reduction (vph)	0	84	0	0	0	70
Lane Group Flow (vph)	170	12	88	679	1039	190
Confl. Peds. (#/hr)		1	2			2
Heavy Vehicles (%)	0%	2%	2%	1%	1%	0%
Turn Type		Perm	Prot			Perm
Protected Phases	4		1	6	2	
Permitted Phases		4				2
Actuated Green, G (s)	13.5	13.5	8.5	87.5	75.0	75.0
Effective Green, g (s)	13.5	13.5	9.0	88.0	75.5	75.5
Actuated g/C Ratio	0.12	0.12	0.08	0.80	0.69	0.69
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3	2.3	5.0	5.0	5.0
Lane Grp Cap (vph)	222	190	145	1505	1291	1081
v/s Ratio Prot	c0.09		c0.05	0.36	c0.55	
v/s Ratio Perm		0.01				0.12
v/c Ratio	0.77	0.06	0.61	0.45	0.80	0.18
Uniform Delay, d1	46.7	42.7	48.8	3.4	12.1	6.2
Progression Factor	1.00	1.00	1.00	1.00	1.12	1.22
Incremental Delay, d2	13.6	0.1	5.5	1.0	5.0	0.3
Delay (s)	60.4	42.7	54.3	4.4	18.6	7.8
Level of Service	E	D	D	A	B	A
Approach Delay (s)	54.0			10.1	16.4	
Approach LOS	D			B	B	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	0	0	15	0	41	2	1084	27	22	510	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	0	0	18	0	48	2	1141	28	23	537	5
Pedestrians		2			10						2	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		3.5			3.5						3.5	
Percent Blockage		0			1						0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								1055				
pX, platoon unblocked	0.33	0.33		0.33	0.33	0.33				0.33		
vC, conflicting volume	1783	1771	541	1753	1760	1167	544			1179		
vC1, stage 1 conf vol	588	588		1169	1169							
vC2, stage 2 conf vol	1195	1184		583	590							
vCu, unblocked vol	2357	2322	541	2265	2287	493	544			530		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.2	5.5							
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	95	100	100	89	100	74	100			93		
cM capacity (veh/h)	94	136	544	158	159	186	1033			335		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	5	66	2	1169	23	542
Volume Left	5	18	2	0	23	0
Volume Right	0	48	0	28	0	5
cSH	94	178	1033	1700	335	1700
Volume to Capacity	0.05	0.37	0.00	0.69	0.07	0.32
Queue Length 95th (ft)	4	40	0	0	6	0
Control Delay (s)	45.1	36.8	8.5	0.0	16.6	0.0
Lane LOS	E	E	A		C	
Approach Delay (s)	45.1	36.8	0.0		0.7	
Approach LOS	E	E				

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	0	8	1	0	0	1	1121	0	1	529	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	0	9	1	0	0	1	1180	0	1	557	0
Pedestrians		2			11							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								378				
pX, platoon unblocked	0.30	0.30		0.30	0.30	0.30				0.30		
vC, conflicting volume	1743	1754	559	1761	1754	1191	559			1191		
vC1, stage 1 conf vol	561	561		1193	1193							
vC2, stage 2 conf vol	1182	1193		568	561							
vCu, unblocked vol	2301	2337	559	2362	2337	481	559			481		
tC, single (s)	7.1	6.5	6.3	8.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		7.1	5.5							
tF (s)	3.5	4.0	3.4	4.4	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	98	99	100	100	100			100		
cM capacity (veh/h)	161	151	509	112	152	177	1020			328		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	12	1	1	1180	1	557
Volume Left	2	1	1	0	1	0
Volume Right	9	0	0	0	0	0
cSH	355	112	1020	1700	328	1700
Volume to Capacity	0.03	0.01	0.00	0.69	0.00	0.33
Queue Length 95th (ft)	3	1	0	0	0	0
Control Delay (s)	15.5	37.4	8.5	0.0	16.0	0.0
Lane LOS	C	E	A		C	
Approach Delay (s)	15.5	37.4	0.0		0.0	
Approach LOS	C	E				

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	74.0%	ICU Level of Service	D	
Analysis Period (min)	15			

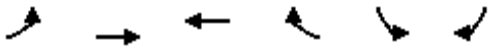
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	11	15	1098	17	7	529
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	13	18	1156	18	7	557
Pedestrians	10					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			179			
pX, platoon unblocked	0.30	0.30			0.30	
vC, conflicting volume	1468	1175			1184	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1392	402			432	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	67	90			98	
cM capacity (veh/h)	39	177			334	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	31	1174	193	371
Volume Left	13	0	7	0
Volume Right	18	18	0	0
cSH	71	1700	334	1700
Volume to Capacity	0.43	0.69	0.02	0.22
Queue Length 95th (ft)	43	0	2	0
Control Delay (s)	90.1	0.0	1.0	0.0
Lane LOS	F		A	
Approach Delay (s)	90.1	0.0	0.3	
Approach LOS	F			

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	146	62	1047	150	25	504
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5		3.5	4.5
Lane Util. Factor	1.00	1.00	1.00		1.00	0.95
Frpb, ped/bikes	1.00	0.97	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1641	1395	1766		1671	3438
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1641	1395	1766		1671	3438
Peak-hour factor, PHF	0.85	0.85	0.95	0.95	0.95	0.95
Adj. Flow (vph)	172	73	1102	158	26	531
RTOR Reduction (vph)	0	64	4	0	0	0
Lane Group Flow (vph)	172	9	1256	0	26	531
Confl. Peds. (#/hr)	1	5		17	17	
Heavy Vehicles (%)	10%	12%	4%	12%	8%	5%
Turn Type		Perm			Prot	
Protected Phases	4		6		5	2
Permitted Phases		4				
Actuated Green, G (s)	12.8	12.8	71.0		3.2	78.2
Effective Green, g (s)	12.8	12.8	71.5		3.7	78.7
Actuated g/C Ratio	0.13	0.13	0.72		0.04	0.79
Clearance Time (s)	4.0	4.0	5.0		4.0	5.0
Vehicle Extension (s)	2.3	2.3	5.0		2.3	5.0
Lane Grp Cap (vph)	210	179	1263		62	2706
v/s Ratio Prot	c0.10		c0.71		c0.02	0.15
v/s Ratio Perm		0.01				
v/c Ratio	0.82	0.05	0.99		0.42	0.20
Uniform Delay, d1	42.5	38.3	14.1		47.1	2.7
Progression Factor	1.00	1.00	1.15		1.00	1.00
Incremental Delay, d2	20.7	0.1	19.3		2.7	0.2
Delay (s)	63.2	38.3	35.5		49.8	2.8
Level of Service	E	D	D		D	A
Approach Delay (s)	55.8		35.5			5.0
Approach LOS	E		D			A

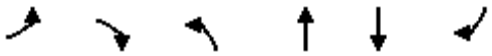
Intersection Summary			
HCM Average Control Delay	29.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	3	173	201	9	3	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	4	204	236	11	4	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)		213				
pX, platoon unblocked						
vC, conflicting volume	247				452	242
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	247				452	242
tC, single (s)	4.4				7.1	6.3
tC, 2 stage (s)						
tF (s)	2.5				4.1	3.4
p0 queue free %	100				99	99
cM capacity (veh/h)	1158				460	768

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	207	247	12
Volume Left	4	0	4
Volume Right	0	11	8
cSH	1158	1700	640
Volume to Capacity	0.00	0.15	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.2	0.0	10.7
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	10.7
Approach LOS			B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	285	68	25	918	571	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1563	1671	1810	1810	1509
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1563	1671	1810	1810	1509
Peak-hour factor, PHF	0.90	0.90	0.95	0.95	0.95	0.95
Adj. Flow (vph)	317	76	26	966	601	98
RTOR Reduction (vph)	0	60	0	0	0	35
Lane Group Flow (vph)	317	16	26	966	601	63
Confl. Peds. (#/hr)		1				
Heavy Vehicles (%)	2%	1%	8%	5%	5%	7%
Turn Type		Perm	Prot			Perm
Protected Phases	4		1	6	2	
Permitted Phases		4				2
Actuated Green, G (s)	20.4	20.4	3.2	70.6	63.4	63.4
Effective Green, g (s)	20.4	20.4	3.7	71.1	63.9	63.9
Actuated g/C Ratio	0.20	0.20	0.04	0.71	0.64	0.64
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3	2.3	5.0	5.0	5.0
Lane Grp Cap (vph)	361	319	62	1287	1157	964
v/s Ratio Prot	c0.18		0.02	c0.53	0.33	
v/s Ratio Perm		0.01				0.04
v/c Ratio	0.88	0.05	0.42	0.75	0.52	0.06
Uniform Delay, d1	38.6	32.0	47.1	9.0	9.8	6.8
Progression Factor	1.00	1.00	1.00	1.00	0.84	0.35
Incremental Delay, d2	20.4	0.0	2.7	4.1	1.6	0.1
Delay (s)	59.0	32.0	49.8	13.0	9.8	2.5
Level of Service	E	C	D	B	A	A
Approach Delay (s)	53.8			14.0	8.8	
Approach LOS	D			B	A	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Attachment F
2013 Total Traffic Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	0	0	15	0	41	2	1092	27	22	521	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	0	0	18	0	48	2	1149	28	23	548	5
Pedestrians		2			10						2	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		3.5			3.5						3.5	
Percent Blockage		0			1						0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								1055				
pX, platoon unblocked	0.33	0.33		0.33	0.33	0.33				0.33		
vC, conflicting volume	1803	1791	553	1773	1780	1176	556			1188		
vC1, stage 1 conf vol	599	599		1178	1178							
vC2, stage 2 conf vol	1204	1192		595	602							
vCu, unblocked vol	2411	2376	553	2319	2341	525	556			562		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.2	5.5							
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	95	100	100	88	100	73	100			93		
cM capacity (veh/h)	89	132	535	153	156	180	1023			328		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	5	66	2	1178	23	554
Volume Left	5	18	2	0	23	0
Volume Right	0	48	0	28	0	5
cSH	89	172	1023	1700	328	1700
Volume to Capacity	0.05	0.38	0.00	0.69	0.07	0.33
Queue Length 95th (ft)	4	42	0	0	6	0
Control Delay (s)	47.5	38.5	8.5	0.0	16.8	0.0
Lane LOS	E	E	A		C	
Approach Delay (s)	47.5	38.5	0.0		0.7	
Approach LOS	E	E				

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	74.8%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	0	8	1	0	0	1	1129	0	1	540	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	0	9	1	0	0	1	1188	0	1	568	0
Pedestrians		2			11							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								378				
pX, platoon unblocked	0.31	0.31		0.31	0.31	0.31				0.31		
vC, conflicting volume	1763	1774	570	1781	1774	1199	570			1199		
vC1, stage 1 conf vol	573	573		1202	1202							
vC2, stage 2 conf vol	1191	1202		580	573							
vCu, unblocked vol	2362	2398	570	2422	2398	515	570			515		
tC, single (s)	7.1	6.5	6.3	8.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		7.1	5.5							
tF (s)	3.5	4.0	3.4	4.4	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	98	99	100	100	100			100		
cM capacity (veh/h)	155	147	501	108	147	170	1010			320		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	12	1	1	1188	1	568
Volume Left	2	1	1	0	1	0
Volume Right	9	0	0	0	0	0
cSH	347	108	1010	1700	320	1700
Volume to Capacity	0.03	0.01	0.00	0.70	0.00	0.33
Queue Length 95th (ft)	3	1	0	0	0	0
Control Delay (s)	15.7	38.8	8.6	0.0	16.3	0.0
Lane LOS	C	E	A		C	
Approach Delay (s)	15.7	38.8	0.0		0.0	
Approach LOS	C	E				

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	74.4%	ICU Level of Service	D	
Analysis Period (min)	15			

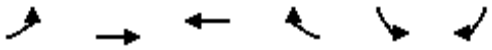
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	15	30	1091	32	21	526
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	18	35	1148	34	22	554
Pedestrians	10					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			179			
pX, platoon unblocked	0.30	0.30			0.30	
vC, conflicting volume	1496	1175			1192	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1488	408			465	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	45	80			93	
cM capacity (veh/h)	32	176			326	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	53	1182	207	369
Volume Left	18	0	22	0
Volume Right	35	34	0	0
cSH	71	1700	326	1700
Volume to Capacity	0.75	0.70	0.07	0.22
Queue Length 95th (ft)	87	0	5	0
Control Delay (s)	142.1	0.0	2.9	0.0
Lane LOS	F		A	
Approach Delay (s)	142.1	0.0	1.1	
Approach LOS	F			

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	152	62	1055	150	25	505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5		3.5	4.5
Lane Util. Factor	1.00	1.00	1.00		1.00	0.95
Frpb, ped/bikes	1.00	0.97	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1641	1395	1766		1671	3438
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1641	1395	1766		1671	3438
Peak-hour factor, PHF	0.85	0.85	0.95	0.95	0.95	0.95
Adj. Flow (vph)	179	73	1111	158	26	532
RTOR Reduction (vph)	0	63	4	0	0	0
Lane Group Flow (vph)	179	10	1265	0	26	532
Confl. Peds. (#/hr)	1	5		17	17	
Heavy Vehicles (%)	10%	12%	4%	12%	8%	5%
Turn Type		Perm			Prot	
Protected Phases	4		6		5	2
Permitted Phases		4				
Actuated Green, G (s)	13.1	13.1	70.7		3.2	77.9
Effective Green, g (s)	13.1	13.1	71.2		3.7	78.4
Actuated g/C Ratio	0.13	0.13	0.71		0.04	0.78
Clearance Time (s)	4.0	4.0	5.0		4.0	5.0
Vehicle Extension (s)	2.3	2.3	5.0		2.3	5.0
Lane Grp Cap (vph)	215	183	1257		62	2695
v/s Ratio Prot	c0.11		c0.72		c0.02	0.15
v/s Ratio Perm		0.01				
v/c Ratio	0.83	0.05	1.01		0.42	0.20
Uniform Delay, d1	42.4	38.0	14.4		47.1	2.8
Progression Factor	1.00	1.00	1.13		1.00	1.00
Incremental Delay, d2	22.6	0.1	22.0		2.7	0.2
Delay (s)	65.0	38.1	38.3		49.8	2.9
Level of Service	E	D	D		D	A
Approach Delay (s)	57.2		38.3			5.1
Approach LOS	E		D			A

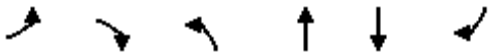
Intersection Summary			
HCM Average Control Delay	31.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	3	173	201	10	4	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	4	204	236	12	5	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		213				
pX, platoon unblocked						
vC, conflicting volume	248				453	242
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	248				453	242
tC, single (s)	4.4				7.1	6.3
tC, 2 stage (s)						
tF (s)	2.5				4.1	3.4
p0 queue free %	100				99	98
cM capacity (veh/h)	1156				460	768

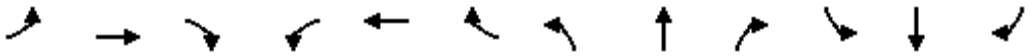
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	207	248	20
Volume Left	4	0	5
Volume Right	0	12	15
cSH	1156	1700	663
Volume to Capacity	0.00	0.15	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.2	0.0	10.6
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	10.6
Approach LOS			B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	287	68	25	925	576	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1563	1671	1810	1810	1509
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1563	1671	1810	1810	1509
Peak-hour factor, PHF	0.90	0.90	0.95	0.95	0.95	0.95
Adj. Flow (vph)	319	76	26	974	606	99
RTOR Reduction (vph)	0	60	0	0	0	36
Lane Group Flow (vph)	319	16	26	974	606	63
Confl. Peds. (#/hr)		1				
Heavy Vehicles (%)	2%	1%	8%	5%	5%	7%
Turn Type		Perm	Prot			Perm
Protected Phases	4		1	6	2	
Permitted Phases		4				2
Actuated Green, G (s)	20.5	20.5	3.2	70.5	63.3	63.3
Effective Green, g (s)	20.5	20.5	3.7	71.0	63.8	63.8
Actuated g/C Ratio	0.20	0.20	0.04	0.71	0.64	0.64
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3	2.3	5.0	5.0	5.0
Lane Grp Cap (vph)	363	320	62	1285	1155	963
v/s Ratio Prot	c0.18		0.02	c0.54	0.33	
v/s Ratio Perm		0.01				0.04
v/c Ratio	0.88	0.05	0.42	0.76	0.52	0.07
Uniform Delay, d1	38.5	31.9	47.1	9.1	9.8	6.8
Progression Factor	1.00	1.00	1.00	1.00	0.85	0.35
Incremental Delay, d2	20.4	0.0	2.7	4.2	1.6	0.1
Delay (s)	58.9	32.0	49.8	13.3	10.0	2.5
Level of Service	E	C	D	B	B	A
Approach Delay (s)	53.7			14.3	9.0	
Approach LOS	D			B	A	

Intersection Summary			
HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	0	1	13	0	15	1	720	25	36	1193	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	0	1	15	0	18	1	758	26	38	1256	2
Pedestrians		3			9			4			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		0			1			0			0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								1055				
pX, platoon unblocked	0.78	0.78		0.78	0.78	0.78				0.78		
vC, conflicting volume	2114	2131	1264	2119	2119	781	1261			793		
vC1, stage 1 conf vol	1336	1336		782	782							
vC2, stage 2 conf vol	779	795		1337	1337							
vCu, unblocked vol	2287	2308	1264	2293	2293	579	1261			594		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	90	100	96	100			95		
cM capacity (veh/h)	154	176	208	157	180	401	557			767		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	4	33	1	784	38	1258
Volume Left	2	15	1	0	38	0
Volume Right	1	18	0	26	0	2
cSH	168	233	557	1700	767	1700
Volume to Capacity	0.02	0.14	0.00	0.46	0.05	0.74
Queue Length 95th (ft)	2	12	0	0	4	0
Control Delay (s)	26.8	23.0	11.5	0.0	9.9	0.0
Lane LOS	D	C	B		A	
Approach Delay (s)	26.8	23.0	0.0		0.3	
Approach LOS	D	C				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	79.2%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	1	0	2	4	751	6	1	1221	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	2	1	0	2	4	791	6	1	1285	0
Pedestrians		1			9							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											2	
Upstream signal (ft)								378				
pX, platoon unblocked	0.77	0.77		0.77	0.77	0.77				0.77		
vC, conflicting volume	2090	2103	1286	2101	2099	803	1286			806		
vC1, stage 1 conf vol	1288	1288		811	811							
vC2, stage 2 conf vol	801	814		1290	1288							
vCu, unblocked vol	2263	2279	1286	2277	2275	598	1286			602		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	99	100	99	99			100		
cM capacity (veh/h)	172	193	203	167	191	388	546			755		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	2	4	4	797	1	1285
Volume Left	0	1	4	0	1	0
Volume Right	2	2	0	6	0	0
cSH	203	269	546	1700	755	1700
Volume to Capacity	0.01	0.01	0.01	0.47	0.00	0.76
Queue Length 95th (ft)	1	1	1	0	0	0
Control Delay (s)	23.0	18.6	11.7	0.0	9.8	0.0
Lane LOS	C	C	B		A	
Approach Delay (s)	23.0	18.6	0.1		0.0	
Approach LOS	C	C				

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	79.3%	ICU Level of Service	D	
Analysis Period (min)	15			

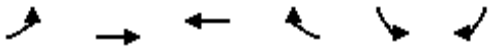
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	24	55	702	60	46	1175
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	65	739	63	48	1237
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			179			
pX, platoon unblocked	0.77	0.77			0.77	
vC, conflicting volume	1492	777			808	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1489	556			597	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	66	82			94	
cM capacity (veh/h)	83	366			754	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	93	802	461	825
Volume Left	28	0	48	0
Volume Right	65	63	0	0
cSH	180	1700	754	1700
Volume to Capacity	0.52	0.47	0.06	0.49
Queue Length 95th (ft)	65	0	5	0
Control Delay (s)	44.5	0.0	1.8	0.0
Lane LOS	E		A	
Approach Delay (s)	44.5	0.0	0.7	
Approach LOS	E			

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	113	30	731	66	29	1158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5		3.5	4.5
Lane Util. Factor	1.00	1.00	1.00		1.00	0.95
Frpb, ped/bikes	1.00	0.96	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	1557	1856		1805	3574
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	1557	1856		1805	3574
Peak-hour factor, PHF	0.85	0.85	0.95	0.95	0.95	0.95
Adj. Flow (vph)	133	35	769	69	31	1219
RTOR Reduction (vph)	0	31	2	0	0	0
Lane Group Flow (vph)	133	4	836	0	31	1219
Confl. Peds. (#/hr)	11	6		6	6	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Turn Type		Perm			Prot	
Protected Phases	4		6		5	2
Permitted Phases		4				
Actuated Green, G (s)	13.2	13.2	79.2		4.6	87.8
Effective Green, g (s)	13.2	13.2	79.7		5.1	88.3
Actuated g/C Ratio	0.12	0.12	0.72		0.05	0.80
Clearance Time (s)	4.0	4.0	5.0		4.0	5.0
Vehicle Extension (s)	2.3	2.3	5.0		2.3	5.0
Lane Grp Cap (vph)	217	187	1345		84	2869
v/s Ratio Prot	c0.07		c0.45		0.02	c0.34
v/s Ratio Perm		0.00				
v/c Ratio	0.61	0.02	0.62		0.37	0.42
Uniform Delay, d1	46.0	42.7	7.6		50.9	3.2
Progression Factor	1.00	1.00	0.98		1.00	1.00
Incremental Delay, d2	4.0	0.0	2.0		1.6	0.5
Delay (s)	50.0	42.7	9.4		52.5	3.7
Level of Service	D	D	A		D	A
Approach Delay (s)	48.5		9.4			4.9
Approach LOS	D		A			A

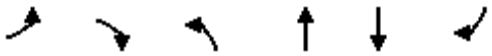
Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	5	90	115	6	5	28
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	6	106	135	7	6	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		213				
pX, platoon unblocked						
vC, conflicting volume	142				256	139
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	142				256	139
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	96
cM capacity (veh/h)	1453				734	915

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	112	142	39
Volume Left	6	0	6
Volume Right	0	7	33
cSH	1453	1700	882
Volume to Capacity	0.00	0.08	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.4	0.0	9.3
Lane LOS	A		A
Approach Delay (s)	0.4	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		



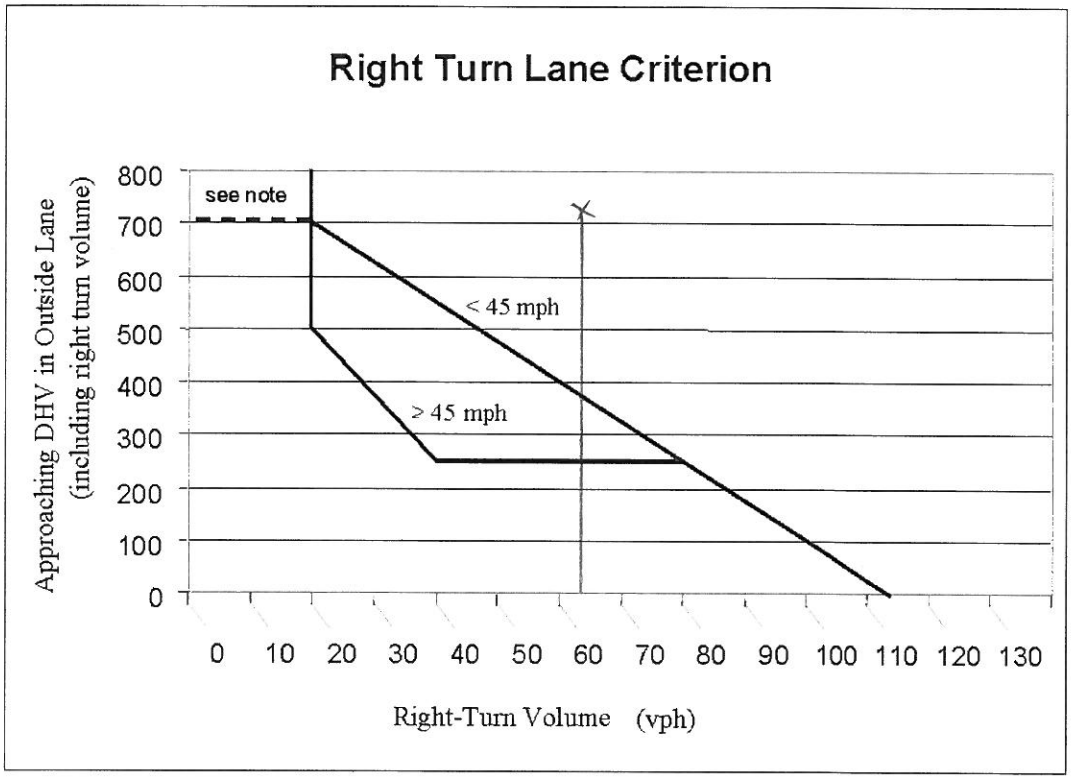
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	155	86	84	655	997	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1805	1547	1770	1881	1881	1575
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1805	1547	1770	1881	1881	1575
Peak-hour factor, PHF	0.90	0.90	0.95	0.95	0.95	0.95
Adj. Flow (vph)	172	96	88	689	1049	262
RTOR Reduction (vph)	0	84	0	0	0	70
Lane Group Flow (vph)	172	12	88	689	1049	192
Confl. Peds. (#/hr)		1	2			2
Heavy Vehicles (%)	0%	2%	2%	1%	1%	0%
Turn Type		Perm	Prot			Perm
Protected Phases	4		1	6	2	
Permitted Phases		4				2
Actuated Green, G (s)	13.6	13.6	8.5	87.4	74.9	74.9
Effective Green, g (s)	13.6	13.6	9.0	87.9	75.4	75.4
Actuated g/C Ratio	0.12	0.12	0.08	0.80	0.69	0.69
Clearance Time (s)	4.0	4.0	4.0	5.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3	2.3	5.0	5.0	5.0
Lane Grp Cap (vph)	223	191	145	1503	1289	1080
v/s Ratio Prot	c0.10		c0.05	0.37	c0.56	
v/s Ratio Perm		0.01				0.12
v/c Ratio	0.77	0.06	0.61	0.46	0.81	0.18
Uniform Delay, d1	46.7	42.6	48.8	3.5	12.3	6.2
Progression Factor	1.00	1.00	1.00	1.00	1.11	1.18
Incremental Delay, d2	14.3	0.1	5.5	1.0	5.3	0.3
Delay (s)	61.0	42.6	54.3	4.5	19.0	7.7
Level of Service	E	D	D	A	B	A
Approach Delay (s)	54.4			10.2	16.7	
Approach LOS	D			B	B	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Attachment G
Turn Lane Warrant
Worksheet

#12154

APPENDIX F



Note: If there is no right turn lane, a shoulder needs to be provided.
If this intersection is in a rural area and is a connection to a public street, a right turn lane is needed.

Figure F-3

II.) Criterion 2: Crash experience

The crash experience Criterion is satisfied when:

1.) Adequate trial of other remedies with satisfactory observance and enforcement has failed to reduce the accident frequency; and
2.) A history of crashes of the type susceptible to correction by a right turn lane; and
3.) The safety benefits outweigh the associated improvements costs; and
4.) The installation of the right turn lane does not adversely impact the operations of the roadway.

III.) Criterion 3: Special Cases

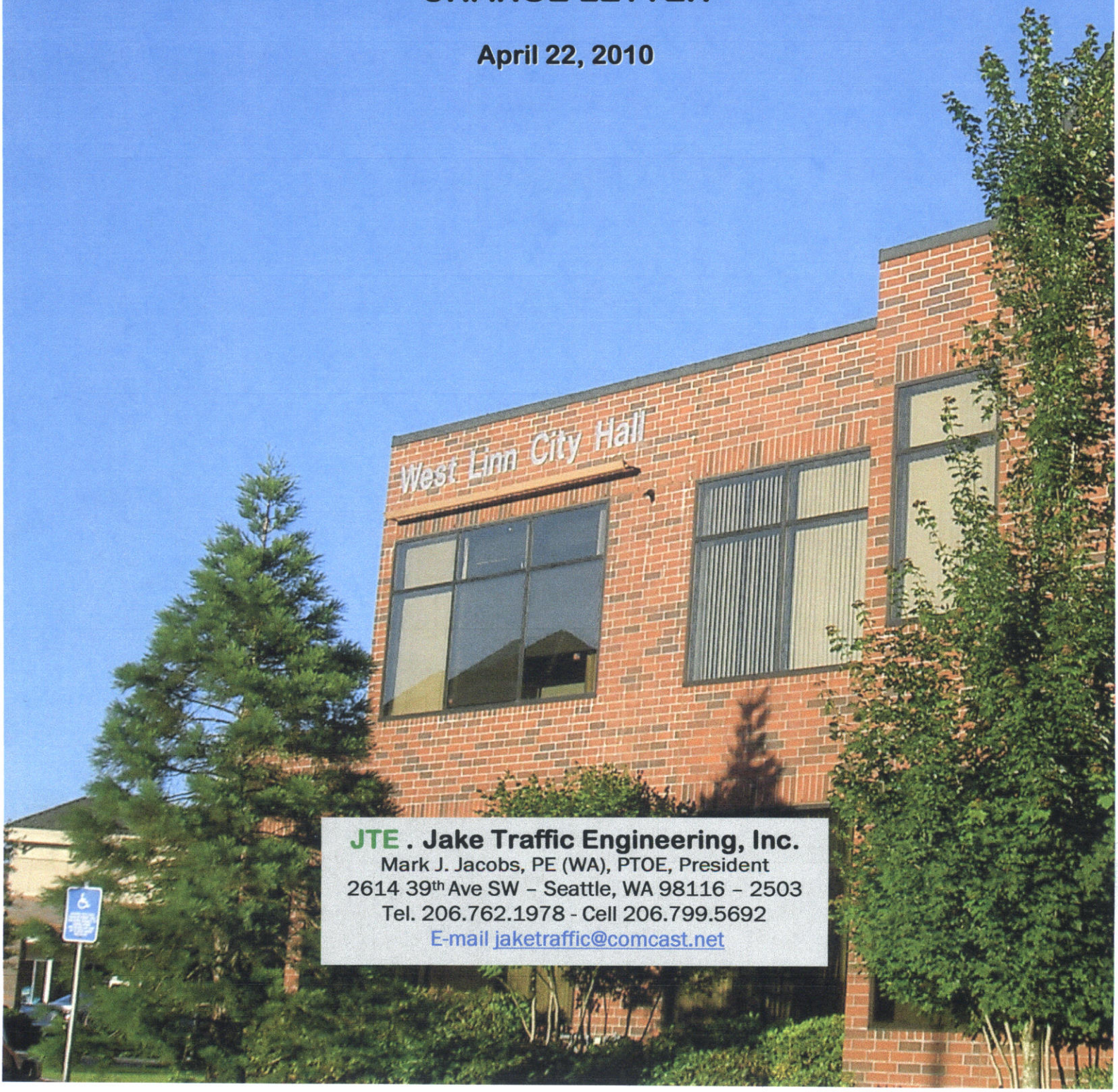
1.) Railroad crossings - If a railroad is parallel to the roadway and adversely affects right turns, a worst case scenario should be used in determining the

Attachment H
JTE Trip Generation and SDC Calculation Worksheet

West Linn, OR

MARYLHURST KEY BANK
TRIP GENERATION AND SYSTEM DEVELOPMENT CHARGE LETTER

April 22, 2010



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E-mail jaketraffic@comcast.net

April 22, 2010

Cassandra Rowan, IIDA, Associate Principal
CALLISON
1420 Fifth Avenue #2400
Seattle, WA 98101-2343

Re: Marylhurst Key Bank – West Linn, OR
Trip Generation and System Development Charge Letter

Dear Ms. Rowan,

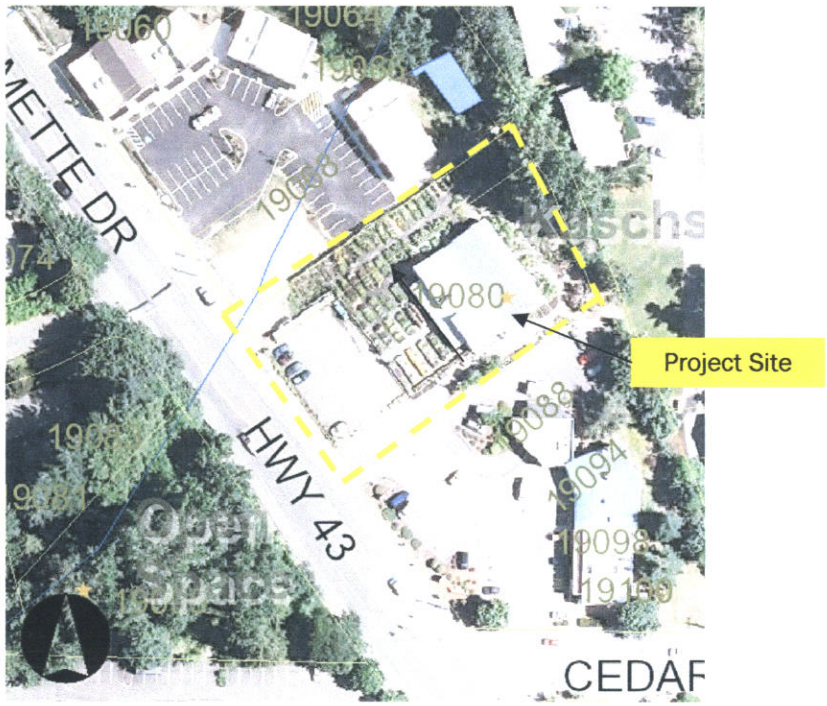
We have prepared this Trip Generation and System Development Charge Letter for the proposed 3,900 sf Key Bank with 3 drive-up service bays to be located 19080 Willamette Drive in West Linn, Oregon. The site is currently developed with 9,400 sf retail nursery building (data obtained from Clackamas County as provided to us by the project team) that is to removed to make way for the proposed bank project. An access is provided off of Willamette Drive and a connection to the strip retail development to north is also shown.

The advent of on-line banking, direct payroll deposit, cash machines and the like has drastically changed banking/credit union activities. In fact so many financial customers conduct transactions on-line, use cash machines and have direct deposit for payroll checks now that the recently published (November 2008) 8th Edition of the Institute of Transportation Engineers Trip Generation removed the bank data collected from prior years. These new realities have resulted in financial institutions generating far less traffic than in the past. And in fact the trip generation trend towards less traffic generation has continued. Jake Traffic Engineering, Inc. has collected substantial traffic data for banks that is used in this letter.

This letter provides our projection of the Trip Generation of the proposed Key Bank based on substantial traffic data collected at financial institutions in the Puget Sound region. The estimated traffic impact fee to the City is also calculated.

PROJECT INFORMATION

Figure 1 is a vicinity map which shows the location of the site and the surrounding street system. Below is an aerial of the site obtained from the West Linn MapIt Interactive Mapping.



The project site is presently developed with a 9,400 sf retail nursery building that is to be removed to make way for the proposed bank project.

Figure 2 shows a preliminary site plan prepared by Callison. The plan shows the 3,900 sf Key Bank, 14 parking stalls, three drive up service lanes and internal circulation. An access is provided off of Willamette Drive and a connection to the development to north is also provided.

The West Linn Transportation System Plan identifies Willamette Drive as a Principal Arterial. See plan gleaned from the City's Figure 8.1 Existing/Future Functional Class plan noted below:

TRIP GENERATION

Definitions

A vehicle trip is defined as a single direction vehicle movement with either the origin or destination inside the study site.

Traffic generated by development projects consists of the following:

Pass-By Trips:	Trips made as intermediate stops on the way from an origin to a primary trip destination.
Diverted Linked Trips:	Trips attracted from the traffic volume on a roadway within the vicinity of the generator but which require a diversion from that roadway to another roadway in order to gain access to the site.
Captured Trips:	Site trips shared by more than one land use in a multi-use development.
Primary Trips:	Trips made for the specific purpose of using the services of the project.

The Institute of Transportation Engineers (ITE) Trip Generation provides trip generation rates for a variety of land uses. All site trips made by all vehicles for all purposes, including commuter, visitor, and service and delivery vehicle trips are included in the trip generation values. As iterated earlier the trip generation rates contained in the Trip Generation for a financial institution are outdated in that the data does not account for further use of on-line banking, bank machines and direct payroll deposit. The City identified that an independent trip generation study could be performed to validate that financial institutions are tending to generate less traffic than they did prior to the advent of electronic bank services.

We have conducted an independent trip study that includes data from 8 facilities (3 - JTE, Inc sites and 5 - from Colleagues). The data collected are for three weekdays (Tuesday, Wednesday and Thursday). The JTE, Inc. data was collected for Key Banks in Kent, Covington and Maple Valley, Washington. The Maple Valley Bank is inordinately large (11,528 sf) versus the average size of 4,000 sf; thus the analysis uses 4,000 sf that assures a conservative trip generation estimate.

Correspondence with colleagues (Geri Reinart, PE and Bill Popp Jr. of Bill Popp & Associates) identified that they also have performed similar studies for banks in Washington. The data (attached in the appendix) is for the 5 - sites that included drive up service, 2 in Kirkland 3 in Burlington and included Friday data that is outside the typical data analyzed. Traffic data is traditionally collected on a typical weekday; Tuesday, Wednesday and Thursday.

The following table summarizes the germane data points from the collected trip generation data:

SUMMARY DRIVEWAY COUNTS PM PEAK HOUR (STREET PEAK)				
Location/Bank Name	PM peak hour TM's	size in sf	TM's/ksf	day of the week
Kirkland/Wells Fargo	68	5,130	13.26	Tuesday 09.20.2005
Kirkland/Frontier Bank	32	4,192	7.63	Thursday 09.15.2005
Burlington/Horizon	32	4,000	8.00	Wednesday 05.11.2005
	62	4,000	15.50	Thursday 05.12.2005
Burlington/Skagit	35	3,000	11.67	Wednesday 05.11.2005
	24	3,000	8.00	Thursday 05.12.2005
Burlington/Whidbey	98	6,118	16.02	Wednesday 05.11.2005
	61	6,118	9.97	Thursday 05.11.2005
Key Bank/Maple Valley (1)	29	4,000	7.25	Thursday 04.09.2009
	27	4,000	6.75	Tuesday 04.21.2009
Key Bank/Kent	19	3,420	5.56	Wednesday 06.24.2009
Key Bank/Covington	33	4,174	7.91	Thursday 06.18.2009
Average	**43.33**	**4,262.67**	**10.17**	**All Studied**

(1) - The bank size is 11,528 sf that is overly large; the size used for analysis is 4,000 sf the national average size.

The collected trip generation data indicates that a drive in financial institutions generate 10.17 PM peak hour trips (PMPHT's) per 1,000 sf for banks in Washington.

Review of the collected data above and comparing the 2009 data to the 2005 data shows the trip generation rates for financial institutions continuing to trend down. This trend down is attributed to the increasing use of on-line banking, bank machines and direct payroll deposit.

In addition to the JTE, Inc. data for Washington banks, we have obtained data for Oregon Portland Metro area banks from a Colleague Sean Morrison of Group McKenzie located in Portland, OR. Mr. Morrison conducted research on Portland Metro area Drive-in Bank Trip Generation. Based on his research the average Key Bank Trip Generation rate is 14.90. The following table summarizes the Key Bank data:

	Location	Date of Count	Size in 1,000 sf	PM peak hour vehicle trips	PM peak hour trip rate (Trips/KSF)
Key Bank	390 NW Burnside Rd, Gresham OR	6/10/2008	5.31	110	20.72
Key Bank	11665 SW Pacific Hwy, Tigard OR	7/8/2008	3.93	69	17.58
Key Bank	805 NW Murray Blvd, Portland OR	6/12/2008	3.84	61	15.89
Key Bank	1205 NE 102nd Ave, Portland OR	6/3/2008	7.2	113	15.69
Key Bank	6416 NE 117th Ave, Vancouver WA	7/15/2008	4.38	34	7.77
Key Bank	256 A Ave, Lake Oswego, OR	7/17/2008	3.86	38	9.85

Financial institutions also tend to attract a significant amount of pass-by traffic. Table 5.20 contained in the ITE Trip Generation Handbook Second Edition, June 2004 provides pass-by data for financial institutions. The table (copy attached) identifies the average pass-by rate for financial institutions with drive up service at 47 percent.

Thus the projected trip generation for the 3,900 sf Key Bank is between 21 new PM peak hour trips (10.17 PMPHT's/1,000 sf x 3,900 x 53%) and 31 PM peak hour trips (14.90 PMPHT's/1,000 sf x 3,900 x 53%).

The project site is presently developed with a 9,400 sf nursery building that is to be removed to make way for the proposed development. The ITE Trip Generation, Eighth Edition for Nursery Garden Center (ITE Land Use Code 817) identifies the PM peak hour rate at 3.80 which equates to 36 PM peak hour trips (9,400 sf / 1,000 sf x 3.80).

The Trip Generation Handbook does not contain pass-by data for a Nursery Garden Center. Willamette Drive is a primary street corridor and it is likely there would be some customers passing by the site. Review of JTE, Inc. documents and correspondence with Colleagues indicates that a 10% pass-by rate is appropriate for Nursery Garden Center Land Use. Accounting for a 10% pass-by rate the existing Nursery generated 32 (36 x 90%) new PM peak hour trips.

Based on our analysis the proposed Key Bank using Portland Metro area Key Bank data would generate 31 PM peak hour trips. The exiting nursery on the site generated 32 PM peak hour trips. Thus the re-development from a nursery to a Key Bank would not result in any added pm peak trips to the West Linn street grid.

TRAFFIC IMPACT MITIGATION

The City of West Linn, Oregon Systems Development Charges (SDC) identifies its traffic impact fees as follows:

Effective January 26, 2010 - Phase I

Type Of Use	Trips Per Use:	Factor	Reimbursement	Improvement	Administrative	Total
per factor of 1		1.00	$1,827	$3,914	$149	$5,890
Single family	Per house	1.01	$1,845	$3,953	$150	$5,948
Multi-family	Per MF Unit	0.62	$1,133	$2,427	$92	$3,652
Retail	Per 1,000ft2	2.536	$4,633	$9,926	$378	$14,937
Office	Per 1,000 ft2	1.314	$2,401	$5,143	$196	$7,740
Public Park	Per Acre	0.223	$407	$873	$33	$1,313
Public School	Per Student	0.08	$146	$313	$12	$471

Effective July 1, 2010

Type Of Use	Trips Per Use:	Factor	Reimbursement	Improvement	Administrative	Total
per factor of 1		1.00	$1,900	$4,069	$155	$6,124
Single family	Per house	1.01	$1,919	$4,110	$157	$6,186
Multi-family	Per MF Unit	0.62	$1,178	$2,523	$96	$3,797
Retail	Per 1,000ft2	2.536	$4,818	$10,319	$393	$15,530
Office	Per 1,000 ft2	1.314	$2,497	$5,347	$204	$8,048
Public Park	Per Acre	0.223	$424	$907	$35	$1,366
Public School	Per Student	0.08	$152	$326	$12	$490

The proposed project is a 3,900 sf Key Bank which is a commercial type facility. The above table does not identify a traffic impact fee for a commercial type use, thus we understand that generic fee rate is used. Pending the project schedule; beginning after July 1, 2010 the rate is $6,124 per new PM peak hour trip.

The re-development of the 9,400 sf Nursery into a 3,900 sf Key Bank facility is projected to generate no additional new PM peak hour trips to the West Linn street system. Thus no SDC should be required.

SUMMARY AND CONCLUSIONS

This letter was prepared to identify the trip generation for proposed Marylhurst Key Bank project. We have conducted extensive studies for financial institutions over the years and have seen the trip generation trend down as more people move to on-line banking, use cash machines and have direct deposit. Traffic data collected by us and Traffic Engineering colleagues was used to determine the trip generation rate of 10.17 in Washington. Data provided by a Colleague for Key Banks in the Portland Metro area (used for analysis) showed a trip generation rate of 14.90 PM peak hour trips/1,000 square feet. The studies we conducted and data obtained from other Traffic Engineering colleagues clearly showed that financial institutions generate less traffic than they did in the past.

Based on the obtained trip generation data for Key Banks in the Portland Metro area and data contained in the Trip Generation Handbook we project that the no net new PM peak hour trips to the City of West Linn street system would occur with the re-development project The City of West Linn has a SDC of $6,124 per PM peak hour trip (effective July 1, 2010). No net new trips are projected to be generated thus no SDC to the City should be required.

If you have any questions you can contact me at 206.762.1978 or email me at jaketraffic@comcast.com.

Very truly yours,

Mark J. Jacobs[1], Professional Traffic Consultant, President
JAKE TRAFFIC ENGINEERING, INC.

MJJ: mjj

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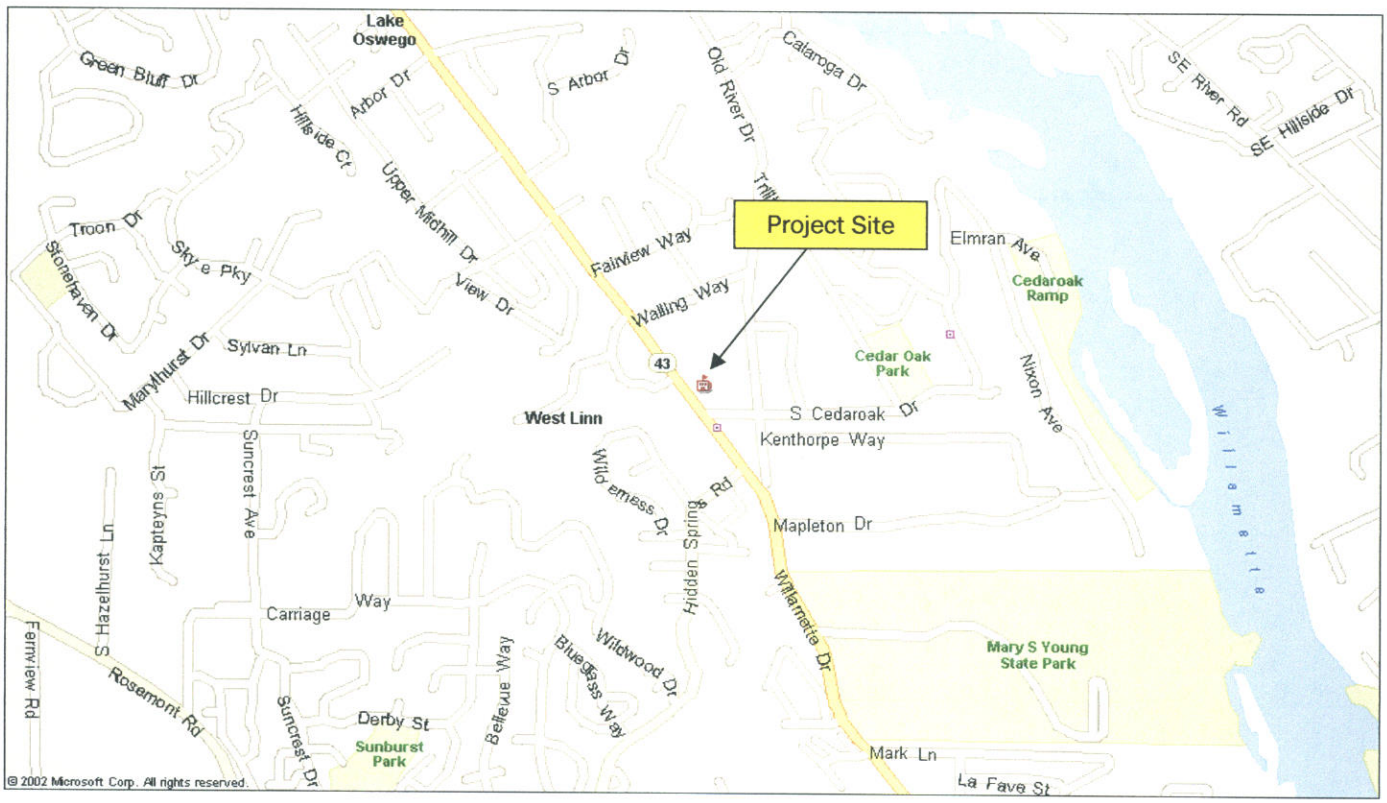
[1] - I am a Licensed Professional Engineer in Washington (#25744), a Professional Traffic Operations Engineer (Certificate #372) and a Fellow Member of the Institute of Transportation Engineers. Oregon Revised Statute **672.020 Practice of engineering without registration prohibited; seal required.** (1) In order to safeguard life, health and property, no person shall practice or offer to practice engineering in this state unless the person is registered and has a valid certificate to practice engineering issued under ORS 672.002 to 672.325. This report is a planning report that does not affect life, health and property and thus should not require a PE stamp; this report is signed as a Professional Traffic Consultant. I am in the process of applying for an Oregon PE License via the Comity agreement.

Project: Marylhurst Key Bank – West Linn
Location: 19080 Willamette Drive in West Linn, Oregon

NORTH



JTE, Inc.
FIGURE 1

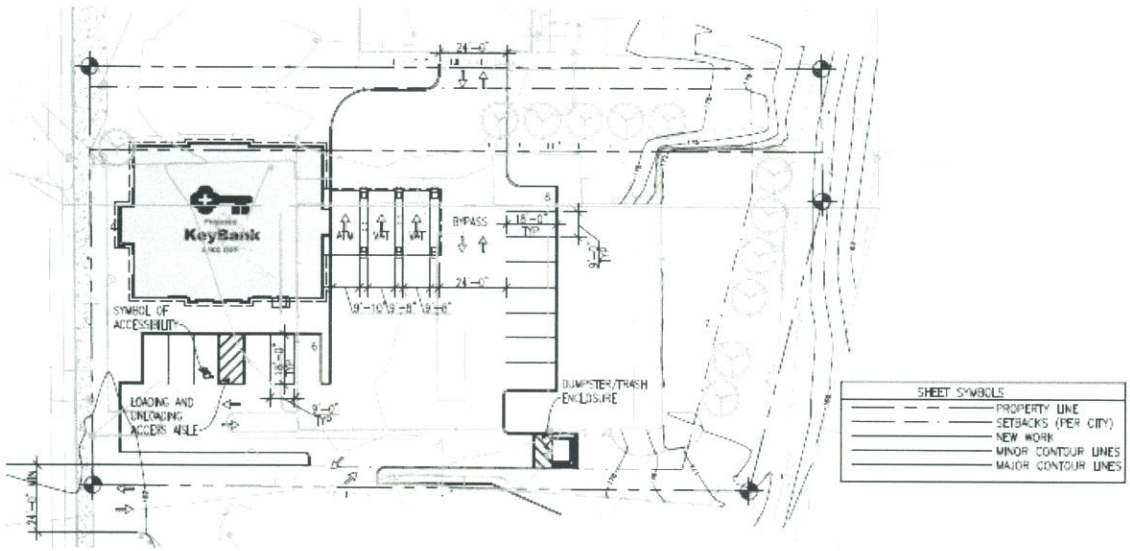
Reprint in Color Only

MARYLHURST KEY BANK – WEST LINN, OREGON
TRIP GENERATION AND SYSTEM DEVELOPMENT CHARGE LETTER

VICINITY MAP

Project: Marylhurst Key Bank – West Linn
Location: 19080 Willamette Drive in West Linn, Oregon

NORTH



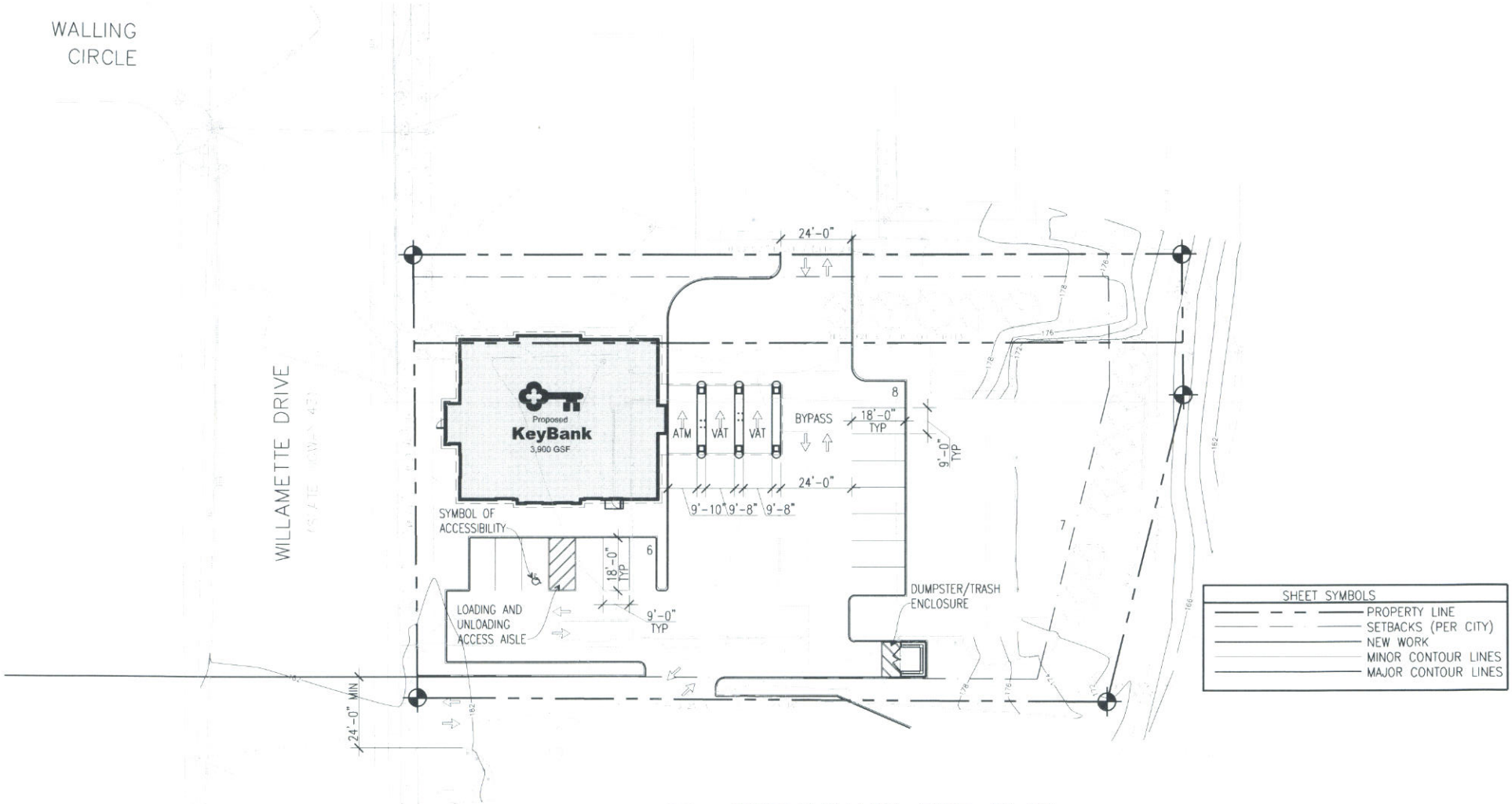
Note: an 8.5 x 11" preliminary site plan is included with this report

JTE, Inc.
FIGURE 2

Reprint in Color Only

MARYLHURST KEY BANK – WEST LINN, OREGON
TRIP GENERATION AND SYSTEM DEVELOPMENT CHARGE LETTER

PRELIMINARY SITE PLAN



1 PRELIMINARY SITE PLAN

KeyBank

CALLISON

SCALE: 1/32"=1'-0"

0 16 32 64

TRUE NORTH

KEY BANK: MARYLHURST
19080 WILLAMETTE DRIVE
WEST LINN, OR 97068
DRAWING NO.: 1A
APRIL 12, 2010
PROJECT NO.: 207251.68

APPENDIX

West Linn GIS Map

Parcel Lines

Preliminary Taxlot Lines

Freeway Lines

Unimproved Right-of-Way

Private Access

2010 West Linn GIS Map Disclaimer, click here

WestLinnBasemap_ex1004v1

West Linn GIS Map Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

From: Cassandra Rowan [mailto:Cassandra.Rowan@callison.com]
Sent: Thursday, April 22, 2010 3:12 PM
To: jaketraffic@comcast.net
Cc: Ebsworth,Cheryl; Vina Anderson; Bob Asahara
Subject: KeyBank-OR Marylhurst: Square Footage Clarification
Importance: High

Hi Jake,

We were able to confirm the following square footage numbers with Clackamas County:

3,200 SF	First Floor
3,200 SF	Basement
600 SF	Lean To Construction
2,400 SF	Covered Sales Area
9,400 SF	Total

Thank you,
Cass

Cassandra Rowan, IIDA
Associate Principal
cassandra.rowan@callison.com

CALLISON
1420 FIFTH AVENUE #2400
SEATTLE, WASHINGTON 98101-2343
T 1 206 623 4646 **F** 1 206 623 4625

ZONING INFORMATION & SITE DATA

ZONING AND RESTRICTIONS SHOWN HEREON WERE OBTAINED BY A GENERAL REQUEST AT THE PUBLIC COUNTER OF THE LOCAL ZONING AUTHORITY. NO REPRESENTATION IS MADE FOR THE ACCURACY OR COMPLETENESS OF SAID THIRD PARTY INFORMATION. THIS FIRM IS NOT AN EXPERT IN THE INTERPRETATION OF COMPLEX ZONING ORDINANCES, COMPLIANCE IS BEYOND THE SCOPE OF THIS SURVEY. ANY USER OF SAID INFORMATION IS URGED TO CONTACT THE LOCAL AGENCY DIRECTLY.

STATUS:	CURRENT ZONING DATED: OCTOBER 1, 2007		DISTRICT:	GENERAL COMMERCIAL
ITEM	REQUIRED	OBSERVED	SOURCE OF INFO	CITY OF WEST LINN
PERMITTED USE	COMMERCIAL	COMMERCIAL	ADDRESS	22500 SALAMO RD #1000 WEST LINE, OR
MINIMUM LOT AREA	NONE	37,971 SQ. FT.	PERSON CONTACTED	CITY WEB PAGE
MINIMUM FRONTAGE	35'	149.94'	DATE CONTACTED	03/18/10
MINIMUM LOT WIDTH	50'	148.94'	PHONE/FAX	503-560-4211/856-4106
MAXIMUM BUILDING COVERAGE	50%			
MINIMUM SETBACKS: FRONT	NONE	133.4'		
SIDE	7.5'	21.2'		
REAR	25'	35.4		
MAXIMUM BUILDING HEIGHT	35'	20.9'	SUBJECT PARCEL	
PARKING: REGULAR	0	0		
HANDICAP	0	0		
TOTAL	0	0		

VERTICAL DATUM – NGVD 29
BENCHMARK – CITY OF LAKE OSWEGO BENCHMARK NO. 210-1, ELEVATION = 178.817 FEET.
DESCRIPTION – A BRASS DISK ON TOP OF CURB, E. SIDE OF HWY 43, 80' S.E. OF CENTERLINE OF FAIRVIEW WAY, AT #18740 HWY 43, WEST LINN.

LEGEND

- GAS METER
- GAS VALVE
- SIGN
- BOLLARD
- FLAG POLE
- SUBJECT PROPERTY
- WALL
- SETBACK
- CENTERLINE
- EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- GAS LINE
- OVERHEAD POWER LINE
- SANITARY SEWER LINE
- STORMDRAIN LINE
- BUILDING
- CONCRETE SURFACE
- PAVEMENT SURFACE
- SITE BENCHMARK FOUND 5/8" IRON ROD WITH RED PLASTIC CAP ELEVATION = 182.14'
- STORMDRAIN CATCH BASIN
- SDCO STORMDRAIN CLEANOUT
- STORMDRAIN AREA DRAIN
- STORMDRAIN MANHOLE
- TRAFFIC SIGNAL BOX
- GUY WIRE
- LIGHT POLE
- POWER POLE
- POWER METER
- POWER VAULT
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- TELEPHONE MANHOLE
- 9' WIDE GARAGE DOOR
- ROOF DRAIN
- SCHEDULE B TITLE EXCEPTION
- SQ. FT. SQUARE FEET
- SSCO SANITARY SEWER CLEANOUT
- SANITARY SEWER MANHOLE

ALTA/ACSM LAND TITLE SURVEY

SURVEYOR'S CERTIFICATION

TO: KEYBANKNATION ASSOCIATION:

THIS IS TO CERTIFY THAT THIS PLAT AND THE SURVEY ON WHICH IT IS BASED, WERE MADE IN ACCORDANCE WITH THE "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS IN 2005, AND INCLUDES ITEMS 1, 2, 3, 4, 5, 6, 7(a), 7(b1), 7(c), 8, 9, 10, 11(b), & 13 OF TABLE A THEREOF PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NSPS AND IN EFFECT ON THE DATE OF THIS CERTIFICATION, UNDERSIGNED FURTHER CERTIFIES THAT IN MY PROFESSIONAL OPINION, AS A LAND SURVEYOR REGISTERED IN THE STATE OF OREGON, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.

FIELD WORK DATE: 03/15/2010
FIELD SURVEY: THOMAS G. NELSON, PLS 2351

For inquiries, questions or concerns about this survey contact inquiries@ussurveyor.com or call 1-800-867-8783 ext. 221

4929 Riverwind Pointe Drive
Evansville, Indiana 47715
"America's Land Surveyor"
1-800- TO SURVEY

KeyBank

CLACKAMAS COUNTY, STATE OF OREGON

19080 WILLAMETTE DRIVE
WEST LINN, OR 97068

ALTA/ACSM LAND TITLE SURVEY

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
JULY 25, 1986
THOMAS G. NELSON
#2351
RENEWAL 12/31/10

THOMAS G. NELSON
OREGON PLS 2351

SHEET 1 OF 1

10066 ALTA.DWG_ASH

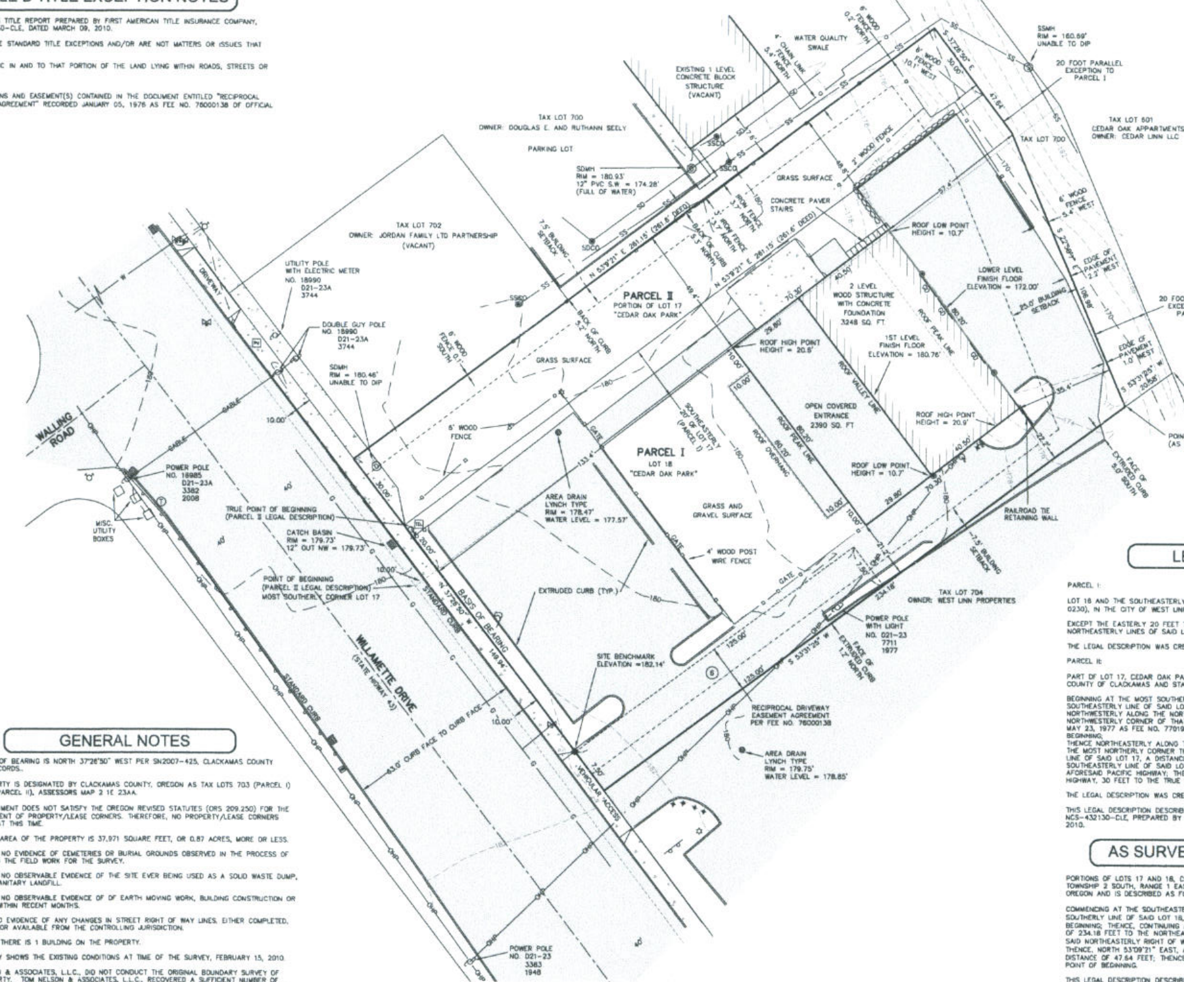
SCHEDULE B TITLE EXCEPTION NOTES

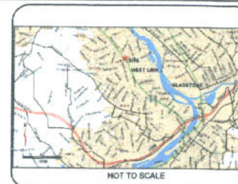
THIS SURVEY IS BASED ON A TITLE REPORT PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, COMMITMENT NO. NCS-432130-CLE, DATED MARCH 09, 2010.

ITEMS NOT LISTED BELOW ARE STANDARD TITLE EXCEPTIONS AND/OR ARE NOT MATTERS OR ISSUES THAT PERTAIN TO THIS SURVEY.

(4.) RIGHTS OF THE PUBLIC IN AND TO THAT PORTION OF THE LAND LYING WITHIN ROADS, STREETS OR HIGHWAYS.

(6.) THE TERMS, PROVISIONS AND EASEMENT(S) CONTAINED IN THE DOCUMENT ENTITLED "RECIPROCAL DRIVEWAY EASEMENT AGREEMENT" RECORDED JANUARY 05, 1976 AS FEE NO. 76000138 OF OFFICIAL RECORDS.





VICINITY MAP

LEGAL DESCRIPTION

PARCEL I:

LOT 18 AND THE SOUTHEASTERLY 20 FEET OF LOT 17, CEDAR OAK PARK (PLAT BOOK 404, PAGE 0230), IN THE CITY OF WEST LINN, COUNTY OF CLACKAMAS AND STATE OF OREGON.

EXCEPT THE EASTERLY 20 FEET THEREOF AS CUT OFF BY A LINE DRAWN PARALLEL WITH THE NORTHEASTERLY LINES OF SAID LOTS 17 AND 18.

THE LEGAL DESCRIPTION WAS CREATED PRIOR TO JANUARY 01, 2008.

PARCEL II:

PART OF LOT 17, CEDAR OAK PARK (PLAT BOOK 404, PAGE 0230), IN THE CITY OF WEST LINN, COUNTY OF CLACKAMAS AND STATE OF OREGON, DESCRIBED AS FOLLOWS:

BEGINNING AT THE MOST SOUTHERLY CORNER OF LOT 17; THENCE NORTHEASTERLY ALONG THE SOUTHEASTERLY LINE OF SAID LOT TO THE NORTHEASTERLY LINE OF PACIFIC HIGHWAY; THENCE NORTHWESTERLY ALONG THE NORTHEASTERLY LINE OF SAID HIGHWAY 20 FEET TO THE NORTHWESTERLY CORNER OF THAT TRACT CONVEYED TO REGIS RAUJOL, ET UX, BY DEED RECORDED MAY 23, 1977 AS FEE NO. 77019608, CLACKAMAS COUNTY RECORDS, AND THE TRUE POINT OF BEGINNING;
THENCE NORTHEASTERLY ALONG THE NORTHWESTERLY LINE OF SAID RAUJOL TRACT 261.6 FEET TO THE MOST NORTHERLY CORNER THEREOF; THENCE NORTHWESTERLY PARALLEL TO THE NORTHEASTERLY LINE OF SAID LOT 17, A DISTANCE OF 30 FEET; THENCE SOUTHWESTERLY PARALLEL TO THE SOUTHEASTERLY LINE OF SAID LOT 17, A DISTANCE OF 261.6 FEET TO THE NORTHEASTERLY LINE AFORESAID PACIFIC HIGHWAY; THENCE SOUTHEASTERLY ALONG THE NORTHEASTERLY LINE OF SAID HIGHWAY, 30 FEET TO THE TRUE POINT OF BEGINNING.

THE LEGAL DESCRIPTION WAS CREATED PRIOR TO JANUARY 01, 2008.

THIS LEGAL DESCRIPTION DESCRIBES THAT SAME PROPERTY FOUND IN TITLE COMMITMENT NO. NCS-432130-CLE, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, DATED MARCH 09, 2010.

AS SURVEYED LEGAL DESCRIPTION

PORTIONS OF LOTS 17 AND 18, CEDAR OAK PARK, SITUATED IN THE N.E. 1/4 OF SECTION 23, TOWNSHIP 2 SOUTH, RANGE 1 EAST, W.M., CITY OF WEST LINE, COUNTY OF CLACKAMAS, STATE OF OREGON AND IS DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEASTERLY CORNER OF LOT 18, "CEDAR OAK PARK"; THENCE, ALONG THE SOUTHERLY LINE OF SAID LOT 18, SOUTH 53°31'25" WEST, A DISTANCE 20.58 FEET TO THE POINT OF BEGINNING; THENCE, CONTINUING ALONG SAID SOUTHERLY LINE, SOUTH 53°31'25" WEST, A DISTANCE OF 234.18 FEET TO THE NORTHEASTERLY RIGHT OF WAY LINE OF WILLAMETTE DRIVE; THENCE, ALONG SAID NORTHEASTERLY RIGHT OF WAY LINE, NORTH 37°26'50" WEST, A DISTANCE OF 149.94 FEET; THENCE, NORTH 53°09'21" EAST, A DISTANCE OF 261.15 FEET; THENCE, SOUTH 37°26'50" EAST, A DISTANCE OF 47.64 FEET; THENCE SOUTH 22°50'07" EAST, A DISTANCE OF 106.98 FEET TO THE TRUE POINT OF BEGINNING.

THIS LEGAL DESCRIPTION DESCRIBES THAT SAME PROPERTY FOUND IN TITLE COMMITMENT NO. NCS-432130-CLE, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, DATED MARCH 09, 2010.

RY PE,PLS
DATE REVIEWED: ____________

INT. –
RECORD CLOSURE 1:XXXX

INT. –
DATE: –
FIELD REVIEWED

LEGAL DESCRIPTION REVIEWED BY:
INT. –

INT. –

CERTIFICATION IS ONLY TO THE PARTIES HEREIN NAMED.
THIS SURVEY IS NOT VALID FOR ANY FUTURE TRANSACTIONS OF THIS PROPERTY.

MARCH 26, 2010
△ REDLINE COMMENTS — MARCH 30, 2010
____________ , 2010
____________ , 2010
1066 alta.dwg 3/30/2010 2:24 PM

GENERAL NOTES

1. THE BASIS OF BEARING IS NORTH 37°26'50" WEST PER SN2007-425, CLACKAMAS COUNTY SURVEY RECORDS.
2. THE PROPERTY IS DESIGNATED BY CLACKAMAS COUNTY, OREGON AS TAX LOTS 703 (PARCEL I) AND 705 (PARCEL II), ASSESSORS MAP 2 1E 23AA.
3. THIS INSTRUMENT DOES NOT SATISFY THE OREGON REVISED STATUTES (ORS 209.250) FOR THE ESTABLISHMENT OF PROPERTY/LEASE CORNERS. THEREFORE, NO PROPERTY/LEASE CORNERS WERE SET AT THIS TIME.
4. THE TOTAL AREA OF THE PROPERTY IS 37,971 SQUARE FEET, OR 0.87 ACRES, MORE OR LESS.
5. THERE WAS NO EVIDENCE OF CEMETERIES OR BURIAL GROUNDS OBSERVED IN THE PROCESS OF PERFORMING THE FIELD WORK FOR THE SURVEY.
6. THERE WAS NO OBSERVABLE EVIDENCE OF THE SITE EVER BEING USED AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.
7. THERE WAS NO OBSERVABLE EVIDENCE OF OF EARTH MOVING WORK, BUILDING CONSTRUCTION OR ADDITIONS WITHIN RECENT MONTHS.
8. THERE IS NO EVIDENCE OF ANY CHANGES IN STREET RIGHT OF WAY LINES, EITHER COMPLETED, PROPOSED, OR AVAILABLE FROM THE CONTROLLING JURISDICTION.
9. CURRENTLY THERE IS 1 BUILDING ON THE PROPERTY.
10. THIS SURVEY SHOWS THE EXISTING CONDITIONS AT TIME OF THE SURVEY, FEBRUARY 15, 2010.
11. TOM NELSON & ASSOCIATES, L.L.C., DID NOT CONDUCT THE ORIGINAL BOUNDARY SURVEY OF THIS PROPERTY. TOM NELSON & ASSOCIATES, L.L.C., RECOVERED A SUFFICIENT NUMBER OF POINTS SET OR FOUND BY SURVEY NUMBER 2007-425, CLACKAMAS COUNTY SURVEY RECORDS, TO RECONSTRUCT THE LOCATION OF THE BOUNDARY AS SHOWN. THE BEARING, DISTANCE AND IMPROVEMENT LOCATIONS SHOWN ON THIS SURVEY ARE BASED ENTIRELY ON THE PROPERTY LINES AS DETERMINED BY THESE SURVEYS. EVEN THOUGH WE HAVE NO REASON TO QUESTION THESE SURVEYS, WE LIMIT OUR GUARANTEE TO THE EXTENT THAT OUR SURVEY IS CORRECT ONLY IF THE PROPERTY SURVEYED AND PLATTED IS, IN FACT, A TRUE AND ACCURATE SURVEY OF THE PROPERTY.
12. THE UTILITIES SHOWN ON THIS MAP ARE LOCATED FROM APPARENT SURFACE FEATURES AND PAINT MARKS ON THE GROUND AS LOCATED BY OTHERS. PIPE LOCATIONS ARE THE RESULT OF OUR DRAWING A STRAIGHT LINE BETWEEN SURFACE FEATURES OR SAID PAINT MARKS. SURFACE FEATURES MAY ALSO INCLUDE WATER VALVES, MANHOLES, ETC. THE PAINT MARKS ON THE GROUND ARE COLOR CODED AND TYPICALLY RESULT FROM OUR CALL TO THE "ONE CALL" UTILITY LOCATION CENTER.

WE MAKE NO GUARANTEE TO THE ACCURACY OR COMPLETENESS OF ANY UTILITY INFORMATION SHOWN ON OUR MAP. WE HAVE NO INFORMATION TO GUARANTEE THAT THE PIPES ARE IN FACT A STRAIGHT LINE BETWEEN SURFACE FEATURES OR THAT THE PAINT MARKS ARE ACCURATELY LOCATED.

This property is in Zone "X" of the Flood Insurance Rate Map, Community Panel No. 41005C0019D which has an effective date of JUNE 17, 2008 and IS NOT in a Special Flood Hazard Area. Field surveying was not performed to determine this zone. An elevation certificate may be needed to verify this determination or apply for an amendment from the Federal Emergency Management Agency.

POTENTIAL ENCROACHMENT NOTES

(1) NO APPARENT ENCROACHMENTS ON THIS SURVEY.

48 HOURS BEFORE YOU DIG CALL MISS DIG (800) 382-2764 (TOLL FREE) PRIOR TO CONSTRUCTION FOR UNDERGROUND UTILITY LOCATION

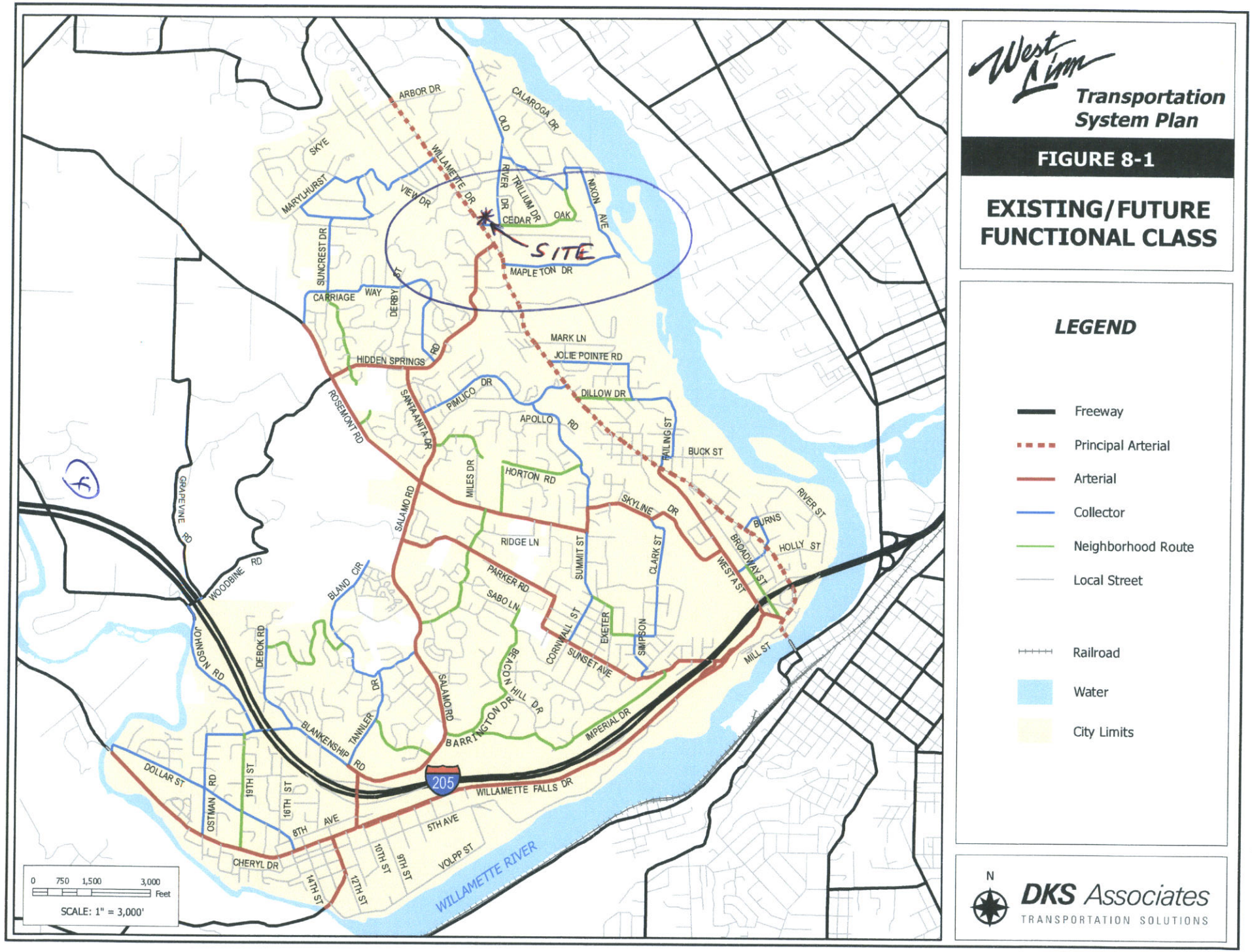

West Linn
Transportation System Plan
FIGURE 8-1
EXISTING/FUTURE FUNCTIONAL CLASS
LEGEND
Freeway
Principal Arterial
Arterial
Collector
Neighborhood Route
Local Street
Railroad
Water
City Limits
SITE
ARBOR DR
CALAROGA DR
OLD RIVER DR
WILLAMETTE DR
TRILLIUM DR
NIXON AVE
CEDAR
OAK
MAPLETON DR
VIEW DR
MARYLHURST
SKYE
SUNCREST DR
CARRIAGE WAY
DERBY CT
HIDDEN SPRINGS RD
MARK LN
JOLIE POINTE RD
DILLOW DR
PIMLICO DR
APOLLO RD
SANTA ANITA DR
ROSEMONT RD
GRAPEVINE RD
WOODBINE RD
MILES DR
HORTON RD
SALAMO RD
RIDGE LN
PARKER RD
SABO LN
BLAND CIR
JOHNSON RD
DEBOK RD
BLANKENSHIP RD
TANNLER DR
BARRINGTON DR
BEACON HILL DR
IMPERIAL DR
SUMMIT ST
CLARK ST
CORNWALL ST
EXETER
SIMPSON
SUNSET AVE
WESTA ST
BROADWAY ST
HOLLY ST
BURNS
SKYLINE DR
BUCK ST
FAILING ST
RIVER ST
MILL ST
WILLAMETTE FALLS DR
205
DOLLAR ST
OSTMAN RD
19TH ST
16TH ST
8TH AVE
5TH AVE
CHERYL DR
14TH ST
12TH ST
10TH ST
9TH ST
VOLPP ST
WILLAMETTE RIVER
0 750 1,500 3,000 Feet
SCALE: 1" = 3,000'
N
DKS Associates
TRANSPORTATION SOLUTIONS

Table 5.1 Land Uses and Time Periods with Pass-By Data

Land Use Code and Description	Time Period	Table	Figure
813 Free-Standing Discount Superstore	Weekday, p.m. Peak Period	5.2	—
815 Free-Standing Discount Store	Weekday, p.m. Peak Period	5.3	5.3
	Saturday, Midday Peak Period	5.4	5.4
816 Hardware/Paint Store	Weekday, p.m. Peak Period	5.5	—
820 Shopping Center	Weekday, p.m. Peak Period	5.6	5.5/5.6
	Saturday, Midday Peak Period	5.7	5.7
843 Automobile Parts Sales	Weekday, p.m. Peak Period	5.8	—
848 Tire Store	Weekday, p.m. Peak Period	5.9	—
850 Supermarket	Weekday, p.m. Peak Period	5.10	5.8
851 Convenience Market (Open 24 Hours)	Weekday, p.m. Peak Period	5.11	5.9
853 Convenience Market with Gasoline Pumps	Weekday, a.m. Peak Period	5.12	5.10
	Weekday, p.m. Peak Period	5.13	5.11
854 Discount Supermarket	Weekday, p.m. Peak Period	5.14	5.12
862 Home Improvement Superstore	Weekday, p.m. Peak Period	5.15	—
863 Electronics Superstore	Weekday, p.m. Peak Period	5.16	—
880 Pharmacy/Drugstore without Drive-Through Window	Weekday, p.m. Peak Period	5.17	—
881 Pharmacy/Drugstore with Drive-Through Window	Weekday, p.m. Peak Period	5.18	—
890 Furniture Store	Weekday, p.m. Peak Period	5.19	—
912 Drive-In Bank	Weekday, p.m. Peak Period	5.20	—
931 Quality Restaurant	Weekday, p.m. Peak Period	5.21	—
932 High-Turnover (Sit-Down) Restaurant	Weekday, p.m. Peak Period	5.22	5.13
934 Fast-Food Restaurant with Drive-Through Window	Weekday, a.m. Peak Period	5.23	—
	Weekday, p.m. Peak Period	5.24	5.14
935 Fast-Food Restaurant without Drive-Through Window and No Indoor Seating (*Specialized Land Use: Coffee/ Espresso Stand*)	Weekday	5.25/5.26	—
944 Gasoline/Service Station	Weekday, a.m. Peak Period	5.27	—
	Weekday, p.m. Peak Period	5.28	—
945 Gasoline/Service Station with Convenience Market	Weekday, a.m. Peak Period	5.29	5.15
	Weekday, p.m. Peak Period	5.30	5.16

Table 5.20
Pass-By Trips and Diverted Linked Trips
Weekday, p.m. Peak Period

Land Use 912—Drive-in Bank

SIZE (1,000 SQ. FT. GFA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	SOURCE
16.0	Overland Park, KS	Dec. 1988	20	4:30–5:30 p.m.	55	—	30	15	n/a	n/a
3.3	Louisville area, KY	Jul. 1993	n/a	4:00–6:00 p.m.	22	—	30	48	2,570	Barton-Aschman Assoc.
3.4	Louisville area, KY	Jul. 1993	n/a	4:00–6:00 p.m.	22	—	14	64	2,266	Barton-Aschman Assoc.
3.4	Louisville area, KY	Jul. 1993	75	4:00–6:00 p.m.	11	—	32	57	1,955	Barton-Aschman Assoc.
3.5	Louisville area, KY	Jun. 1993	53	4:00–6:00 p.m.	32	—	21	47	2,785	Barton-Aschman Assoc.
6.4	Louisville area, KY	Jun. 1993	66	4:00–6:00 p.m.	20	—	27	53	2,610	Barton-Aschman Assoc.

Average Pass-By Trip Percentage: 47

Table 5.21
Pass-By Trips and Diverted Linked Trips
Weekday, p.m. Peak Period

Land Use 931—Quality Restaurant

SEATS	SIZE (1,000 SQ. FT. GFA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	SOURCE
240	12	Louisville area, KY	Jul. 1993	38	4:00–6:00 p.m.	36	—	38	26	4,145	Barton-Aschman Assoc.
n/a	8	Orlando, FL	1992	168	4:00–8:00 p.m.	—	55	—	45	n/a	TPD Inc.
n/a	8.8	Orlando, FL	1992	84	2:00–6:00 p.m.	40	—	16	44	n/a	TPD Inc.
n/a	6.5	Orlando, FL	1995	173	2:00–6:00 p.m.	—	38	—	62	n/a	TPD Inc.

Average Pass-By Trip Percentage: 44

Nursery (Garden Center)
(817)

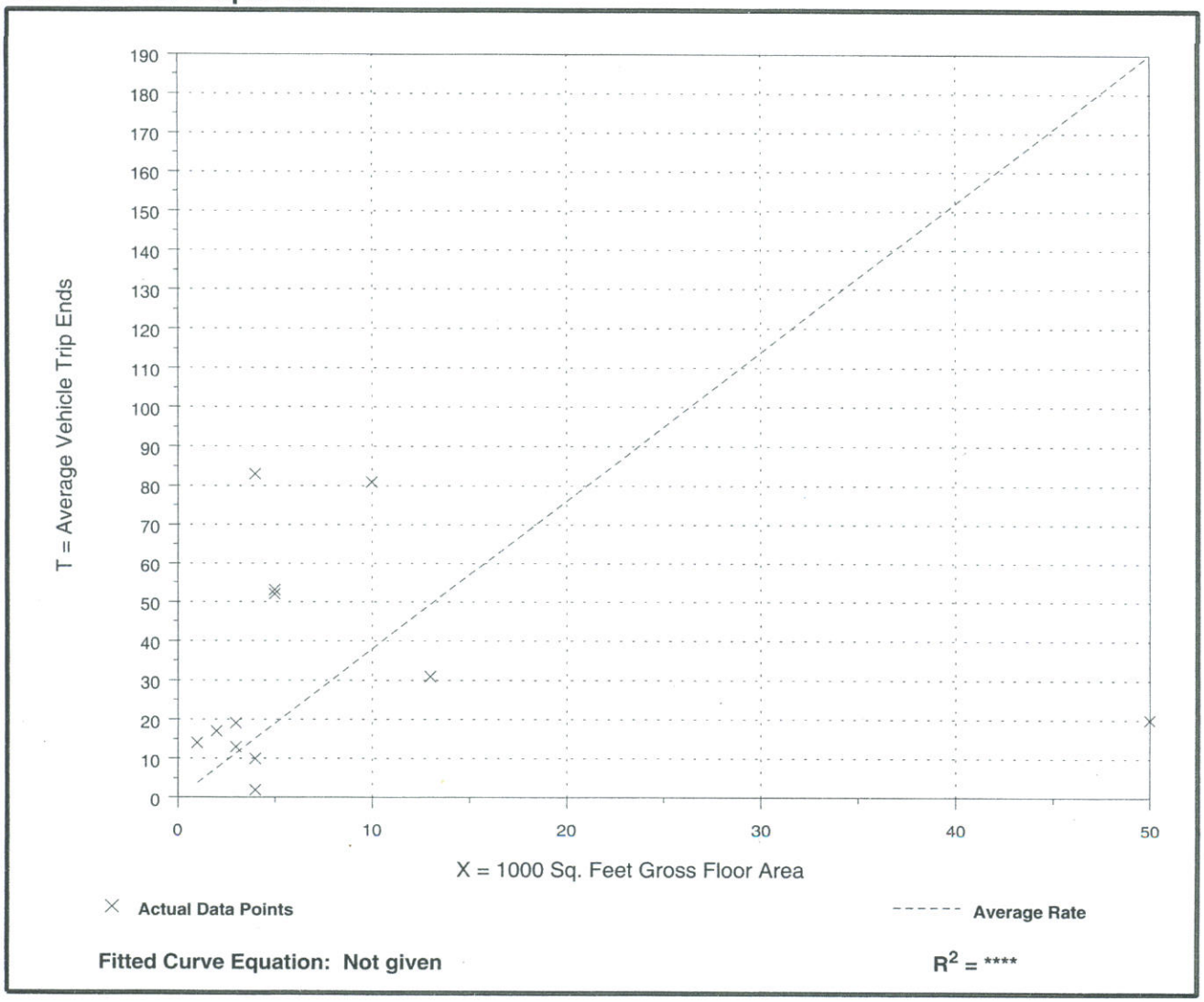
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 12
Average 1000 Sq. Feet GFA: 9
Directional Distribution: Not available

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
3.80	0.40 - 20.75	5.32

Data Plot and Equation



Fitted Curve Equation: Not given

R^2 = ****

FIFE WA

Appendix B. Traffic Impact Rate Table

Fee Rate per Daily VMT = $ 473

This table uses ITE [3] driveway trip rates, with adjustments, to derive the net new impact per unit of development, in vehicle-miles-traveled (VMT). See ITE for details of land use categories. [9]

RETAIL	*Signature elements: non-residential activity with traffic generated mainly by customers or patrons, not employees. Inbound and outbound are roughly equal most of the day. Some public facilities are thus "retail".*								
Community Retail Focus									
Apparel Store	870	1000 sq. ft.	5	66.4	20%	60%	1.52	32.3	$ 15,276
Shopping Ctr, under 65,000 sq. ft.[6]	820	1000 sq. ft.	50	70.0	50%	40%	1.52	31.9	$ 15,098
Convenience Market	851 - 853	1000 sq. ft.	3	640.0	85%	80%	1.52	29.2	$ 13,804
Hardware, paint store	816	1000 sq. ft.	21	51.3	25%	60%	1.52	23.4	$ 11,063
Building Materials & Lumber Store	812	1000 sq. ft.	11	45.2	20%	60%	1.52	22.0	$ 10,390
Specialty retail center (strip mall)	814	1000 sq. ft.	105	44.3	20%	60%	1.52	21.6	$ 10,197
Video Rental Store	896	1000 sq. ft.	7	140.0	55%	80%	1.52	19.2	$ 9,059
Pharmacy/Drug Store	880, 881	1000 sq. ft.	13	89.1	30%	80%	1.52	19.0	$ 8,968
Bank, drive-in	912	1000 sq. ft.	4	246.5	75%	80%	1.52	18.7	$ 8,861
Supermarket, discount supermarket	850, 854	1000 sq. ft.	62	102.2	45%	80%	1.52	17.1	$ 8,086
Bank, walk-in	911	1000 sq. ft.	5	156.5	65%	80%	1.52	16.6	$ 7,875
Destination Retail Focus									
Discount Club (membership warehouse store)	861	1000 sq. ft.	112	41.8	20%	20%	1.52	40.7	$ 19,234
Electronics Superstore	863	1000 sq. ft.	37	45.0	30%	20%	1.52	38.3	$ 18,134
Toy / Children's Superstore	864	1000 sq. ft.	46	60.0	30%	40%	1.52	38.3	$ 18,118
Free-standing Discount Superstore	813	1000 sq. ft.	154	49.2	20%	40%	1.52	35.9	$ 16,982
Freestanding Discount Store	815	1000 sq. ft.	111	56.0	30%	40%	1.52	35.8	$ 16,916
Home improvement superstore	862	1000 sq. ft.	100	29.8	10%	20%	1.52	32.6	$ 15,426
Factory Outlet Center	823	1000 sq. ft.	146	26.6	10%	20%	1.52	29.1	$ 13,764
Furniture Store	890	1000 sq. ft.	67	5.1	10%	20%	1.52	5.5	$ 2,619
Nursery (Garden Center)	817	Acres	4	96.2	10%	20%	1.52	105.3	$ 49,803
Nursery (Wholesale)	818	Acres	24	19.5	10%	10%	1.52	24.0	$ 11,356

SPECIAL CASES	*Signature Elements: Characteristics not matched with groups above*								
State Motor Vehicles / Licensing Agency	731	1000 sq. ft.	10	166.0	30%	50%	1.52	88.3	$ 41,777
Medical/Dental Office or Clinic	630, 720	1000 sq. ft.	71	33.0	10%	50%	1.52	22.6	$ 10,677
Hospital	610	1000 sq. ft.	500	17.6	10%	10%	1.52	21.6	$ 10,232
US Post Office	732	1000 sq. ft.	31	108.2	60%	70%	1.52	19.7	$ 9,334
Day Care	565	1000 sq. ft.	4	79.3	80%	95%	1.52	1.2	$ 570
Casino - Gaming Area basis	na	1000 sq. ft.	na	442.0	10%	2%	0.33	128.6	$ 60,851
Hotel/Motel - no convention facilities	310-312, 320	*Total Rooms* [2]	200	6.5	10%	10%	1.52	8.0	$ 3,785

Notes:

(1) V.S.P. (Vehicle Servicing Position) = space provided for one vehicle to be fueled or washed; not necessarily "pumps" or "hoses"
(2) Use total rooms for hotel/motel; 15% vacancy factor is incorporated in gross trip rate. Excludes facilities with major restaurants and meeting places.
(3) Institution of Transportation Engineers, Trip Generation, 7th edition. Some ITE rates are smoothed and averaged to eliminate statistically insignificant differences.
(4) Pass-by Diversion Reduction eliminates trips diverted from the stream of traffic "passing by" a retail site, which add no vehicle-miles of impact on the road system.
(5) Net New VMT Impact Trip Rate = ITE Gross Trip Rate * (1 - % Pass-by - % Intra-City) * Average Trip Length .
(6) For shopping centers over 65,000 sq. ft., see ITE for logarithmic trip rate formula.
(7) A retirement community is "self-contained" only if it provides a full range of facilities on-site for medical care, recreation, shopping, dining, etc. similar to a small city. For "assisted living" retirement facilities serving the non-driving elderly with caregivers employed on-site, use Congregate Care Centers under NON-RETAIL.
(8) Average size of developments comprising the ITE database. May be useful to distinguish between otherwise similar-sounding classes.
(9) Trip rate for any land use not covered by this table shall be determined by the Director of Public Works.
(10) Discounts half of each trip beginning and ending within city, to avoid charge for same impact at both ends.
(11) Average miles per net new trip on city streets (only), determined using Fife Traffic Forecasting Model
(12) This land use generates heavy truck travel. Truck surcharge must be calculated.
(13) Units expressed as 1000 sq. ft. refer to habitable gross building area, not land area. Units expressed as "acres" refer to land area.

Appendix B. Traffic Impact Rate Table

Fee Rate per Daily VMT = $ 473

This table uses ITE [3] driveway trip rates, with adjustments, to derive the net new impact per unit of development, in vehicle-miles-traveled (VMT). See ITE for details of land use categories. [8]

ITE LAND USE NAME	ITE LAND USE CODE	ITE LAND USE UNIT [13]	ITE AVERAGE SIZE [9]	ITE GROSS TRIP RATE / UNIT [3]	DISCOUNT PASS-BY TRIPS [4]	DISCOUNT INTRA-CITY TRIPS [10]	AVERAGE TRIP LENGTH [11]	NET NEW VMT IMPACT RATE / UNIT [5]	FEE PER LAND USE UNIT	
RESIDENTIAL	***Signature elements: places where people live with active lifestyles. Afternoon peak hour traffic is mainly inbound.***									
Single-family (detached) dwelling	210	Dwelling	214	9.6	0%	10%	1.59	13.7	$ 6,478	
Duplex (detached) dwelling	use 210	Dwelling	same	9.6	0%	10%	1.59	13.7	$ 6,478	
Multifamily, 3+ bedrooms	use 231	Dwelling	234	7.4	0%	10%	1.59	10.6	$ 5,016	
Multifamily, under 3 bedrooms	blend 220, 221, 230	Dwelling	250	6.0	0%	10%	1.59	8.6	$ 4,061	
Mobile Home Park	240	Dwelling	168	5.0	0%	10%	1.59	7.1	$ 3,378	
Self-contained Retirement Community [7]	251	Dwelling	862	3.7	0%	10%	1.59	5.3	$ 2,511	
Senior Adult Housing-Attached	252	Dwelling	147	3.5	0%	10%	1.59	5.0	$ 2,355	
Congregate Care Facility, Nursing Home, Elderly Housing (Attached)	*please see Non-Retail, assisted living facilities*									
NON-RETAIL	***Signature elements: places where most traffic is generated by employees, rather than customers, patrons or residents. Includes some public facilities and some assisted-living types of residential facilities. Peak hour main direction varies.***									
Employment Centers										
Business Park (multiple buildings)	770	1000 sq. ft.	379	12.8	0%	5%	1.11	13.5	$ 6,364	
Office Building (single building)	blend 710, 714, 715	1000 sq. ft.	150-300	11.4	0%	5%	1.11	12.0	$ 5,696	
Office Park (multiple buildings)	750	1000 sq. ft.	370	11.4	0%	5%	1.11	12.0	$ 5,696	
Research & Development Center	760	1000 sq. ft.	306	8.1	0%	5%	1.11	8.6	$ 4,045	%T[12]
General Light Industrial	110	1000 sq. ft.	357	7.0	0%	5%	1.11	7.3	$ 3,476	%T[12]
Industrial Park	130	1000 sq. ft.	447	7.0	0%	5%	1.11	7.3	$ 3,471	%T[12]
Manufacturing	140	1000 sq. ft.	325	3.8	0%	5%	1.11	4.0	$ 1,905	%T[12]
General Heavy Industrial	120	1000 sq. ft.	1544	1.5	0%	5%	1.11	1.6	$ 748	%T[12]
Trucking and Storage Facilities										
Warehousing (industrial)	150	1000 sq. ft.	354	4.96	0%	5%	1.11	5.2	$ 2,474	%T[12]
High-Cube Warehouse	152	1000 sq. ft.	302	1.50	0%	5%	1.11	1.6	$ 748	%T[12]
Truck Terminal	30	Acres	12	81.9	0%	5%	1.11	86.4	$ 40,850	%T[12]
Mini-warehouse (self-service storage)	151	1000 sq. ft.	58	2.50	0%	5%	1.11	2.6	$ 1,247	
Institutions										
Church, with weekday programs	560	1000 sq. ft.	17	30.0	20%	50%	1.11	13.3	$ 6,300	
School, high	530	1000 sq. ft.	225	12.9	10%	50%	1.11	6.4	$ 3,045	
School, elementary and junior-high	520	1000 sq. ft.	55	14.5	20%	50%	1.11	6.4	$ 3,043	
Church, no weekday programs	560	1000 sq. ft.	17	6.0	0%	50%	1.11	3.3	$ 1,575	
Assisted Living Facilities										
Nursing Home	620	Beds	99	2.4	10%	50%	1.11	1.2	$ 560	
Congregate Care Facility, Elderly Housing (Attached)	253	Living unit	164	2.0	10%	50%	1.11	1.0	$ 477	

Notes:

(1) V.S.P. (Vehicle Servicing Position) = space provided for one vehicle to be fueled or washed; not necessarily "pumps" or "hoses"

(2) Use total rooms for hotel/motel; 15% vacancy factor is incorporated in gross trip rate. Excludes facilities with major restaurants and meeting places.

(3) Institution of Transportation Engineers, Trip Generation, 7th edition. Some ITE rates are smoothed and averaged to eliminate statistically insignificant differences.

(4) Pass-by Diversion Reduction eliminates trips diverted from the stream of traffic "passing by" a retail site, which add no vehicle-miles of impact on the road system.

(5) Net New VMT Impact Trip Rate = ITE Gross Trip Rate * (1 - % Pass-by - % Intra-City) * Average Trip Length .

(6) For shopping centers over 65,000 sq. ft., see ITE for logarithmic trip rate formula.

(7) A retirement community is "self-contained" only if it provides a full range of facilities on-site for medical care, recreation, shopping, dining, etc. similar to a small city. For "assisted living" retirement facilities serving the non-driving elderly with caregivers employed on-site, use Congregate Care Centers under NON-RETAIL.

(8) Average size of developments comprising the ITE database. May be useful to distinguish between otherwise similar-sounding classes.

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Appendix B. Traffic Impact Rate Table

Fee Rate per Daily VMT =	$ 473

This table uses ITE [3] driveway trip rates, with adjustments, to derive the net new impact per unit of development, in vehicle-miles-traveled (VMT). See ITE for details of land use categories. [9]

RETAIL	*Signature elements: non-residential activity with traffic generated mainly by customers or patrons, not employees. Inbound and outbound are roughly equal most of the day. Some public facilities are thus "retail".*								
Automobile-related Sales									
Auto Care Center (multiple stores)	942	1000 sq. ft.	12	38.9	20%	10%	1.52	42.5	$ 20,121
Auto Parts Sales	843	1000 sq. ft.	8	61.9	50%	10%	1.52	42.3	$ 20,030
Car Sales, New and Used	841	1000 sq. ft.	30	33.3	10%	10%	1.52	41.0	$ 19,416
Automobile Servicing									
Carwash	947	V.S.P. [1]	7	75.0	50%	80%	1.52	11.4	$ 5,392
Service Station no Mini-Mart	944	V.S.P. [1]	8	168.6	80%	80%	1.52	10.2	$ 4,848
Service Station with Mini-Mart	945	V.S.P. [1]	10	162.8	80%	80%	1.52	9.9	$ 4,681
Tire Store	848, 849	V.S.P. [1]	8	32.0	50%	60%	1.52	9.7	$ 4,601
Quick-Lube Vehicle Servicing	941	V.S.P. [1]	2	51.9	50%	80%	1.52	7.9	$ 3,731
Social-Recreational Activities									
Drinking Place (pub, tavern, bar)	936	1000 sq. ft.	4	140.0	20%	70%	1.52	51.1	$ 24,157
Bowling Alley	437	1000 sq. ft.	24	33.3	10%	10%	1.52	41.0	$ 19,410
Health/Fitness Club	492	1000 sq. ft.	36	32.9	10%	10%	1.52	40.5	$ 19,177
Lodge, Fraternal Organization, with dining facilities	591	1000 sq. ft.	n/a	48.0	10%	50%	1.52	32.8	$ 15,530
Restaurant, quality	931	1000 sq. ft.	9	90.0	20%	70%	1.52	32.8	$ 15,521
Restaurant, sit-down	932	1000 sq. ft.	6	127.2	50%	70%	1.52	29.0	$ 13,712
Library	590	1000 sq. ft.	16	54.0	10%	70%	1.52	22.2	$ 10,482
Racquet/Tennis Club	491	1000 sq. ft.	48	14.0	10%	10%	1.52	17.3	$ 8,170
Restaurant, fast food	934	1000 sq. ft.	4	496.0	80%	90%	1.52	15.1	$ 7,132
Recreational Community Center	495	1000 sq. ft.	65	22.9	10%	70%	1.52	9.4	$ 4,441

Notes:

(1) V.S.P. (Vehicle Servicing Position) = space provided for one vehicle to be fueled or washed; not necessarily "pumps" or "hoses"

(2) Use total rooms for hotel/motel; 15% vacancy factor is incorporated in gross trip rate. Excludes facilities with major restaurants and meeting places.

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(6) For shopping centers over 65,000 sq. ft., see ITE for logarithmic trip rate formula.

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Mark J. Jacobs, PE, PTOE

From: Sean Morrison [SMorrison@grpmack.com]
Sent: Friday, June 12, 2009 9:19 AM
To: Mark J. Jacobs, PE, PTOE
Subject: RE: tg data
Attachments: 2009 Annual Meeting and Exhibit-SM.pdf

Mark,

I enjoyed chatting with you too.

Attached is a copy of the research I performed on Portland Metro area Drive-in Bank trip generation. And here are the KeyBank sites in particular. The average KeyBank rate is 14.90.

Key Bank	390 NW Burnside Rd, Gresham OR	6/10/2008	5.31	110	20.72
Key Bank	11665 SW Pacific Hwy, Tigard OR	7/8/2008	3.93	69	17.58
Key Bank	805 NW Murray Blvd, Portland OR	6/12/2008	3.84	61	15.89
Key Bank	1205 NE 102nd Ave, Portland OR	6/3/2008	7.2	113	15.69
Key Bank	6416 NE 117th Ave, Vancouver WA	7/15/2008	4.38	34	7.77
Key Bank	256 A Ave, Lake Oswego, OR	7/17/2008	3.86	38	9.85

I'm sure we will talk again soon.

Sean Morrison

GROUP
MACKENZIE

RiverEast Center | 1515 SE Water Avenue, Suite 100 | Portland, OR 97214
P.O. Box 14310 | Portland, OR 97293
T: 503.224.9560 | F: 503.228.1285 | www.groupmackenzie.com | vCard
PORTLAND, OREGON | SEATTLE, WASHINGTON | VANCOUVER, WASHINGTON

From: Mark J. Jacobs, PE, PTOE [mailto:JakeTraffic@comcast.net]
Sent: Thursday, June 11, 2009 4:57 PM
To: Sean Morrison
Cc: Patrick Flanagan
Subject: tg data

Shawn

It was nice chatting with you earlier.

Attached is a TG report I conducted. I look forward to receiving your TG data; in particular the Key Bank data.

Mark
206.762.1978
206.799.5692 cell

4/22/2010

(11)

Mark J. Jacobs, PE, PTOE

From: David Casey [david.casey@ci.maple-valley.wa.us]
Sent: Friday, October 09, 2009 4:29 PM
To: Mark J. Jacobs, PE, PTOE
Subject: FW: Key Bank Review

Follow Up Flag: Follow up
Flag Status: Completed

Mark
I believe that this is what you are looking for.
Dave

-----Original Message-----
From: John Davies [mailto:J.Davies@fehrandpeers.com]
Sent: Friday, October 09, 2009 3:17 PM
To: David Casey
Cc: Jana Janarthanan
Subject: Key Bank Review

David,

We have completed our review of the July 20, 2009 Key Bank Revised Trip Generation Analysis and Application for Capacity Reservation Certificate. This report provided revised information including locally collected trip generation data at 3 study sites. The trip generation rate was 7.9 PM peak hour trips/1000 sf.

The final trip generation after adjustment for diverted trips is 18 net new pm peak hour trips. This value will be used in the concurrency evaluation.

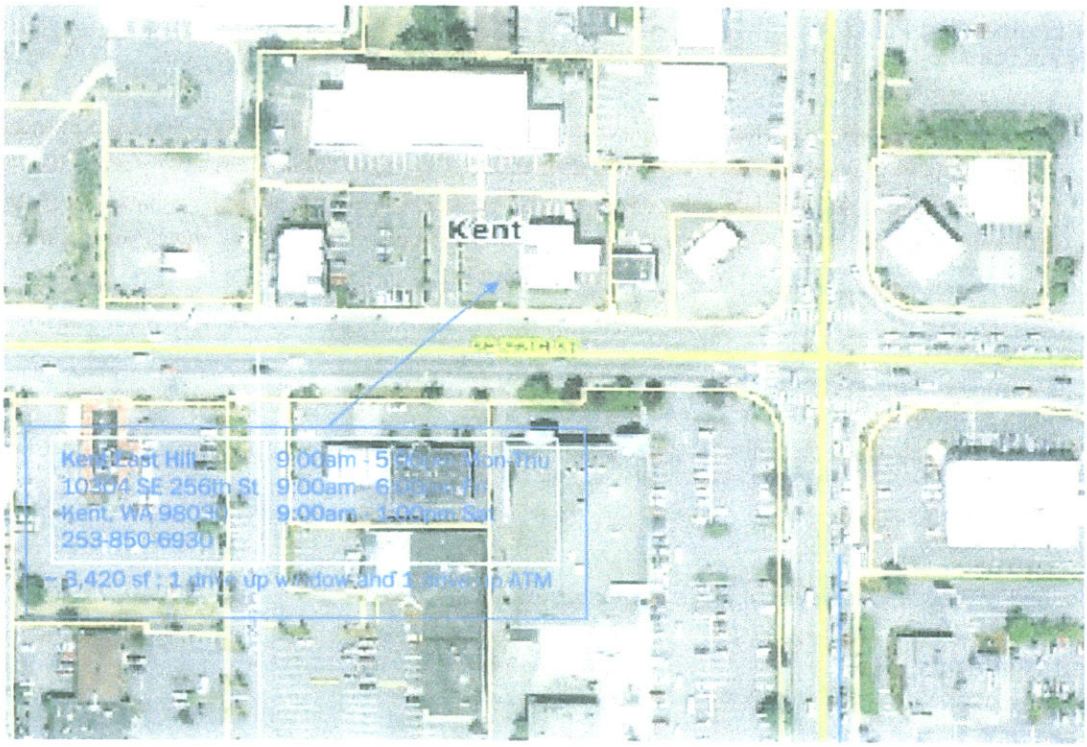
We accept the trip generation as presented and will proceed with the concurrency evaluation and report.

Feel free to contact me with any questions.

John Davies, AICP, PTP
Associate
Fehr & Peers
11410 NE 122nd Way, Suite 320
Kirkland, WA 98034-6927
T: 425-820-0100 x213
F: 425-821-1750

12

Trip Generation Study Key Bank Sites:


Kent
Kent East Hill
10304 SE 256th St
Kent, WA 98030
253-850-6930
9:00am - 5:00pm Mon-Thu
9:00am - 6:00pm Fri
9:00am - 1:00pm Sat
~ 3,420 sf ; 1 drive up window and 1 drive up ATM

Existing Key Bank - Covington (Thursday 06.18.2009)						
Time	Driveway 1		# of cars that entered the drive through bay/atm area	Driveway 2		Total
	Enter	Exit		Enter	Exit	
1600 - 1614	4	5	1			9
1615 - 1629	7	6	4			13
1630 - 1644	10	6	3			16
1645 -1659	7	9	0			16
1700 - 1714	1	6	0			7
1715 - 1729	2	5	2			7
1730 - 1744	1	2	1			3
1745 - 1800	1	1	0			2

All cars entered/exited through driveway 1

There are 2 drive through bays and 1 drive through atm. There also is 1 walk-up atm.

Traffic data collected off of SR - 516 to the west in Covington shows the PM peak hour is 1645 to 1745.

Existing Key Bank - Maple Valley (Thursday 04.09.2009)					
Time	Driveway 1 (North)		Driveway 2 (South)		Total
	Enter	Exit	Enter	Exit	
1600 - 1614	6	2	2	5	15
1615 - 1629	5	2	2	6	15
1630 - 1644	3	0	1	4	8
1645 -1659	**1**	**0**	**4**	**4**	**9**
1700 - 1714	**5**	**3**	**0**	**4**	**12**
1715 - 1729	**2**	**0**	**0**	**2**	**4**
1730 - 1744	**1**	**1**	**1**	**1**	**4**
1745 - 1800	0	2	0	0	2

Existing Key Bank - Maple Valley (Tuesday 04.21.2009)					
Time	Driveway 1 (North)		Driveway 2 (South)		Total
	Enter	Exit	Enter	Exit	
1600 - 1614	4	3	2	3	12
1615 - 1629	3	1	1	4	9
1630 - 1644	3	0	0	3	6
1645 -1659	**4**	**1**	**1**	**4**	**10**
1700 - 1714	**1**	**2**	**1**	**1**	**5**
1715 - 1729	**2**	**2**	**2**	**4**	**10**
1730 - 1744	**1**	**1**	**0**	**0**	**2**
1745 - 1800	0	0	0	0	0

Existing Key Bank - Kent SE 256th St. (Wednesday 06.24.2009)					
Time	Driveway 1 (West)		Driveway 2 (East)		Total
	Enter	Exit	No Enter	Exit	
1600 - 1614	3	4	0	1	8
1615 - 1629	2	2	0	0	4
1630 - 1644	1	2	0	0	3
1645 -1659	3	1	0	0	4
1700 - 1714	1	3	0	1	5
1715 - 1729	0	2	0	0	2
1730 - 1744	1	2	0	0	3
1745 - 1800	1	0	0	1	2

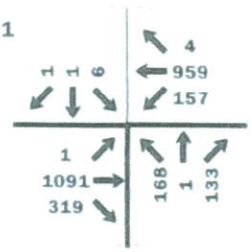
19 highest

NORTH

LEGEND

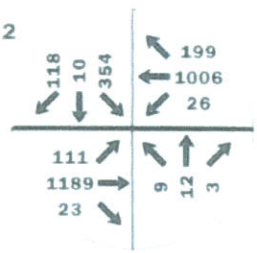
Approach Lane & Direction

1



Tuesday
10.30.07
1645-1745

2

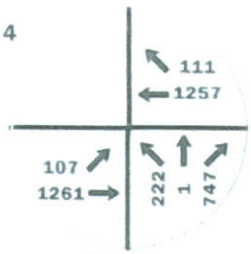


Tuesday
10.30.07
1700-1800

3

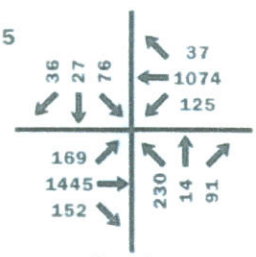
Tuesday
10.30.07
1630-1730

4



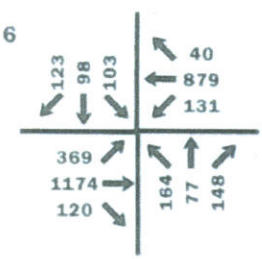
Tuesday
10.30.07
1645-1745

5



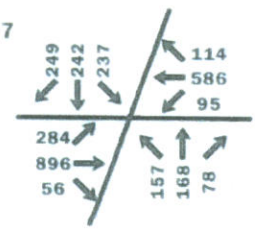
Tuesday
10.30.07
1645-1745

6



Tuesday
10.30.07
1645-1745

7



SR 516 at
SE Wax Rd.

JTE, Inc.

FIGURE 5

Reprint in Color Only

COVINGTON PROFESSIONAL ARTS BUILDING - COVINGTON
TRAFFIC IMPACT ANALYSIS

EXISTING PM PEAK HOUR TRAFFIC VOLUMES

ATTACHMENT 1

KIRKLAND BANKS DRIVEWAY COUNTS

Wells Faro Bank at 460 Central Way — 9/20/05
Kirkland, WA
Building Area = 5130 gsf

Time Ending	In	Out	Total	Hour Ending	Pk Hr Trip Rate
4:15 PM	7	8	15		
4:30 PM	8	9	17		
4:45 PM	12	9	21		
5:00 PM	6	9	15	68 < peak hour	13.26
5:15 PM	3	5	8	61	
5:30 PM	9	9	18	62	
5:45 PM	7	7	14	55	
6:00 PM	10	9	19	59	
Total	62	65	127		
Pk Hour	33	35	68		

Wells Faro Bank at 460 Central Way — 9/16/05
Kirkland, WA
Building Area = 5130 gsf

Time Ending	In	Out	Total	Hour Ending	Pk Hr Trip Rate
4:15 PM	11	9	20		
4:30 PM	8	8	16		
4:45 PM	10	9	19		
5:00 PM	10	13	23	78	
5:15 PM	8	17	25	83	
5:30 PM	7	9	16	83 < peak hour	16.18
5:45 PM	9	9	18	82	
6:00 PM	7	8	15	74	
Total	70	82	152		
Pk Hour	35	48	83		

FRIDAY

Frontier Bank at 12507 116th Avenue NE — 9/15/05
Kirkland, WA
Building Area = 4192 gsf

Time Ending	In	Out	Total	Hour Ending	Pk Hr Trip Rate
4:15 PM	2	3	5		
4:30 PM	4	4	8		
4:45 PM	3	1	4		
5:00 PM	7	6	13	30	
5:15 PM	2	5	7	32 < peak hour	7.63
5:30 PM	1	4	5	29	
5:45 PM	0	0	0	25	
6:00 PM	0	0	0	12	
Total	19	23	42		
Pk Hour	16	16	32		

Frontier Bank at 12507 116th Avenue NE — 9/16/05
Kirkland, WA
Building Area = 4192 gsf

Time Ending	In	Out	Total	Hour Ending	Pk Hr Trip Rate
4:15 PM	5	5	10		
4:30 PM	5	7	12		
4:45 PM	4	2	6		
5:00 PM	0	4	4	32 < peak hour	7.63
5:15 PM	4	4	8	30	
5:30 PM	0	1	1	19	
5:45 PM	1	1	2	15	
6:00 PM	1	0	1	12	
Total	20	24	44		
Pk Hour	14	18	32		

FRIDAY

BURLINGTON, WASHINGTON
GRT05130M - MITZEL
HORIZON BANK - 1020 S BURLINGTON BLVD
TRIP GENERATION COUNTS
LOCATION #01

CUT THRU TRAFFIC HAS ALREADY BEEN DELETED FROM IN/OUT TOTALS

	WED 5/11/2005			THU 5/12/2005			FRI 5/13/2005		
TIME	IN	OUT	CUT	IN	OUT	CUT	IN	OUT	CUT
16:00	4	1	0	5	8	1	6	9	2
16:15	1	4	0	7	3	0	5	10	0
16:30	5	3	1	11	9	0	10	10	1
16:45	7	7	1	7	12	0	18	15	1
17:00	3	2	2	1	3	0	17	12	0
17:15	0	0	0	3	1	0	7	8	1
17:30	0	0	0	0	0	0	3	7	0
17:45	0	0	1	3	2	0	1	7	1
TOTAL	20	17	5	37	38	1	57	78	6
PK HOUR	16:15			16:00			16:15		
VOLUME	16	16	4	30	32	1	50	47	

BURLINGTON, WASHINGTON
GRT05130M - MITZEL
SKAGIT STATE BANK - 1575 S BURLINGTON BLVD
TRIP GENERATION COUNTS
LOCATION #02

	WED 5/11/2005		THU 5/12/2005		FRI 5/13/2005	
TIME	IN	OUT	IN	OUT	IN	OUT
16:00	5	4	2	4	6	7
16:15	3	5	3	4	8	10
16:30	6	4	2	3	7	8
16:45	4	4	3	3	5	6
17:00	0	2	1	2	10	14
17:15	0	0	0	0	5	4
17:30	0	1	1	1	8	10
17:45	1	1	0	0	2	2
TOTAL	19	21	12	17	51	61
PK HOUR	16:00		16:00		16:15	
VOLUME	18	17	10	14	30	38

BURLINGTON, WASHINGTON
GRT05130M - MITZEL
WHIDBEY ISLAND BANK - 1800 S BURLINGTON BLVD
TRIP GENERATION COUNTS
LOCATION #03

	WED 5/11/2005		THU 5/12/2005		FRI 5/13/2005	
TIME	IN	OUT	IN	OUT	IN	OUT
16:00	9	12	8	4	21	25
16:15	14	14	7	12	13	15
16:30	13	9	6	7	11	15
16:45	11	16	8	9	17	15
17:00	1	8	1	6	19	14
17:15	1	6	0	0	12	16
17:30	0	1	1	6	4	10
17:45	2	3	3	5	2	4
TOTAL	51	69	34	49	99	114
PK HOUR	16:00		16:00		16:00	
VOLUME	47	51	29	32	62	70

From:	Kamon Bryck
To:	Hans Christiansen
Subject:	Re: RNA 2/14/12 - Meeting Minutes
Date:	Tuesday, February 28, 2012 6:36:10 PM

Here is the minutes in text in the e-mail, to avoid incompatibility between word processors.

RNA Minutes for Meeting of 02/14/2012 Attendance: 23

Called to order at 7:04 PM

Mary Hill moved to approve the minutes with a date correction.
Seconded by Mary Grace.
Approved by voice vote.

Treasurer Report: No neighborhood has received the additional allocation of stipend funds.

Guest Speakers from Chase Bank,for a proposed new building on the former Kasch's property:
Greta Pass, Hans Christiansen and Grant Seaman.
Presentation was recorded for Planning application.

Discussion: To discontinue lengthy presentations by LOTWP representatives until they are more cooperative.
Curt Sumers moved to table topic until next meeting.
Seconded by Bob Stowell.
Approved with 11 in favor, 2 opposed and 3 abstaining.

Announcements:

Gardening Class Sunday Feb, 20th, Mar 3rd.
White Oak Savanna Fundraiser Walk April 7th
West Linn Centennial Committer meeting

Updates:

The GNC wrote letter to the LOTWP Oversight Committee, requesting a meeting with voting members of their committee and City of West Linn officials. The GNC asks the RNA to approve this action.

Curt Sommers moved that this issue is time sensitive.
Seconded by Mary Hill
Approved by a show of hands

Curt Sommers moved that the RNA approve the letter from the GNC to the LOTWP
Seconded by Randall Fastabend.
Approved by a show of hands

Narrative of GNC process and discussion of LO water rights and usage.

West Linn is still looking for new members for boards and commissions.

Committee Reports:

Parks: Advertisements on dog poo bag dispensers.
FORS: New Carpet on walls, negotiating new furnace and door.

New Business:

As Kamon Bryck is no longer living in Robinwood, he requests that the RNA select a new Secretary.

Randall Fastabend moved that meeting adjourn.
Seconded by David Newell.
Approved by voice vote at 8:45 PM.

On 2/28/2012 3:30 PM, Hans Christiansen wrote:

> Thank you Kamon. I did not know that you had taken the notes until I received the message below. I found your e-mail on the agenda. Look forward to receiving the minutes.
>
> Thanks again.
>
> Hans Christiansen
> *Associate*
> *hans.christiansen@callison.com*
>
> CALLISON
> 1420 FIFTH AVENUE #2400
> SEATTLE, WASHINGTON 98101-2343
> T 1 206 623 4646 F 1 206 623 4625
>
> **From:** Kamon Bryck [mailto:kamontyler@comcast.net]
> **Sent:** Tuesday, February 28, 2012 3:27 PM
> **To:** Hans Christiansen
> **Subject:** Re: RNA 2/14/12 - Meeting Minutes
>
> At work. On phone. Dot have minutes on me. Will get them out ASAP when I get home. Would be easier if I had been privy to below conversation. But I wasn't. Sorry for delay.
>
> On Feb 28, 2012, at 3:18 PM, Hans Christiansen <Hans.Christiansen@callison.com> wrote:
>
> > Dear Kamon-
> >
> > Please see the below e-mails for your reference.
> >
> > Could you please provide me with a PDF of your draft Robinwood Neighborhood Association meeting minutes for the 2/14/12 meeting. If you could please send them ASAP it would be much appreciated.
> >
> > Thank you,
> >
> > Hans Christiansen
> > *Associate*
> > *hans.christiansen@callison.com*
> >
> > CALLISON
> > 1420 FIFTH AVENUE #2400
> > SEATTLE, WASHINGTON 98101-2343
> > T 1 206 623 4646 F 1 206 623 4625
> >
> > **From:** David Newell [mailto:davidbnewell@yahoo.com]
> > **Sent:** Tuesday, February 28, 2012 2:48 PM
> > **To:** Hans Christiansen; Anthony Bracco

Subject: Re: RNA 2/14/12 - Meeting Minutes

I do not have a copy of the minutes. They were taken by our secretary. Cameron Bryck. Tony, have you gotten your copy yet?

From: Hans Christiansen <Hans.Christiansen@callison.com>
To: Anthony Bracco <anthonymbracco@yahoo.com>; "davidbnewell@yahoo.com" <davidbnewell@yahoo.com>
Sent: Tuesday, February 28, 2012 1:58 PM
Subject: FW: RNA 2/14/12 - Meeting Minutes

<!--[if !supportLineBreakNewLine]-->
<!--[endif]-->
Hi Tony/David,

Could you please give me a status update? Thank you.

Hans Christiansen
Associate
hans.christiansen@callison.com

CALLISON
1420 FIFTH AVENUE #2400
SEATTLE, WASHINGTON 98101-2343
T 1 206 623 4646 **F** 1 206 623 4625

From: Hans Christiansen
Sent: Thursday, February 23, 2012 3:04 PM
To: 'Anthony Bracco'; 'davidbnewell@yahoo.com'
Subject: RE: RNA 2/14/12 - Meeting Minutes
Importance: High

Tony/David,

Do you have your draft meeting minutes available to forward to us? Please send ASAP.

Thank you,

Hans Christiansen
Associate
hans.christiansen@callison.com

CALLISON
1420 FIFTH AVENUE #2400
SEATTLE, WASHINGTON 98101-2343
T 1 206 623 4646 **F** 1 206 623 4625

From: Hans Christiansen
Sent: Tuesday, February 21, 2012 5:55 PM
To: 'Anthony Bracco'; 'davidbnewell@yahoo.com'
Subject: FW: RNA 2/14/12 - Meeting Minutes
Importance: High

Tony,

I sent my original e-mail below to you and Davidnewell@gmail.com which you gave me a few weeks ago, but it turns out this was not the right address. I am using the e-mail David has listed on the neighborhood association agenda. Will you please confirm and forward to David in case I still have the wrong e-mail. Thank you.

Hans Christiansen
Associate
hans.christiansen@callison.com

CALLISON
1420 FIFTH AVENUE #2400
SEATTLE, WASHINGTON 98101-2343
T 1 206 623 4646 **F** 1 206 623 4625

From: Hans Christiansen
Sent: Tuesday, February 21, 2012 4:10 PM
To: 'Anthony Bracco'; 'davidnewell@gmail.com'
Subject: RNA 2/14/12 - Meeting Minutes
Importance: High

Dear Tony and David-

Thank you for hosting Chase's proposed Cedar Oak & Willamette project at the February 14, 2012 Robinwood Neighborhood Association Meeting.

We are writing to request a copy of your meeting minutes. The City has a requirement that we include a copy of your meeting minutes for our design review application.

I understand that procedurally the minutes need to be approved at the next meeting, and therefore understand that they are in Draft form until accepted.

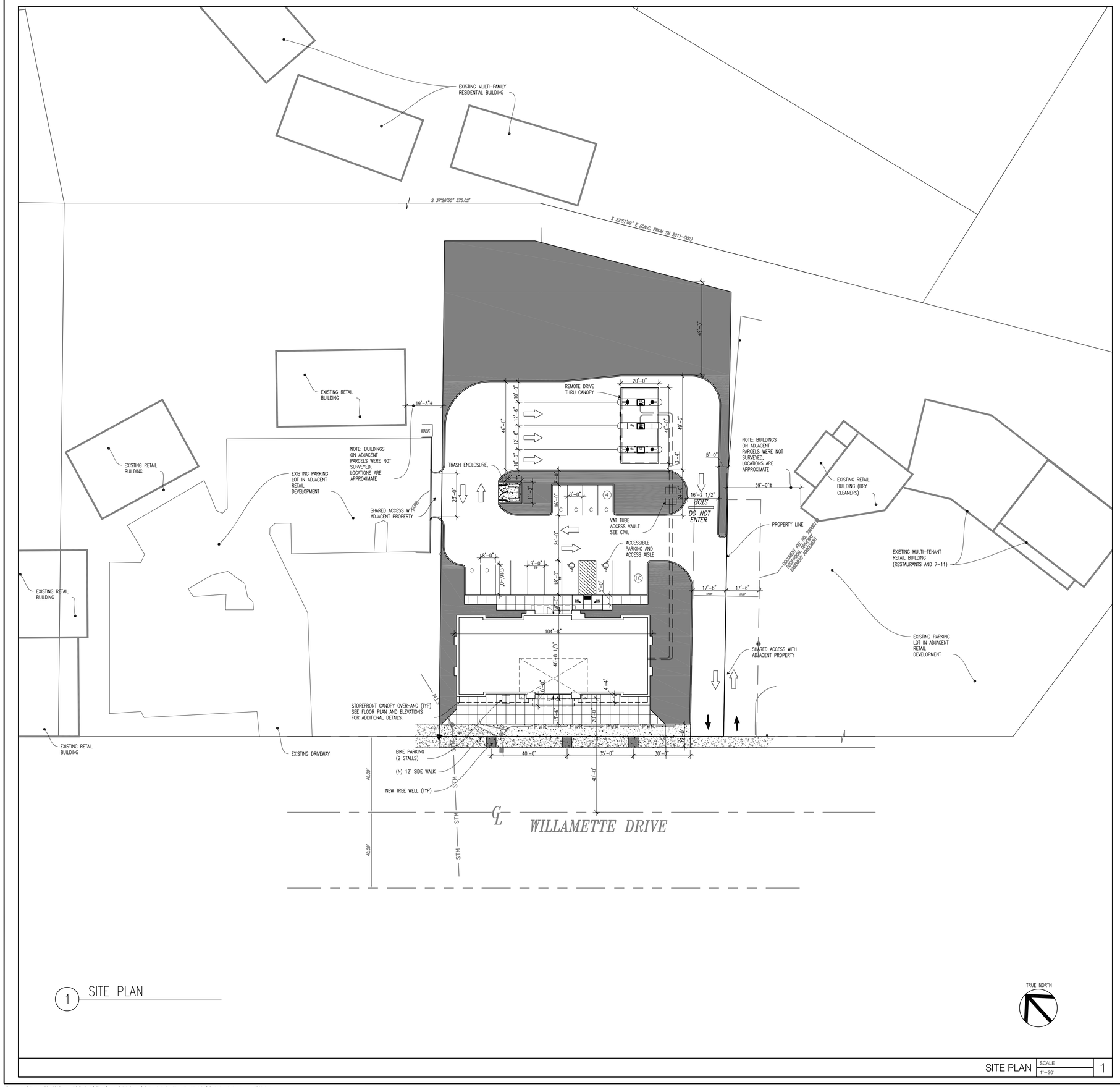
We are planning to make our submittal on Thursday 2/23, so if it is at all possible for you to send your Draft Meeting Minutes by tomorrow, in either MS Word or PDF format, it would be much appreciated. Thank you.

Hans Christiansen
Associate
hans.christiansen@callison.com

CALLISON
1420 FIFTH AVENUE #2400
SEATTLE, WASHINGTON 98101-2343
T 1 206 623 4646 **F** 1 206 623 4625

This message is private or confidential. If you are not the person for whom this message is intended, please delete it, notify me immediately, and do not copy or send this message to anyone else.

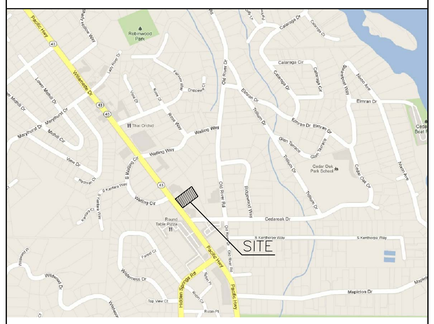
This message is private or confidential. If you are not the person for whom this message is intended, please delete it, notify me immediately, and do not copy or send this message to anyone else.



1 SITE PLAN

SITE PLAN | SCALE 1"=20' | 1

VICINITY PARCEL MAP



GENERAL PROJECT INFORMATION

APPLICANT:
CALLISON ARCHITECTS, P.C.
1420 5TH AVE, SUITE 2400
SEATTLE, WA 98101
CONTACT: HANS CHRISTIANSEN
EMAIL: HANS.CHRISTIANSEN@CALLISON.COM

TAX IDENTIFICATION NO:
00360656 & 00360674

ZONING CLASSIFICATION:
GC - GENERAL COMMERCIAL

ENTIRE SITE AREA:
38,059 SF

BUILDING AREA:
4,335 SF (11.4%)

IMPERVIOUS AREA:
19,079 SF (50.1%)

LANDSCAPE AREA:
14,645 SF (38.5 %)

TOTAL # PARKING STALLS:
14 PARKING STALLS: 7 STANDARD, 7 COMPACT.
(INCLUDES 1 VAN ACCESSIBLE AND 1 STANDARD ACCESSIBLE STALL)
REQ. = 12, MAX = 14

BUILDING HEIGHT:
26'-6"/ONE STORY

ESTIMATED PROJECT VALUATION:
$885,000

PRE-APPLICATION MEETING DATE:
JUNE 2, 2011

LANDSCAPING

PLAN NORTH

CHASE

SIGNED: XX/XX/XX

CALLISON ARCHITECTS, P.C.
CALLISON
www.callison.com

CHASE
NEW BUILD
CEDAR OAK & WILLAMETTE
19080 Willamette Dr
West Linn, OR 97068

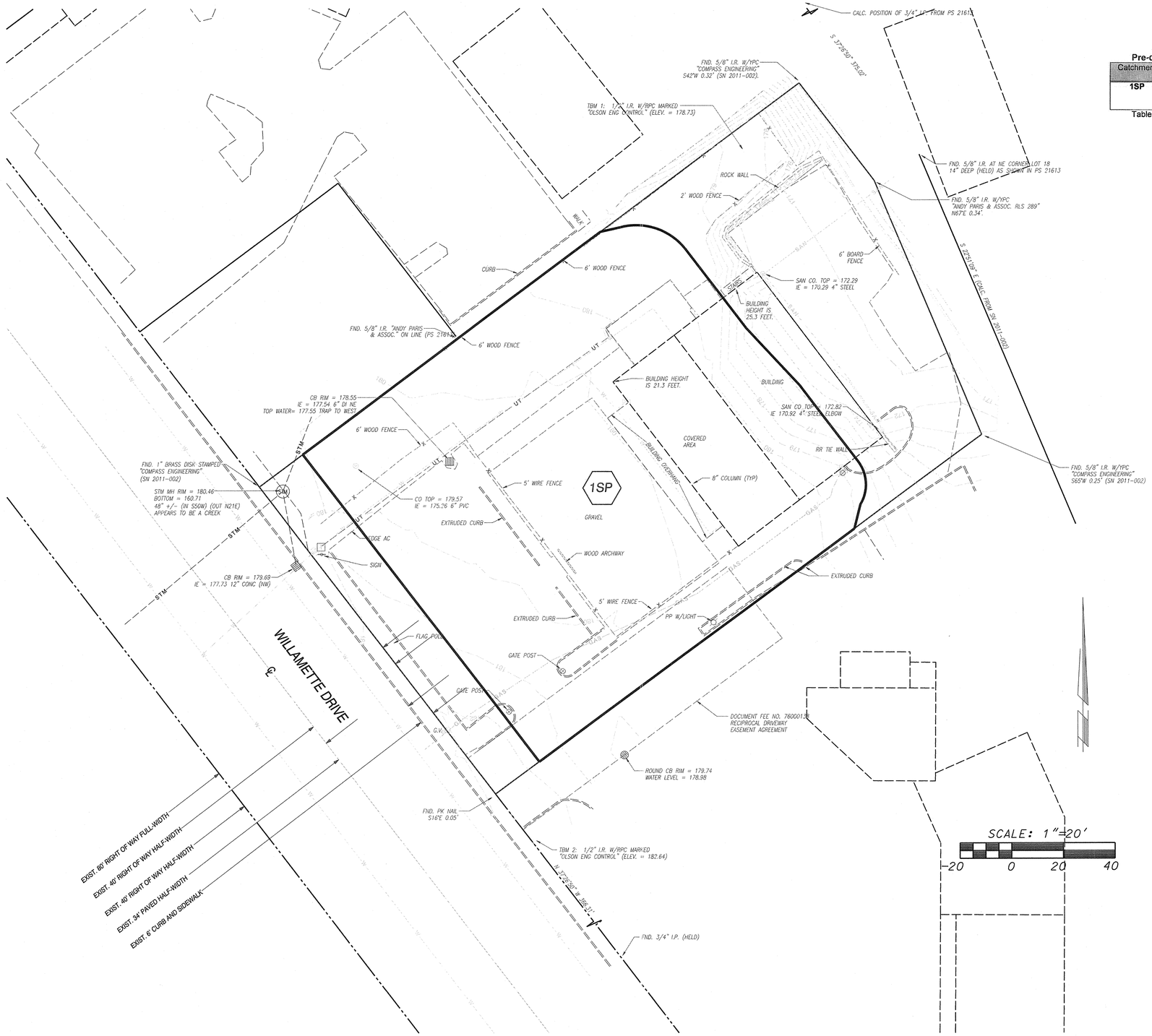
PROJECT #210461.89

ISSUED / REVISED	DATE
PLANNING SUBMITTAL	02/23/12
PLANNING ADD. INFO.	02/29/12

SITE PLAN

A0.1

Plot date: February 29, 2012 U:\Projects\Chase\New Build\Oregon\Cedar Oak & Willamette-WestLinn\Caddchcow\chcow_a-sp0001.dwg



Pre-developed Catchment Area:

Catchment	Area (AC)	CN*	Description	Type of Flow	Length (Ft.)	Slope (%)
1SP	0.573	70	Woods, Good, HSG "C"	Sheet Flow	167	1.1
				Shallow Conc. Flow	30	11.0

Table 1: Hydrologic parameters used in stormwater analysis.

J:\data\8000\8700\8701\Engineering\8701.e.Border.catch predev.dgn
M:\MicroStation V8\pen tables\OCE table setup\oce catch dev.tbl

CHASE

CEDAR OAK & WILLAMETTE RETAIL BANKING CENTER

19080 WILLAMETTE DRIVE
WEST LINN, OR 97068
PROJECT #: 21046I.89

ARCHITECT OF RECORD

CALLISON

CALLISON ARCHITECTS, P.C.
www.callison.com

ENGINEER OF RECORD

OLSON ENGINEERING INC. LAND SURVEYORS ENGINEERS
1111 BROADBANK, VANCOUVER, WA 98660

SEAL

REGISTERED PROFESSIONAL ENGINEER
60758PE
OREGON
MAY 17, 1985
CHRIS R. WONDERLY
EXPIRES: 6/30/12
2/17/12

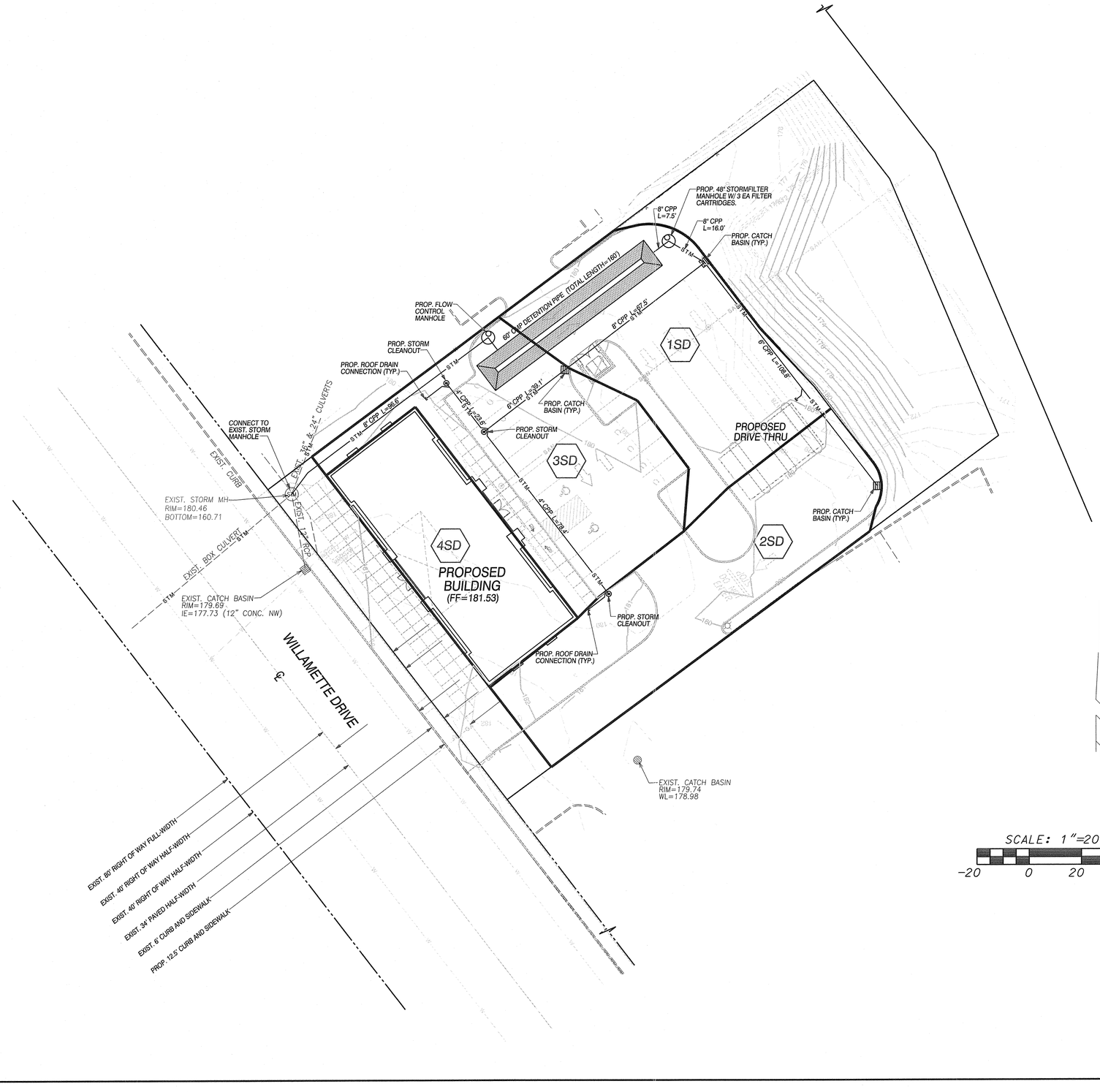
ISSUE	DATE	DESCRIPTION
	2/23/2012	DESIGN REVIEW APPLICATION

SHEET TITLE

PRELIMINARY PRE-DEVELOPED CATCHMENT PLAN

SHEET NUMBER

1 OF 2



Developed Catchment Areas:

Catchment	Area (AC)	CN*	Description	Type of Flow	Length (Ft.)	Slope (%)
1SD	0.127	98	Paved parking	Direct entry (5.0 Min.)	-	-
	0.022	74	>75% Grass cover, Good, HSG C			
2SD	0.105	98	Paved parking	Direct entry (5.0 Min.)	-	-
	0.058	74	>75% Grass cover, Good, HSG C			
3SD	0.110	98	Paved parking	Direct entry (5.0 Min.)	-	-
	0.016	98	Sidewalk			
	0.034	74	>75% Grass cover, Good, HSG C			
4SD	0.101	98	Roof	Direct entry (5.0 Min.)	-	-
					-	-

Table 2: Hydrologic parameters used in stormwater analysis.

CHASE

CEDAR OAK & WILLAMETTE
RETAIL BANKING CENTER
19080 WILLAMETTE DRIVE
WEST LINN, OR 97068
PROJECT #: 210461.89

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SEAL
REGISTERED PROFESSIONAL ENGINEER
60784PE
OREGON
JANUARY 17, 1997
DARIS R. WONDERLY
EXPIRES: 6/30/
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SHEET TITLE
PRELIMINARY DEVELOPED CATCHMENT PLAN

SHEET NUMBER
2 OF 2

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M:\MicroStation V8\pen tables\OCE table setup\oce catch dev.tbl