



# Oregon

Kate Brown, Governor

Department of Transportation

Region 2

855 Airport Road SE, Bldg. Y

Salem, Oregon 97301-5395

gerard.p.juster@odot.state.or.us

FILE CODE: 140-6

DRS Case No. 6720

September 11, 2015

Jim Hendryx  
Economic Development Director, City of Woodburn  
270 Montgomery Street  
Woodburn, OR 97071

SUBJECT: ODOT Comments for Land Use File Nos. DR 2015-02 and VAR 2015-01  
Applicant: Master Development, LLC  
Assessor's Map: 05 2W 12BC, Tax Lot 6600  
Hillsboro-Silverton Highway, No. 140, OR219 between Mile Points 36.52 –  
36.62  
Hillsboro-Silverton Frontage Road, 140QC at Mile Point 271.72  
Marion County

Dear Jim,

Thank you for notifying the Oregon Department of Transportation (ODOT) of the Design Review and Variance applications. This letter is submitted for inclusion in the public hearing record and ODOT should be considered a party to the land use action. Please provide a copy of the land use decision, notice of any time extensions or continuances, to ODOT at the address provided below, or you may provide notice to ODOT via e-mail. Electronic format is preferred.

Planning and Development Manager  
Oregon Department of Transportation  
Region 2 Headquarters  
455 Airport Road SE, Building B  
Salem, OR 97301-5395

Electronic documents can be directed to:

**Exhibit C**

ODOTR2PLANMGR@ODOT.STATE.OR.US

ODOT staff has completed a review of the proposed application and has the following comments.

The property abuts The Hillsboro-Silverton Highway, No. 140, State Route OR219, along the southern property boundary of Tax Lot 6600, and The Hillsboro-Silverton Highway Frontage Road, No. 001QC, along the east property boundary of Tax Lot 6600. The Frontage Road is known as Arney Road. These two state highways are subject to state laws administered by the Oregon Department of Transportation. These laws may require the applicant to obtain one or more state permits to carry out the intended use of the property, or to otherwise comply with state law without need for a permit.

The applicant is proposing two private access points to serve a multi-use commercial retail development. One of the access points would be to the local road system via Robin Avenue. A second access point would be to Arney Road. The applicant's site plan recommends closure of an existing access on the Arney Road. A new access is proposed to be constructed approximately 100 feet north of the current location.

This redevelopment proposal was evaluated by ODOT under Oregon Administrative Rule, Chapter 734, Division 51, (OAR 734-051) specific to OAR 734-051-3020(2) Change of Use of a Private Connection. ODOT can apply evaluation criteria in this section of administrative rule to determine if the proposal would meet the need to submit **An Application for State Highway Approach**<sup>1</sup> (access permit application). ODOT's evaluation has determined an Application must be submitted. For this reason, ODOT is recommending the City of Woodburn include this as a condition of approval of the applicants land use application(s).

ODOT has reviewed the applicant's mitigation plan to develop a north bound left-turn lane into the site. This plan raises concerns with turn movements that currently exist for development on the east side of Arney Road into the Shell gas station, Jack-in-the-Box restaurant and the LaQuinta Inn. This mitigation plan would need to be approved by ODOT as part of the access permitting process. Therefore, ODOT recommends the applicant schedule a preapplication meeting to discuss this and other issues associated with the access permit application process. It is recommended the applicant schedule this meeting with ODOT as soon as possible.

The applicant should contact Robert Earl, Senior Permit Specialist at the ODOT District 3 Maintenance Office at 503.986.2902 to schedule the preapplication meeting.

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<sup>1</sup> To obtain a copy of **An Application for State Highway Approach** visit ODOT's Access Management Webpage: <http://www.oregon.gov/ODOT/HWY/ACCESSMGT/Pages/Application-Forms.aspx>

Sincerely,

A handwritten signature in black ink, appearing to read "Ray Drake". The signature is fluid and cursive, with the first name "Ray" and the last name "Drake" clearly distinguishable.

Development Review Coordinator

cc: Electronic copies provided to:  
Scott Nelson, PE, ODOT  
Casey Knecht, ODOT  
Robert Earl, ODOT  
Ray Drake, ODOT  
Dorothy Upton, PE, ODOT  
Keith Blair, PE, ODOT

## **Matt Hughart**

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**From:** NELSON Brian S \* Scott <Brian.S.NELSON@odot.state.or.us>  
**Sent:** Thursday, October 01, 2015 8:58 AM  
**To:** JUSTER Gerard P \*Gerry; Jim Hendryx (jim.hendryx@ci.woodburn.or.us)  
**Cc:** EARL Robert; DRAKE Ray F; KNECHT Casey; UPTON Dorothy J; Matt Hughart  
**Subject:** RE: Woodburn Commercial Site - file numbers DR 2015-02 and VAR 2015-01  
**Attachments:** 201509301430.pdf

Hello Jim,

Gerry is out this week and the development team asked that we submit an update on our discussions about the subject application. We met with the development team on Tuesday and discussed our concerns which were mainly the interactions with the existing driveway to the Jack in the Box and Shell station with the new approach. There was concern that a southbound vehicle making a left into the existing development would have to stop in the through lane and possibly create gridlock in the area. After looking closer at the section we found that the existing road width is just under 50', which we believe if striped appropriately will allow southbound cars to get around a stopped car if necessary. The attached image shows a conceptual striping scenario we support.

At this time I recommend going ahead with the City's review and approval process. We would still appreciate a condition for the applicant to obtain an approach application approval, but feel confident that our process will not change the location of the approach or the turning movements allowed.

Thank you,

### **B Scott Nelson, P.E.**

Region 2 Access Management Engineer  
Oregon Department of Transportation  
455 Airport Rd SE, Bldg. B  
Salem, OR 97301  
Office 503.986.2751  
Cell 503.602.0703

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**From:** JUSTER Gerard P \*Gerry  
**Sent:** Wednesday, September 09, 2015 4:43 PM  
**To:** Jim Hendryx (jim.hendryx@ci.woodburn.or.us)  
**Cc:** NELSON Brian S \* Scott; EARL Robert; DRAKE Ray F; KNECHT Casey  
**Subject:** Woodburn Commercial Site - file numbers DR 2015-02 and VAR 2015-01

Hi Jim,

Thank you for taking time today to discuss the development proposal for the Woodburn Commercial Site. Directly below is a link to the ODOT ftp site where you can upload the electronic files you attempted to send to Dan.

<ftp://ftp.odot.state.or.us/incoming/Woodburn%20Commercial%20Site/>

An evaluation of the applicant's proposal would meet criteria in our administrative rule (OAR 734-051) to submit an access permit application (what ODOT calls **An Application for State Highway Approach**). Below is the link to our Access Management site where the applicant can find information for the access permit application,

<http://www.oregon.gov/ODOT/HWY/ACCESSMGT/Pages/Application-Forms.aspx>

The applicant will want to use the link under the heading **Application for State Highway Approach** to download an electronic version of the permit application. A signed, hard-copy application should be sent to our Senior Permit Specialist, Robert Earl along with several other accompanying documents to support the application. There is submittal information with the application that indicates what supporting documents need to be submitted with the application. One part of the application is the Land Use Compatibility Statement or LUCS, that someone from the City will need to fill out and sign. This will need to be included with the **Application for State Highway Approach**. If the applicant has any questions when filling out the application they should contact Robert. He can be reached at 503.986.2902. The application should be mailed to:

Oregon Department of Transportation  
Area/District 3  
Attn. Robert Earl  
885 Airport Rd. SE, Bldg. P  
Salem, Oregon 97301

Attached is a letter that has an embedded e-mail address for future reference when submitting electronic land use notifications to ODOT staff for review and comment. Hopefully that e-mail address will work when submitting future land use notifications. The letter also provides contact information for Planning and Development Review staff that covers the Woodburn area, which ODOT calls Area/District 3. Again, thank you for your time this afternoon. If you have any need to contact me, see my information below.

Thank you,

**Gerry Juster**  
Development Review Coordinator  
Oregon Department of Transportation  
855 Airport Rd SE, Bldg. Y | Salem, Oregon 97301  
Office: 503.986.2732 | FAX: 503.986.2748  
e-mail: [gerard.p.juster@odot.state.or.us](mailto:gerard.p.juster@odot.state.or.us)



# KITTELSON & ASSOCIATES, INC.

TRANSPORTATION ENGINEERING / PLANNING

610 SW Alder Street, Suite 700, Portland, OR 97205 ■ 503.228.5230 ■ 503.273.8169

August 18, 2015

Project #: 17858

Jim Hendryx  
City of Woodburn  
270 Montgomery Street  
Woodburn, OR 97071-4730

***RE: Woodburn Commercial Development Transportation Assessment Letter Update, June 2015***

Dear Jim,

In a report dated October 6, 2014, Kittelison & Associates, Inc. (KAI) documented a transportation assessment for the proposed Woodburn Commercial Development project. This report summarized the development's estimated trip generation profile, evaluated the traffic operations at the proposed site driveways, and recommended improvements for enhancing the site's circulation, access, and safety. *A copy of the assessment letter is included in Appendix 1.* The project was approved by the City of Woodburn in November 2014 but construction on the project was delayed while the developer (Master Capital Management) worked to secure a revised set of tenant agreements. With new tenant agreements now more securely in place, KAI prepared the following updated Woodburn Commercial Development Transportation Assessment letter to address changes in the overall development proposal.

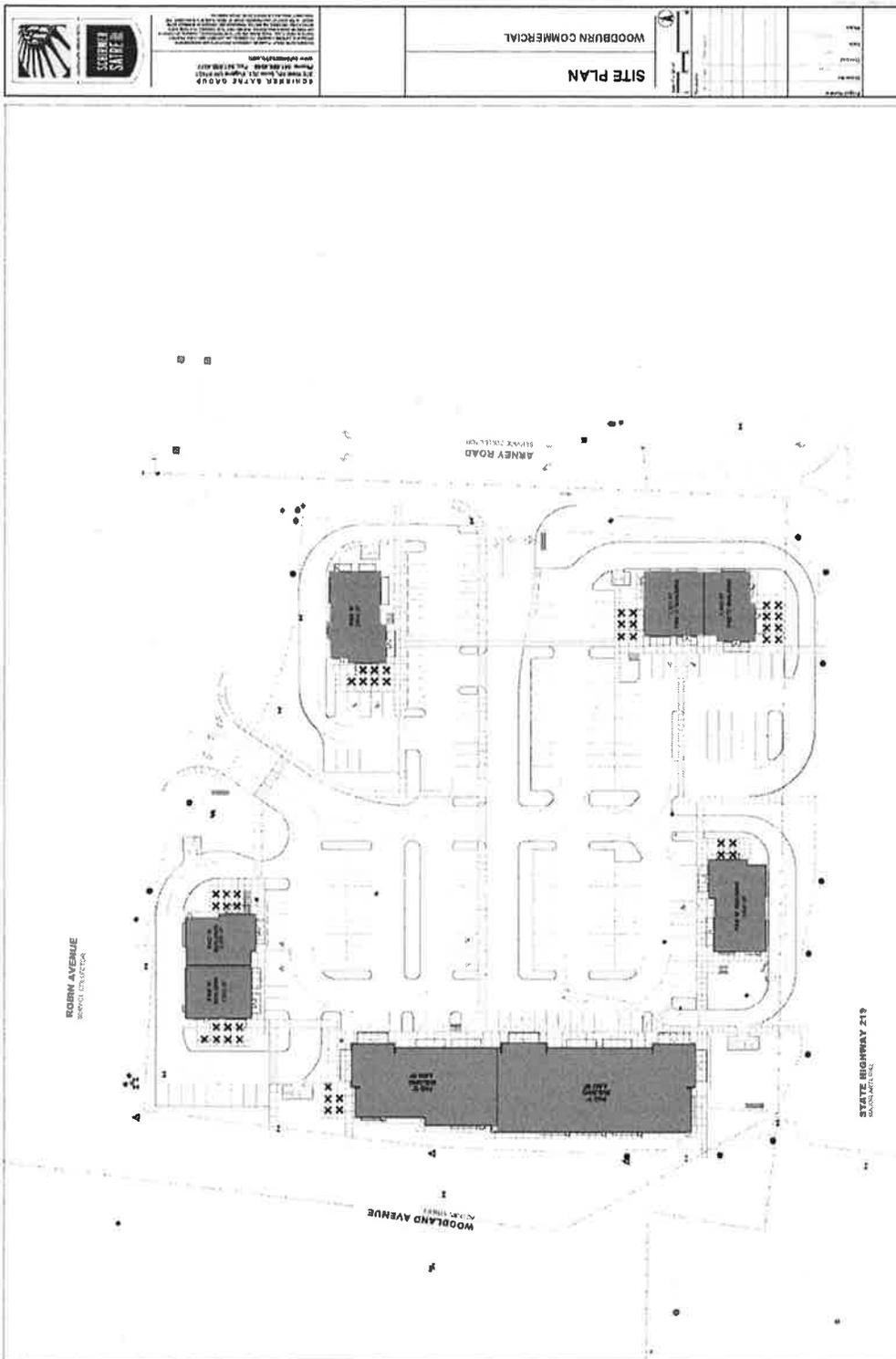
### Current (July 2015) Development Proposal

Similar to the previously approved November 2014 development proposal, Master Capital Management is proposing to redevelop the site into a commercial retail center. The current proposal includes 16,839 square feet of miscellaneous retail commercial space, a 2,300 square foot high-turnover sit-down restaurant, and multiple fast-food restaurants with drive-through windows totaling approximately 9,554 square feet<sup>1</sup>. Two full-movement driveways are proposed to serve the site; one driveway is located off of N. Arney Road and one driveway is located off of Robin Avenue. This access configuration is the same as what was originally proposed and approved in November 2014. The current site plan is shown in Figure 1.

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<sup>1</sup> The square footages are approximate. Based on discussions with the design team, further architectural refinements may result in slightly lower overall square footages.

Figure 1 – Proposed Site Plan (Prepared by Schirmer Satre Group 8/14/15)



## Trip Generation

The current development proposal contains a different mix and quantity of commercial retail uses when compared to the approved November 2014 proposal. As this is the only substantive change between the two proposals, a trip generation comparison was prepared to quantify the different trip profiles using the appropriate land uses contained within Trip Generation, 9<sup>th</sup> Edition. Table 1 documents this comparison and demonstrates that the current development proposal is estimated to generate fewer daily and weekday p.m. peak hour trips than previously analyzed.

**Table 1 - Trip Generation Profile Comparison Between Approved November 2014 Development Proposal and Current August 2015 Development Proposal**

Land Use	ITE Code	Size (square feet)	Daily Trips	Weekday PM Peak Hour		
				Total	In	Out
<b>Trip Generation Profile of the Approved November 2014 Development Proposal</b>						
Shopping Center	820	42,767	3,910	340	165	175
<i>Pass-by Trips (34% Daily, 34% PM)</i>			(1,330)	(110)	(55)	(55)
Coffee/Donut Shop with Drive-Through Window	937	3,150	2,580	130	65	65
<i>Internal Trips (10% Daily, 10% PM)</i>			(260)	(10)	(5)	(5)
<i>Pass-by Trips (49% Daily, 50% PM)</i>			(1,140)	(60)	(30)	(30)
High Turnover Sit-Down Restaurant	932	6,500	830	65	40	25
<i>Pass-by Trips (43% Daily, 43% PM)</i>			(355)	(20)	(10)	(10)
<b>Total Trips</b>			<b>7,320</b>	<b>535</b>	<b>270</b>	<b>265</b>
<i>Total Internal Trips</i>			(260)	(10)	(5)	(5)
<i>Total Pass-by Trips</i>			(2,825)	(190)	(95)	(95)
<b>Total Net New Trips</b>			<b>4,235</b>	<b>335</b>	<b>170</b>	<b>165</b>
<b>Trip Generation Profile of the Current August 2015 Development Proposal</b>						
Shopping Center	820	16,839	2,130	180	85	95
<i>Pass-by Trips (34% Daily, 34% PM)</i>			(720)	(60)	(30)	(30)
High Turnover Sit-Down Restaurant	932	2,300	290	25	15	10
<i>Pass-by Trips (43% Daily, 43% PM)</i>			(125)	(10)	(5)	(5)
Fast-Food Restaurant with Drive-Through	934	9,554	4,740	310	160	150
<i>Internal Trips (10% Daily, 10% PM)</i>			(470)	(30)	(15)	(15)
<i>Pass-by Trips (49% Daily, 50% PM)</i>			(2,090)	(140)	(70)	(70)
<b>Total Trips</b>			<b>7,160</b>	<b>515</b>	<b>260</b>	<b>255</b>
<i>Total Internal Trips</i>			(470)	(30)	(15)	(15)
<i>Total Pass-by Trips</i>			(2,935)	(210)	(105)	(105)
<b>Total Net New Trips</b>			<b>3,755</b>	<b>275</b>	<b>140</b>	<b>135</b>
<b>Current August 2015 Development Proposal – Approved November 2014 Development</b>			<b>-480</b>	<b>-60</b>	<b>-30</b>	<b>-30</b>

With an estimated trip generation profile that is less than the previously approved November 2014 development proposal, the traffic impacts of the current development proposal will likely be equal to or slightly better during the weekday p.m. peak hour. As such, the traffic operations, safety, and site access findings from the previous October 2014 transportation assessment letter are still applicable and no additional analysis is needed to support the current development application.

The formal recommendations from the October 2014 Woodburn Commercial Development Transportation Assessment Letter are also still applicable to the current development proposal and have been resummarized below.

## Recommendations

### ***Arney Road Site Driveway***

The Arney Road site driveway should be located approximately 230 feet north of the Highway 219/Arney Road intersection. To accommodate the anticipated demand at the proposed driveway, the following striping modifications are proposed along the existing Arney Road cross section:

- Provide a northbound left-turn lane with 75 feet of storage and appropriate tapers at the proposed site driveway to accommodate site ingress movements.
- Include additional roadway striping (that is complimentary to the planned raised channelization island) to guide the westbound right-turn vehicles on Highway 219 into the northbound through lane on Arney Road and provide a transition for the left-turn pocket at the proposed site driveway.
- Maintain dual double yellow lane striping on Arney Road to delineate northbound and southbound movements and discourage left-turn movements at the existing driveway located on the east side of Arney Road<sup>2</sup>.
- Connect the proposed lane striping to the existing separate northbound left- and right-turn lanes at the Arney Road/Robin Avenue intersection.
- Modify the existing Stop signs (with their secondary signs) on the northbound and eastbound approaches at the Arney Road/Robin Avenue intersection. These new stop signs should meet the MUTCD standards that require 7 feet of clearance beneath the secondary signs. The existing Stop signs do not meet this requirement as the secondary signs have less than 7 feet of clearance.

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<sup>2</sup> The existing Arney Road segment has dual double yellow striping from the Highway 219/Arney Road intersection to just north of the existing site driveway.

- To ensure that the maximum intersection sight distance is maintained at the Arney Road side driveway, it is recommended that all street trees and above ground utilities be kept clear of the departure sight triangles and that any landscaping be limited to low-lying groundcover.

An illustration of this recommended treatment is shown in Figure 3 of the attached October 2014 Transportation Assessment Letter.

### ***Robin Avenue Site Driveway***

The Robin Avenue site driveway should be located approximately 250 feet east of the Woodland Avenue/Robin Avenue intersection and 150 feet west of the Arney Road/Robin Avenue intersection. Due to the horizontal curvature of Robin Avenue along the north site frontage, it is important to ensure that there is an adequate departure sight triangle for the northbound left- and right-turn exiting lanes. To ensure the maximum amount of intersection sight distance for these two movements, it is recommended that all street trees and above ground utilities be kept clear of the departure sight triangles and that any landscaping be limited to low-lying groundcover.

We trust this letter adequately addresses the traffic impacts associated with the proposed Woodburn Commercial Development. Please contact us if you have any questions.

Sincerely,  
KITTELSON & ASSOCIATES, INC.



Matt Hughart, AICP  
Associate Planner



Julia Kuhn, P.E.  
Senior Principal Engineer

Appendix 1    October 6, 2014 Transportation  
Assessment Letter for the  
Proposed Woodburn  
Commercial Development



# KITTELSON & ASSOCIATES, INC.

TRANSPORTATION ENGINEERING / PLANNING

610 SW Alder Street, Suite 700, Portland, OR 97205 503.228.5230 503.273.8169

October 6, 2014

Project #: 17858

Jim Hendryx  
City of Woodburn  
270 Montgomery Street  
Woodburn, OR 97071-4730

***RE: Transportation Assessment Letter for the Proposed Woodburn Commercial Development – Woodburn, Oregon***

Dear Jim,

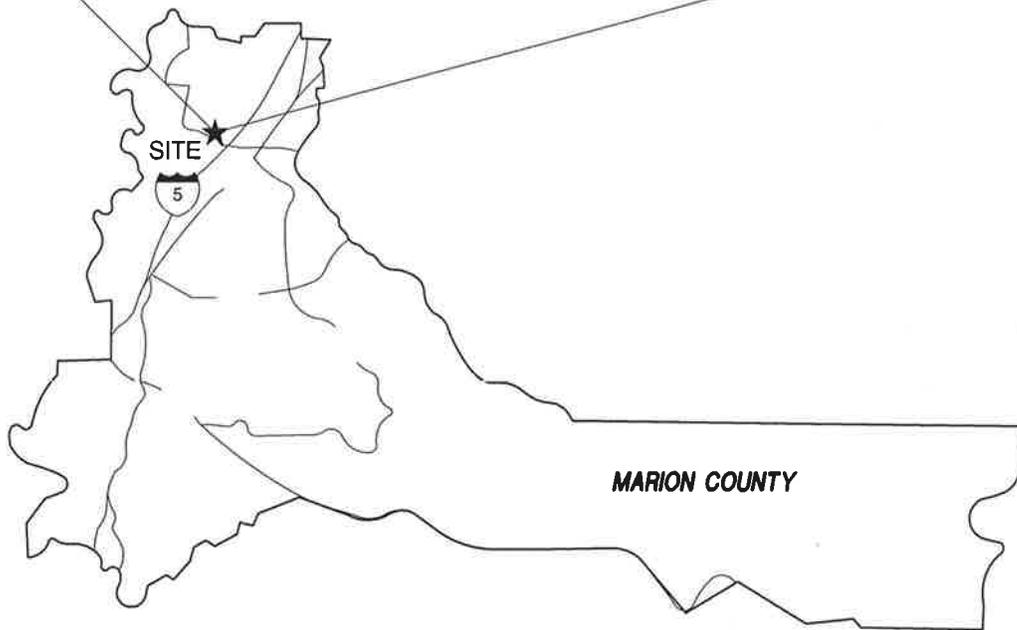
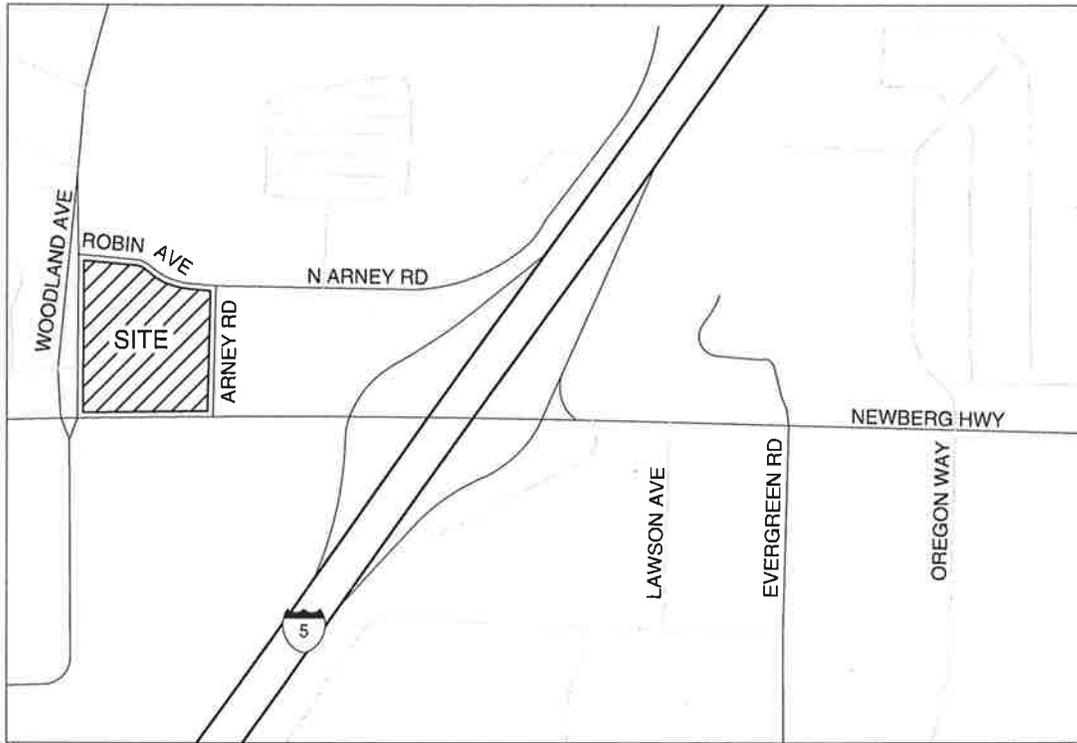
Kittelison & Associates, Inc. (KAI) prepared the following transportation assessment letter for the proposed Woodburn Commercial development project. In 2012, we prepared a letter to support the removal of a zoning overlay on the property. This letter documented trip generation potential of the site and the compliance of the proposed zoning modification with the Transportation Planning Rule (TPR). As documented in the enclosed letter, the current proposal for site development is less than that estimated previously. Given that no additional off-site impacts are anticipated beyond those previously evaluated, the scope of this letter is limited to a trip generation estimate, an evaluation of the operations at the proposed site driveways, and recommended improvements for enhanced site circulation, access, and safety. Further details of the study methodology and findings of this analysis are presented herein.

## BACKGROUND

In 2012, KAI prepared a detailed transportation analysis for the proposed commercial site. The location of the site is illustrated in Figure 1. The purpose of the 2012 analysis was to support a proposal for the removal of an overlay zone that limited the site to auto-oriented sales and related uses<sup>1</sup>.

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<sup>1</sup> At the time of the proposed 2012 zone modification, Woodburn staff noted that the site was located within the Woodburn Interchange Area Management Plan (IAMP) study area. With the proposed removal of the auto-oriented overlay zone, it was recognized that there was a potential for increased automobile trips to/from the site which were not specifically studied as part of the underlying IAMP. As such, a detailed Transportation Planning Rule (TPR) analysis was required to demonstrate that the planned and funded improvement project for the I-5/OR 214 interchange and supporting local roadway network could accommodate the additional traffic generating potential associated with the removal of the overlay zone without requiring additional improvements. The TPR study subsequently concluded that the additional trip-generation potential of the site could be accommodated by the planned interchange and local circulation improvement project. *A copy of the previous TPR analysis is provided in Attachment A.*



**SITE VICINITY MAP  
WOODBURN, OREGON**

**FIGURE  
1**

f:\projfile\17858 - Woodburn Commercial Redevelopment\ch\wgs\figs\17858fig01.dwg Oct 02, 2014 - 8:19am - jsommerville Layout Tab: Fig01

Following the formal land use review process, the City of Woodburn officially approved and removed the auto-oriented overlay designation from the site, maintaining the General Commercial (GC) site zoning with no overlay.

## TRANSPORTATION ASSESSMENT FOR NEW DEVELOPMENT PROPOSAL

Since the formal removal of the auto-oriented overlay zone in 2012, the site has remained vacant. A redevelopment proposal led by Master Capital Management is being proposed for the site that includes a combination of commercial retail uses and restaurants. To support the development review application, KAI has prepared the following transportation assessment for the site. This assessment includes a detailed trip generation analysis for the purposes of documenting that the new development proposal is consistent in scale to the assumed land uses included in the 2012 TPR analysis associated with the removal of the overlay. This assessment is appropriate given the consistency with our 2012 analysis, and in recognition that the on-going construction of the I-5/OR 214 interchange improvement project has likely impacted current interim traffic patterns in the larger interchange influence area. The temporary construction disruptions limit the ability to reassess current existing traffic conditions associated with the proposed development.

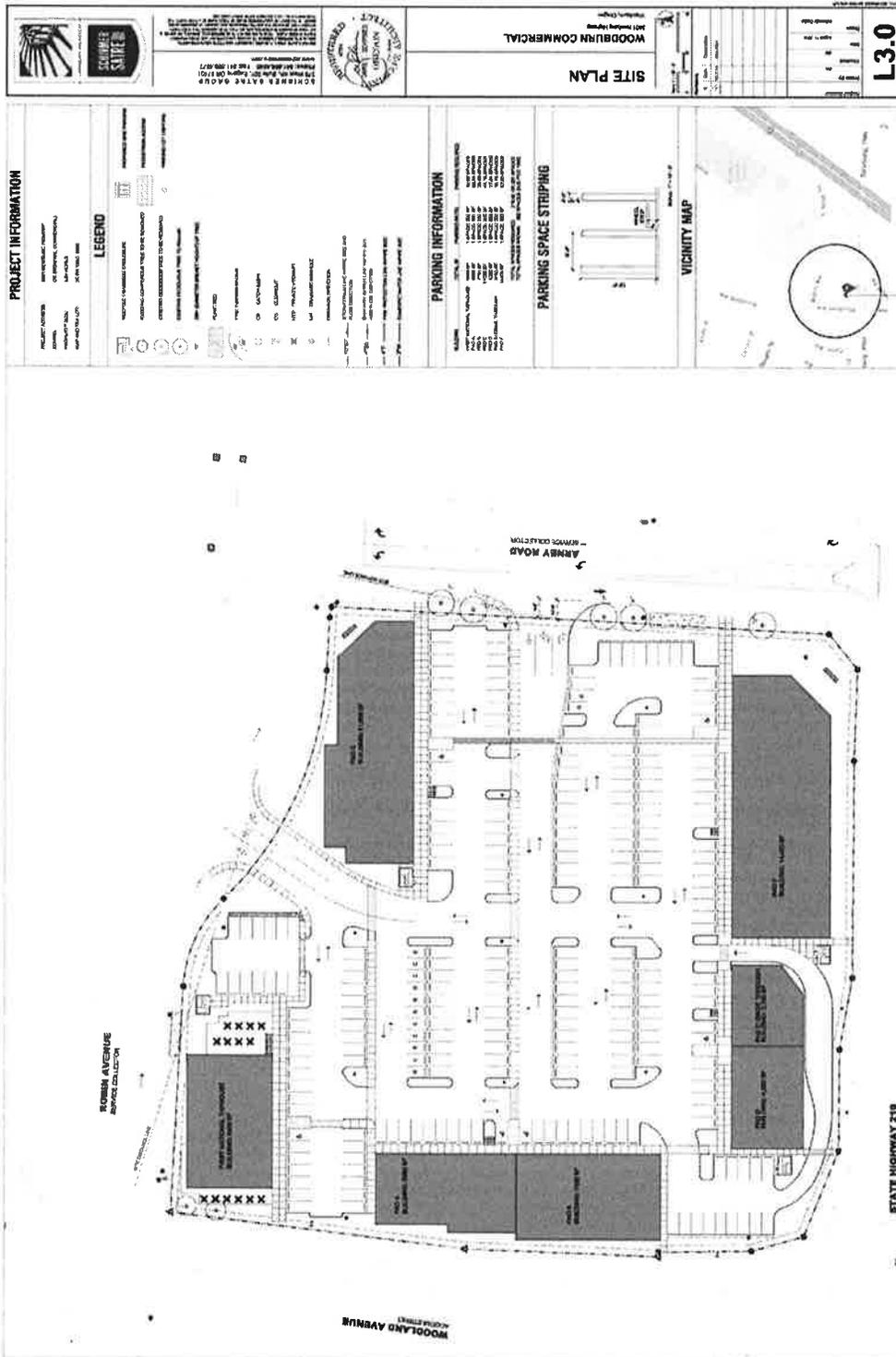
### Development Proposal

Master Capital Management is proposing to redevelop the site into a commercial retail center. The proposal includes a 6,400 square foot high-turnover sit-down restaurant, a 3,150 square foot coffee shop with drive-through window, and 42,767 square feet of miscellaneous retail commercial space<sup>2</sup>. Two full-movement driveways are proposed to serve the site; one driveway is located off of N. Arney Road and one driveway is located off of Robin Avenue. The proposed site plan is shown in Figure 2.

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<sup>2</sup> The square footages identified in this development proposal are preliminary and conservatively high. Based on discussions with the design team, further architectural refinements will likely result in slightly lower overall square footages.

Figure 2 - Proposed Site Plan (Prepared by Schirmer Satre Group 10/03/14)



## Trip Generation

A trip generation analysis was prepared comparing the proposed commercial retail center to the previous land use scenarios studied in the 2012 TPR analysis. Table 1 summarizes the assumed “worst-case” land use and associated trip generation profile documented in the 2012 TPR analysis. As shown in the table, the assumed mix of maximum allowed retail uses under the GC zone was estimated to generate approximately 3,760 net new daily trips and 350 net new trips during the weekday p.m. peak hour (175 trips in, 175 trips out).

**Table 1 - Reasonable "Worst-Case" Trip Generation from 2012 TPR Analysis**

Land Use	ITE Code	Size (square feet)	Daily Trips	Weekday PM Peak Hour		
				Total	In	Out
Shopping Center	820	45,400	4,065	375	185	190
<i>Pass-by Trips (34% Daily, 34% PM)</i>			<i>(1,380)</i>	<i>(130)</i>	<i>(65)</i>	<i>(65)</i>
Drive-in Bank	912	4,000	595	105	55	50
<i>Pass-by Trips (47% Daily, 47% PM)</i>			<i>(280)</i>	<i>(50)</i>	<i>(25)</i>	<i>(25)</i>
Fast-food Restaurant with Drive-through	934	3,000	1,490	100	50	50
<i>Pass-by Trips (49% Daily, 50% PM)</i>			<i>(730)</i>	<i>(50)</i>	<i>(25)</i>	<i>(25)</i>
Total Trips			6,150	580	290	290
<i>Total Pass-by Trips</i>			<i>(2,390)</i>	<i>(230)</i>	<i>(115)</i>	<i>(115)</i>
<b>Total Net New Trips</b>			<b>3,760</b>	<b>350</b>	<b>175</b>	<b>175</b>

For comparison to the 2012 study, trip generation estimates for the proposed commercial retail center were prepared using Trip Generation, 9<sup>th</sup> Edition (Reference 1). Table 2 summarizes the daily and weekday p.m. peak-hour trips for the proposed development. As shown in the table, the proposed mix of restaurants and retail space is estimated to generate approximately 15 fewer net new trips during the weekday p.m. peak hour when compared to the 2012 study.

**Table 2 - Trip Generation Estimate – Proposed Woodburn Commercial Development**

Land Use	ITE Code	Size (square feet)	Daily Trips	Weekday PM Peak Hour		
				Total	In	Out
Shopping Center	820	42,767	3,910	340	165	175
<i>Pass-by Trips (34% Daily, 34% PM)</i>			<i>(1,330)</i>	<i>(110)</i>	<i>(55)</i>	<i>(55)</i>
Coffee/Donut Shop with Drive-Through Window	937	3,150	2,580	130	65	65
<i>Internal Trips (10% Daily, 10% PM)</i>			<i>(260)</i>	<i>(10)</i>	<i>(5)</i>	<i>(5)</i>
<i>Pass-by Trips (49% Daily, 50% PM)</i>			<i>(1,140)</i>	<i>(60)</i>	<i>(30)</i>	<i>(30)</i>
High Turnover Sit-Down Restaurant	932	6,500	830	65	40	25
<i>Pass-by Trips (43% Daily, 43% PM)</i>			<i>(355)</i>	<i>(20)</i>	<i>(10)</i>	<i>(10)</i>
Total Trips			7,320	535	270	265
<i>Total Internal Trips</i>			<i>(260)</i>	<i>(10)</i>	<i>(5)</i>	<i>(5)</i>
<i>Total Pass-by Trips</i>			<i>(2,825)</i>	<i>(190)</i>	<i>(95)</i>	<i>(95)</i>
<b>Total Net New Trips</b>			<b>4,235</b>	<b>335</b>	<b>170</b>	<b>165</b>
<b>Proposed Woodburn Commercial Development – 2012 TPR Analysis</b>			<b>475</b>	<b>-15</b>	<b>-5</b>	<b>-10</b>

With an estimated trip generation profile that is consistent with and approximately equal to the 2012 TPR analysis during the critical weekday pm peak hour, it can reasonably be concluded that the findings of the 2012 TPR analysis remain applicable.

## SITE ACCESS ANALYSIS

As shown in Figure 2, access to the site is proposed via two full-movement driveways. The following sections discuss the design and anticipated operational characteristics of each as well as recommendations to enhance site circulation, access, and safety.

### Arney Road Site Driveway

The existing site currently has an access driveway located along the Arney Road site frontage. As a result of the recent roadway improvements made along Highway 219 to the south<sup>3</sup>, this driveway is now located only 130 feet to the north of the Highway 219/Arney Road intersection. In recognition of this short distance and the number of northbound left-turn vehicles that are anticipated to use this driveway for site ingress purposes, the existing site driveway is proposed to be closed and a new site driveway constructed further to the north. This new site driveway would be located approximately 230 feet north of the Highway 219/Arney Road intersection.

To accommodate the anticipated demand at the proposed driveway, the following striping modifications are proposed along the existing Arney Road cross section:

- Provide a northbound left-turn lane with 75 feet of storage and appropriate tapers at the proposed site driveway to accommodate site ingress movements.
- Include additional roadway striping (that is complimentary to the planned raised channelization island) to guide the westbound right-turn vehicles on Highway 219 into the northbound through lane on Arney Road and provide a transition for the left-turn pocket at the proposed site driveway.
- Maintain dual double yellow lane striping on Arney Road to delineate northbound and southbound movements and discourage left-turn movements at the existing driveway located on the east side of Arney Road.<sup>4</sup>

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<sup>3</sup> As part of the I-5/OR 214 interchange modification project, Highway 219 has been widened to provide two eastbound and two westbound travel lanes that are separated by a raised median. In addition, a westbound right-turn lane has been constructed at the Highway 219/Arney Road intersection to better facilitate inbound vehicle trips to the commercial and retail uses located northeast of the site.

<sup>4</sup> The existing Arney Road segment has dual double yellow striping from the Highway 219/Arney Road intersection to just north of the existing site driveway.

- Connect the proposed lane striping to the existing separate northbound left- and right-turn lanes at the Arney Road/Robin Avenue intersection.
- Modify the existing Stop signs (with their secondary signs) on the northbound and eastbound approaches at the Arney Road/Robin Avenue intersection. These new stop signs should meet the MUTCD standards that require 7 feet of clearance beneath the secondary signs. The existing Stop signs do not meet this requirement as the secondary signs have less than 7 feet of clearance.

A conceptual illustration of these proposed striping changes is provided in Figure 3. These striping modifications are consistent with the on-going I-5/OR 214 interchange modification project and the remaining modifications identified for Arney Road.

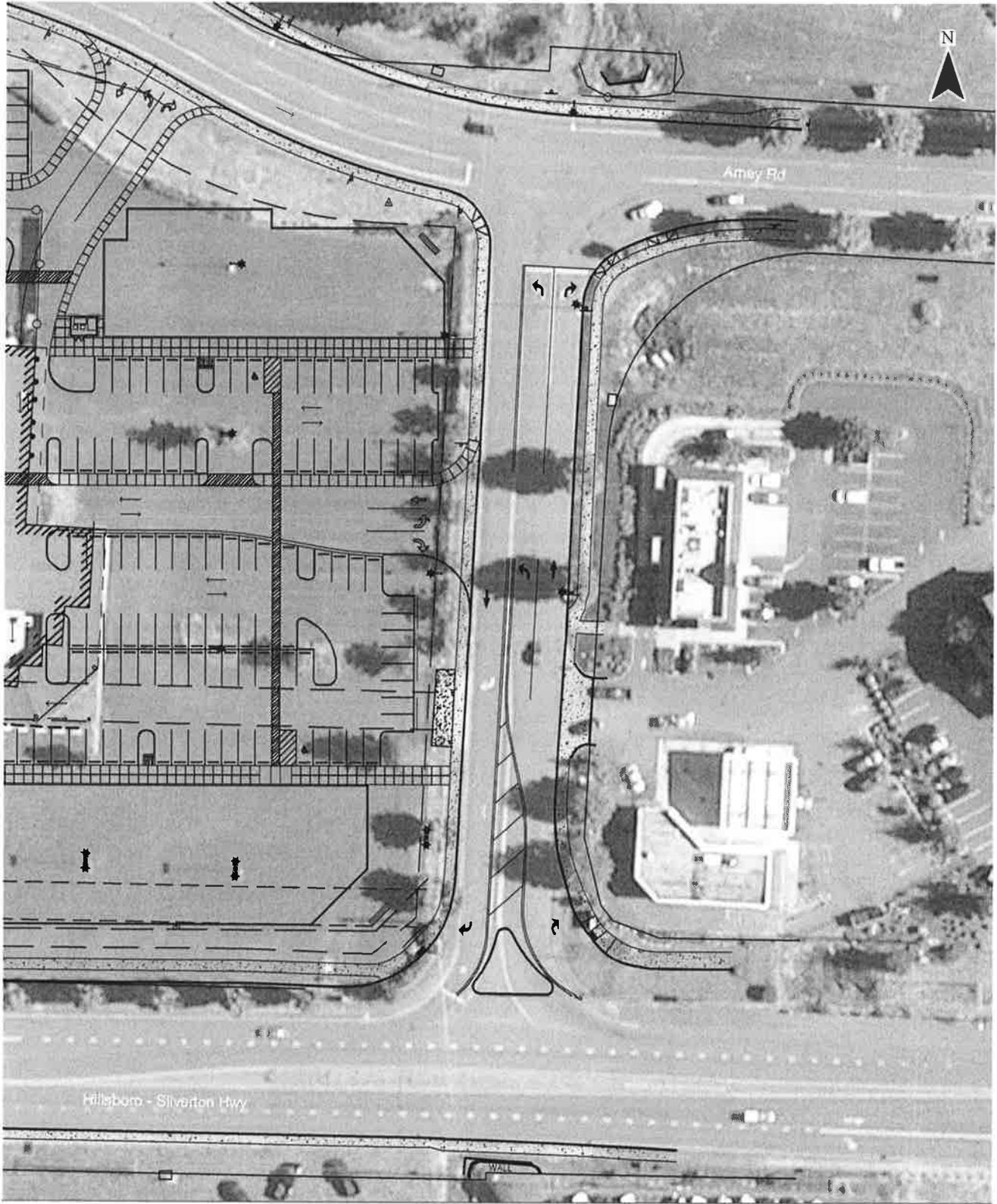
To assess the adequacy of the proposed northbound left-turn lane at the Arney Road site driveway, a vehicle queuing analysis was performed during the weekday p.m. peak period based on existing roadway traffic volumes (*provided in Attachment B*) and the projected number of northbound left-turn maneuvers. As shown in Table 3, the estimated 95<sup>th</sup> percentile queue for the northbound left-turn movement is projected to be minimal during the weekday pm peak hour, and can be accommodated within the proposed storage area. *The queuing analysis worksheets are provided in Attachment C.*

**Table 3 - 95th Percentile Queuing Summary – Proposed Arney Road/Site Driveway**

Intersection	Movement	2015 Estimated Queue Length (feet)	Proposed Storage (feet)	Adequate?
		Weekday PM Peak Hour		
Arney Road/Proposed Site Driveway	Northbound Left-Turn	25	100	Yes

**Sight Distance**

Based on the location of the proposed site driveway, the horizontal and vertical geometry of Arney Road is such that adequate departure sight triangles can be achieved for vehicles exiting the site onto Arney Road. To ensure that the maximum intersection sight distance is maintained at this driveway, it is recommended that all street trees and above ground utilities be kept clear of the departure sight triangles and that any landscaping be limited to low-lying groundcover.



H:\projects\17858 - Woodburn Commercial Development\p\figs\design\17858\_fig0002.dwg Sep 30, 2014 - 11:52am - boulimon@ Kittelson & Associates, Inc.

Proposed Arney Road Striping Modification  
Woodburn, Oregon

Figure  
3

## Robin Avenue Site Driveway

In addition to the proposed Arney Road site driveway, a full-movement driveway is being proposed along the Robin Avenue site frontage. This driveway would be located approximately 250 feet east of the Woodland Avenue/Robin Avenue intersection and 150 feet west of the Arney Road/Robin Avenue intersection.

Today, Robin Avenue accommodates a significant amount of westbound traffic generated by the Woodburn Company Stores complex and other adjacent retail uses. During periods of a typical weekday and for longer periods of time on the weekends, traffic volumes can queue back along Robin Avenue from the downstream Robin Avenue/Woodland Avenue intersection. To assess the impacts of this queuing condition on the proposed site driveway, traffic counts and queuing data were collected during the heaviest traveled weekend time period. As a result of this effort, the following conditions were observed:

- Vehicle queues do not consistently build up and block the proposed driveway location before 2:00 or after 6 p.m. on a typical weekend day. When queues do form during these periods, they are sporadic and tend to dissipate quickly.
- Westbound traffic volumes are highest along Robin Avenue between the 2:00 p.m. - 6:00 p.m. time period. This corresponds to the typical weekend peak shopping hours. During this peak time period, westbound vehicle queue lengths were observed to be either near or at the proposed driveway location. Over this four hour period, these conditions were observed for a cumulative total of 55 minutes (e.g., approximately 25 percent of the time). During all other times, the westbound vehicle queue was either short or it dissipated prior to extending beyond the proposed driveway location.
  - The duration of vehicle queues observed that built up to or beyond the proposed driveway location ranged from a minimum of 2 minutes to a maximum of 13 minutes.
  - The mean observed queue duration is approximately 6 minutes.

Based on these weekend observations, it is recognized that there are times when vehicle queues will build up and block the proposed site driveway off of Robin Avenue. When these conditions occur, it is likely that vehicles exiting the site onto Robin Avenue westbound will experience some periods of long delay. However, the following site layout features will help mitigate this delay and provide options for egress purposes:

- The site has a separate access onto Arney Road. When the Robin Avenue driveway is blocked, the Arney Road driveway can be utilized to access Robin Avenue further to the east to get behind the Robin Avenue vehicle queue.
- The Robin Avenue driveway has separate northbound left- and right-turn lanes to facilitate multiple means of egress movements onto Robin Avenue. The Robin Avenue queuing

condition is primarily limited to the westbound direction so exiting vehicles can still make a right-turn to leave the site without delay.

- The Robin Avenue driveway throat depth has been maximized to better accommodate on-site queue storage for exiting vehicles and help manage internal circulation. This layout will provide exiting vehicles a view of the Robin Avenue queuing conditions and a means of circulating on-site to other egress options.

### ***Sight Distance***

Due to the horizontal curvature of Robin Avenue along the north site frontage, it is important to ensure that there is an adequate departure sight triangle for the northbound left- and right-turn exiting lanes. The departure sight triangle for each movement is shown in Figure 2. To ensure the maximum amount of intersection sight distance for these two movements, it is recommended that all street trees and above ground utilities be kept clear of the departure sight triangles and that any landscaping be limited to low-lying groundcover.

## **CONCLUSIONS**

As documented herein, the trip generation of the proposed development is consistent with that previously analyzed for the site. Further, the following recommendations can help ensure acceptable operations at the site driveways:

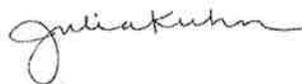
- Implement the proposed striping modifications along Arney Road.
- All street trees and above ground utilities should be kept clear of the departure sight triangles and any landscaping be limited to low-lying groundcover at the site access points on both Arney Road and Robin Avenue.
- Implement the recommended site plan layout to ensure adequate queuing and circulation is provided on-site.

We trust this letter adequately addresses the traffic impacts associated with the proposed Woodburn Commercial Development. Please contact us if you have any questions.

Sincerely,  
KITTELSON & ASSOCIATES, INC.



Matt Hughart, AICP  
Associate Planner



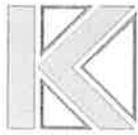
Julia Kuhn, P.E.  
Senior Principal Engineer

## REFERENCES

1. Institute of Transportation Engineers. *9<sup>th</sup> Edition, Trip Generation*. 2012.

## ATTACHMENT

- A. 2012 TPR Analysis
- B. Robin Avenue and Arney Road Traffic Count Worksheets
- C. Arney Road Queuing Analysis Worksheets



## KITTELSON & ASSOCIATES, INC.

TRANSPORTATION ENGINEERING / PLANNING

610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

September 27, 2012

Project #: 12399.0

Jim Hendryx  
Woodburn Economic & Development Services  
270 Montgomery Street  
Woodburn, Oregon 97071-4730

***RE: Transportation Planning Rule Compliance for the Proposed Auto Overlay Zone Restriction Removal for Tax Lot 6600 – Woodburn, Oregon***

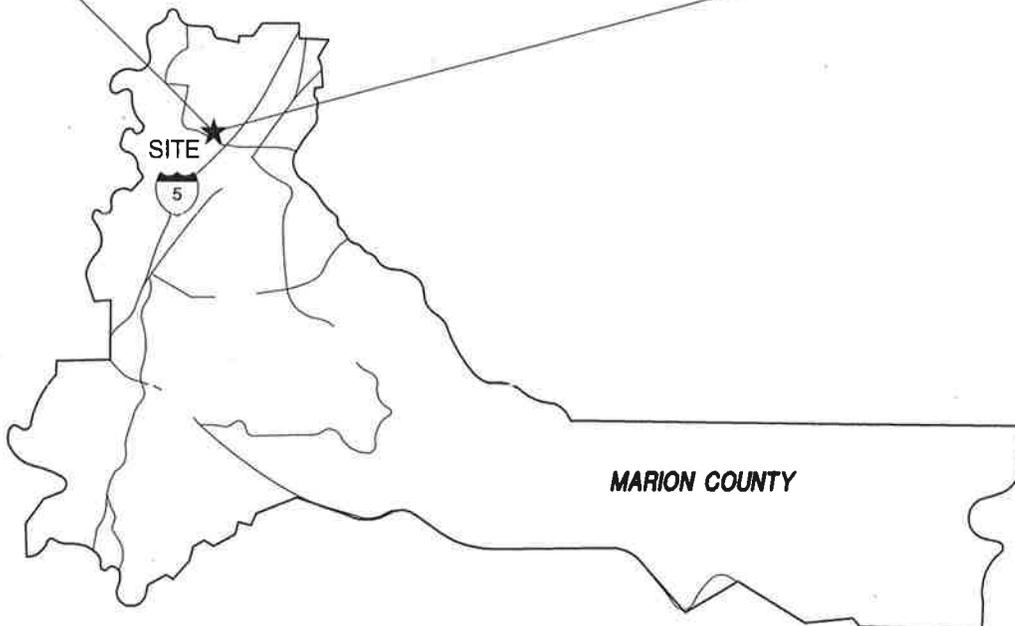
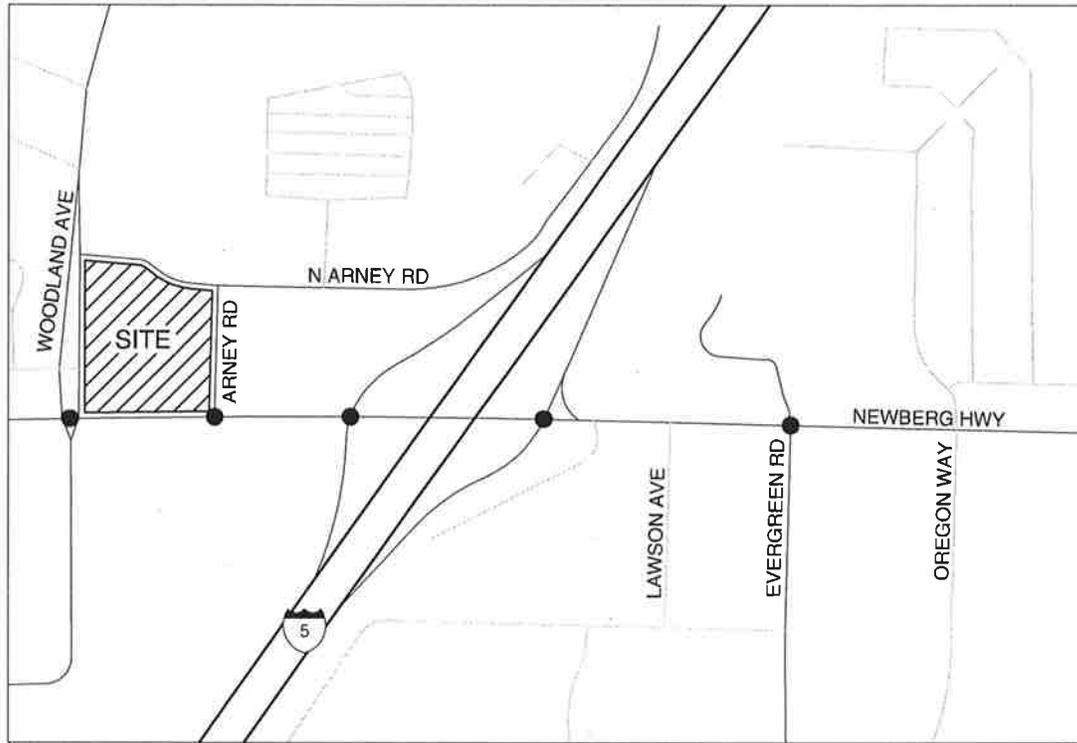
Dear Jim,

Kittelison & Associates, Inc. (KAI) has prepared this letter summarizing the compliance of the proposed removal of the auto-related land use zoning restriction on tax lot #6600 with the requirements of the Transportation Planning Rule (TPR) analysis. Tax Lot #6600 is located in the northwest quadrant of the Arney Road/Highway 214 intersection in Woodburn, Oregon. As discussed in this letter, the funded improvements associated with the upcoming Highway 214/I-5 Interchange Project can support the proposed unrestricted commercial zone within and beyond the horizon years of Woodburn Interchange Area Management Plan (IAMP) and the Transportation System Plan (TSP). Details of the TPR analysis and results are documented herein.

### BACKGROUND

This letter report addresses the transportation issues related to the Ensign Property (Tax Lot 6600) in Woodburn, Oregon. The subject site is approximately 5.04 acres and is located west of the I-5/Highway 214 interchange and is bordered by Woodland Avenue to the west, Robin Avenue to the north, Arney Road to the east, and Highway 219 to the south. The site was previously occupied by a Chevrolet vehicle dealership and has also operated as an Enterprise Rent-a-Car. Currently, the building on-site (approximately 30,000 square feet) is not occupied. The site is located in proximity to the Woodburn Company Stores and the associated retail uses as well as adjacent to a single family neighborhood to the west. A site vicinity map is shown in Figure 1.

The site is currently zoned General Commercial (CG) with an overlay zone that limits the commercial development opportunities to land uses that are primarily auto-oriented. The overlay zone limitation and the site's inclusion in the Woodburn Interchange Area Management Plan (IAMP) dictate the need for the provided TPR analysis to support the removal of the overlay zone.



**LEGEND**

- - STUDY INTERSECTIONS

**SITE VICINITY MAP  
WOODBURN, OREGON**

**FIGURE  
1**

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## TRANSPORTATION PLANNING RULE

The TPR institutes criteria under which the transportation impacts of a post-acknowledgement plan amendment and zoning map amendment must be evaluated (Reference 1).

OAR 660-012-0060(1) states:

(1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule.

(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);

(b) Change standards implementing a functional classification system; or

(c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.

(A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;

(B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or

(C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.

The Ensign property is within the existing Woodburn Interchange Area Management Plan (IAMP) which has been adopted as part of the City's Transportation System Plan (TSP). The proposed removal of the auto-oriented overlay zone will result in the potential for increased automobile trips which were not specifically studied as part of the underlying IAMP. Given that there is a planned and funded improvement project for the adjacent interchange and roadway network, a TPR analysis has been prepared to demonstrate that these improvements can accommodate the removal of the overlay zone.

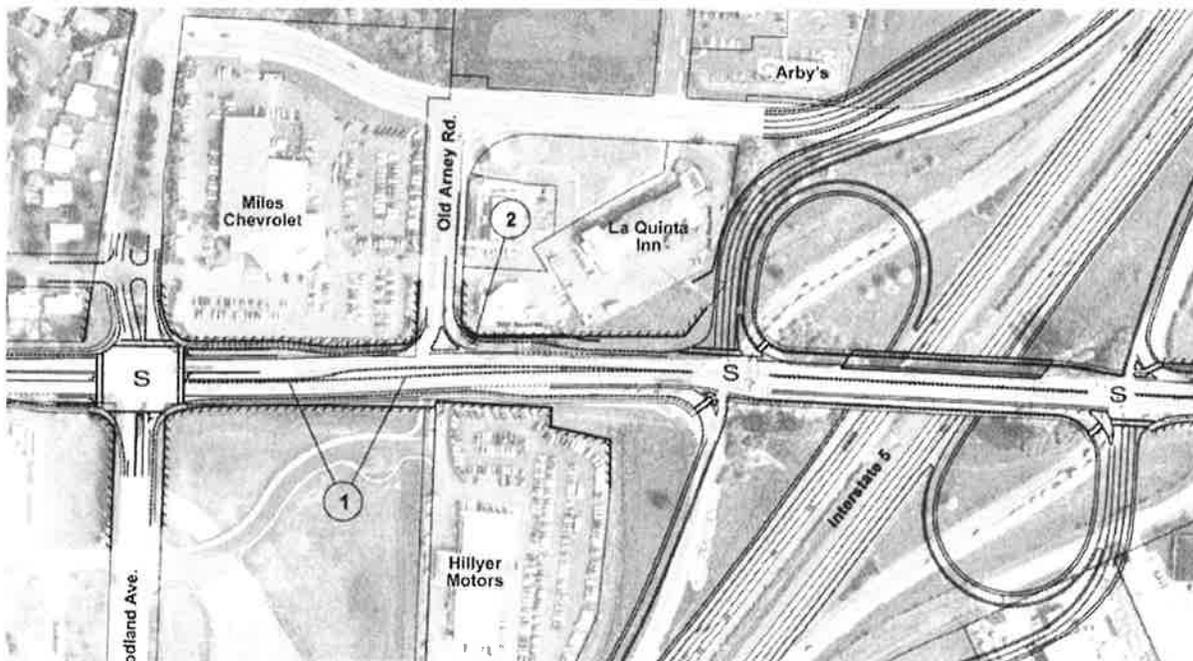
## WOODBURN INTERCHANGE IMPROVEMENTS

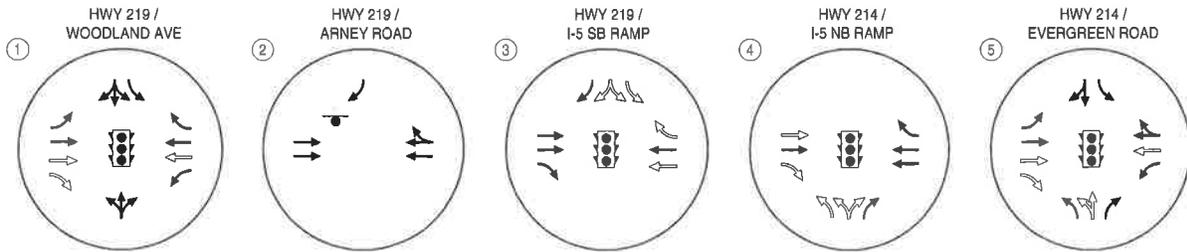
The Oregon Department of Transportation (ODOT) is planning to reconstruct the existing I-5/OR 214 interchange. This reconstruction project will generally include the following key elements:

- Reconstruct the interchange to a partial cloverleaf with loop ramps;
- Lengthen the ramps to meet current design standards;
- Widen the existing over-crossing structure (bridge) to the north;
- Raise the profile of the bridge approaches in order to improve sight lines;
- Widen Oregon 214 and 219 equally or northerly of the existing centerline
- Provide new 6-foot sidewalks with an additional 6 foot-wide landscaped buffer between the sidewalk and the curb;
- Provide one bicycle lane in each direction along Oregon 214 and 219;
- Add a raised median to control turning movements;
- Modify access for local city streets at Oregon Way, Evergreen Road and Lawson Avenue;
- Construct a Transit Facility (Park & Ride) and extend Evergreen Road north of Oregon 214 for neighborhood access to the public transit lines listed above.

Figure 2 below graphically illustrates the extent of the interchange improvements and Figure 3 shows the planned lane configurations and traffic control devices.

**Figure 2 Woodburn Interchange Project Improvements (Reference 2)**





**LEGEND**

- - EXISTING LANE CONFIGURATIONS
- - - - - PLANNED LANE CONFIGURATIONS
- ⊠ - STOP SIGN
- ⚡ - TRAFFIC SIGNAL

**PLANNED AND FUNDED LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES  
WOODBURN, OREGON**

**FIGURE  
3**

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The improvement of the interchange is being funded, in part, by Oregon's Jobs and Transportation Act (JTA) and is scheduled for completion in 2015. For the purposes of the TPR analysis, it is appropriate to include these improvements in the evaluation of the proposed removal of the zoning overlay on the Ensign property.

## TPR ANALYSIS REQUIREMENTS

The TPR requires evaluation of the forecast transportation system operations in the TSP horizon year or a minimum of 15 years from the proposal, both with and without the proposed overlay removal. The analysis years included in the TSP and IAMP are less than the 15-year minimum horizon year requirement within the TPR so the analyses contained in this letter focus on 2027 forecast conditions. A discussion of the methodology, assumptions and findings of year 2027 conditions is provided below.

## TRAFFIC OPERATIONS

All level-of-service analyses described in this report were performed in accordance with the procedures stated in the 2000 *Highway Capacity Manual* (Reference 3) and ODOT's Analysis and Procedures Manual (APM).

All intersection evaluations used the peak 15-minute flow rate during the weekday p.m. peak hour. Using the peak 15-minute flow rate ensures that this analysis is based on a reasonable worst-case scenario. For this reason, the analysis reflects conditions that are only likely to occur for 15 minutes out of each average peak hour. The transportation system will likely operate under conditions better than those described in this report during other time periods.

Per the 1999 Oregon Highway Plan (OHP) classification maps, Highway 214/219 is classified as a District Highway and I-5 is classified as an Interstate Highway. As such, the mobility standards for each of these facilities are summarized in Table 1 below.

Table 1 Oregon Highway Plan Mobility Standards

Highway	OHP Classification	Volume to Capacity Mobility Standard
Highway 214/Highway 219	District Highway	0.80
Interstate 5	Interstate Highway	0.70

## FORECAST TRAFFIC VOLUMES

### Forecast Methodology

Year 2027 traffic volumes were developed from the 2020 traffic volumes documented in the *Woodburn Transportation System Plan (TSP)* (Reference 4). The 2020 TSP volumes were increased by an annual percentage based on Future Volume Tables data<sup>1</sup> for specific segments of roadways in the vicinity of the Ensign Property along Highway 214/219. The data is summarized in Table 2 below.

Table 2 TPAU Future Volume Forecasts

Highway	0.1 Mile West of I-5		Annual Growth Rate	0.01 Mile East of I-5		Annual Growth Rate	0.3 Mile South of OR 219		Annual Growth Rate
	2010	2030		2010	2030		2008	2030	
Highway 214/219 (#140)	17,800	20,600	0.8%	24,900	26,400	0.3%	--	--	--
I-5 (#001)	--	--	--	--	--	--	78,300	109,300	1.8%

As shown in the table above, the average annual growth rate along Highway 219 is forecast to be approximately 0.8 percent annually to the west of I-5 and 0.3 percent annually to the east of I-5. To provide a conservative forecast of traffic volumes along Highway 219, the analysis herein assumes a one percent annual growth rate from the 2020 TSP volumes to arrive at the forecast 2027 volumes.

*The 2020 TSP volumes and the 2027 forecast volumes are shown in Attachment "A."*

## TRIP GENERATION

### Existing Zoning

Our review of the Woodburn IAMP indicates that the Ensign Property is accounted for as a commercially zoned site with an auto-oriented land use restriction according to the provisions of the overlay zone. For the purposes of the TPR analysis, we developed a reasonable "worst-case" trip generation based on the existing zoning with the auto-oriented overlay restriction. The land use assumptions used to determine the trip potential are summarized in Table 3 below. Per conversation with city staff, the intent of the existing overlay restriction is to allow only auto sales on the property. The overlay language in the zoning code could be interpreted more broadly to allow for the uses shown in Table 3.

<sup>1</sup> Data provided by the Oregon Transportation Planning and Analysis Unit (TPAU).

Table 3 Reasonable “Worst-Case” Trip Generation –Existing Zoning and Auto Overlay Restriction

Land Use	ITE Code	Size	Daily Trips	Weekday PM Peak Hour		
				Total	In	Out
Automobile Parts Sales	843	9,000 (square feet)	555	55	25	30
<i>Pass-by Trips (43% Daily, 43% PM)</i>			(240)	(20)	(10)	(10)
Gasoline/Service Station	944	8 (fuel stations)	1,350	110	55	55
<i>Pass-by Trips (58% Daily, 43% PM)</i>			(780)	(50)	(25)	(25)
Quick Lubrication Vehicle Stop	941	3	120	15	10	5
<b>Total Trips</b>			<b>2,025</b>	<b>180</b>	<b>90</b>	<b>90</b>
<i>Total Pass-by Trips</i>			<i>(1,020)</i>	<i>(70)</i>	<i>(35)</i>	<i>(35)</i>
<b>Total Net Trips</b>			<b>1,005</b>	<b>110</b>	<b>55</b>	<b>55</b>

### Proposed Zoning without the Overlay Restrictions

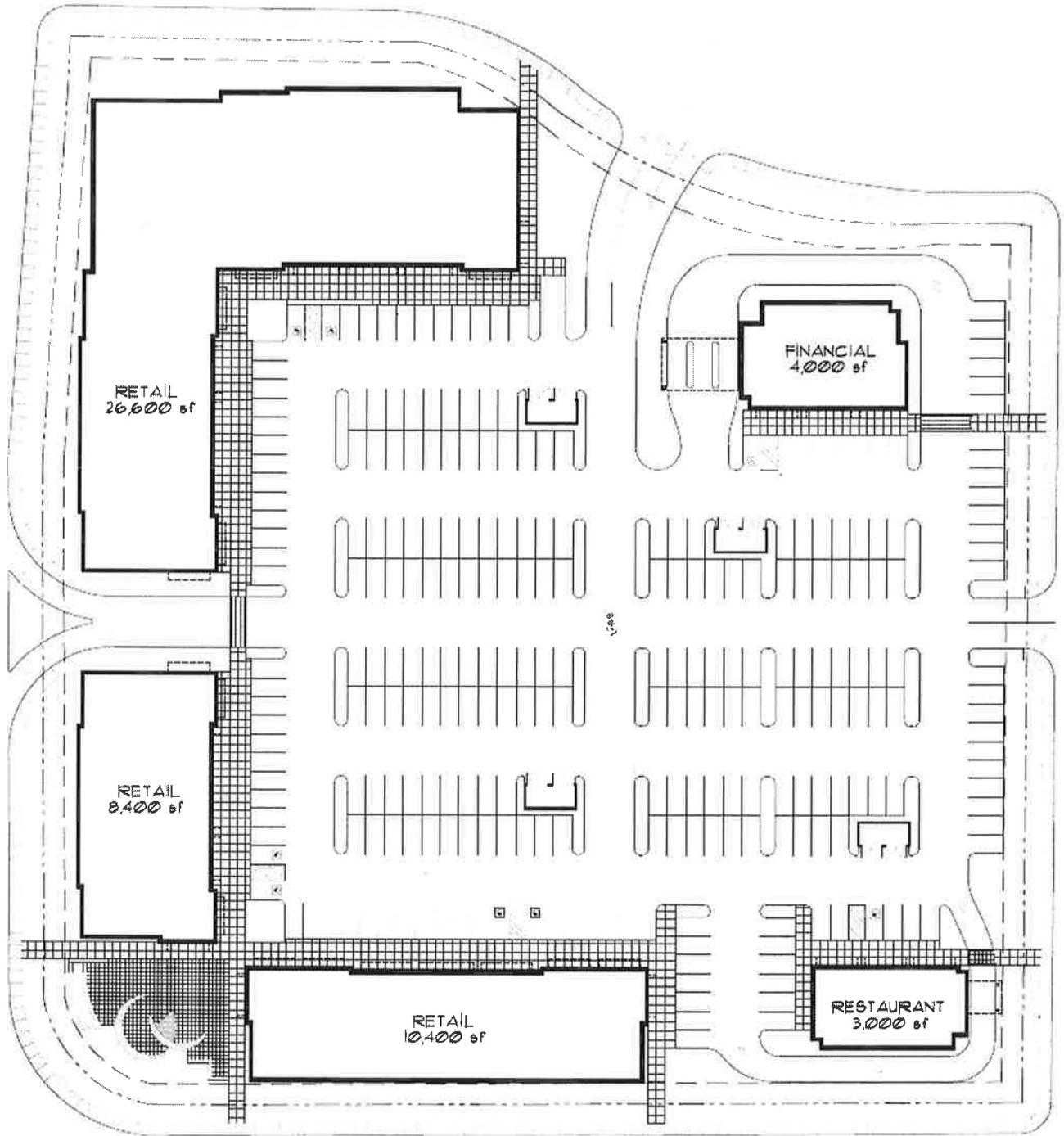
The owners of the Ensign Property would like to add flexibility for future redevelopment of the property to enable land uses that are not allowed within the existing overlay restrictions. To support the proposed removal of the overlay, the remainder of this report provides an analysis of the impact of a reasonable “worst-case” development scenario for the commercial zone.

Similar to the existing zoning trip generation, a reasonable “worst-case” trip generation was estimated for the property based on the commercial zoning without consideration of the auto-oriented overlay restriction. The land use assumptions used to determine the trip potential are summarized in Table 4 below.

Table 4 Reasonable “Worst-Case” Trip Generation – Proposed Zoning without Auto Overlay Restriction

Land Use	ITE Code	Size (square feet)	Daily Trips	Weekday PM Peak Hour		
				Total	In	Out
Shopping Center	820	45,400	4,065	375	185	190
<i>Pass-by Trips (34% Daily, 34% PM)</i>			(1,380)	(130)	(65)	(65)
Drive-in Bank	912	4,000	595	105	55	50
<i>Pass-by Trips (47% Daily, 47% PM)</i>			(280)	(50)	(25)	(25)
Fast-food Restaurant with Drive-through	934	3,000	1,490	100	50	50
<i>Pass-by Trips (49% Daily, 50% PM)</i>			(730)	(50)	(25)	(25)
<b>Total Trips</b>			<b>6,150</b>	<b>580</b>	<b>290</b>	<b>290</b>
<i>Total Pass-by Trips</i>			<i>(2,390)</i>	<i>(230)</i>	<i>(115)</i>	<i>(115)</i>
<b>Total Net Trips</b>			<b>3,760</b>	<b>350</b>	<b>175</b>	<b>175</b>

As shown in Table 4, the commercial zoning without the auto-oriented overlay restriction would allow for general retail, fast food and a bank. A potential site development scenario for this concept is shown in Figure 4 for illustrative purposes. This development mix is estimated to generate approximately



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PROVIDED FOR CONCEPTUAL PURPOSES ONLY

POTENTIAL SITE DEVELOPMENT SCENARIO  
UNRESTRICTED COMMERCIAL ZONING  
WOODBURN, OREGON

FIGURE  
4

3,760 daily trips and 350 trips during the weekday p.m. peak hour (290 trips in, 290 trips out). The TPR analysis provided in the following section analyzes the impact of the added trips from existing restricted commercial zoning (Table 3) and the proposed unrestricted commercial zoning (Table 4).

## YEAR 2027 TPR ANALYSIS

### Current Commercial Zoning with Auto Overlay Restriction

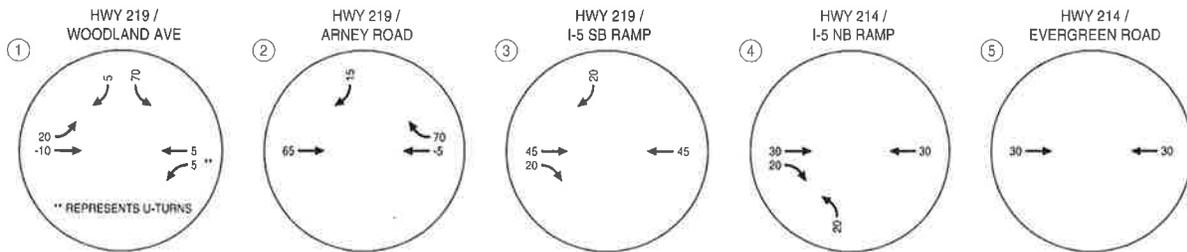
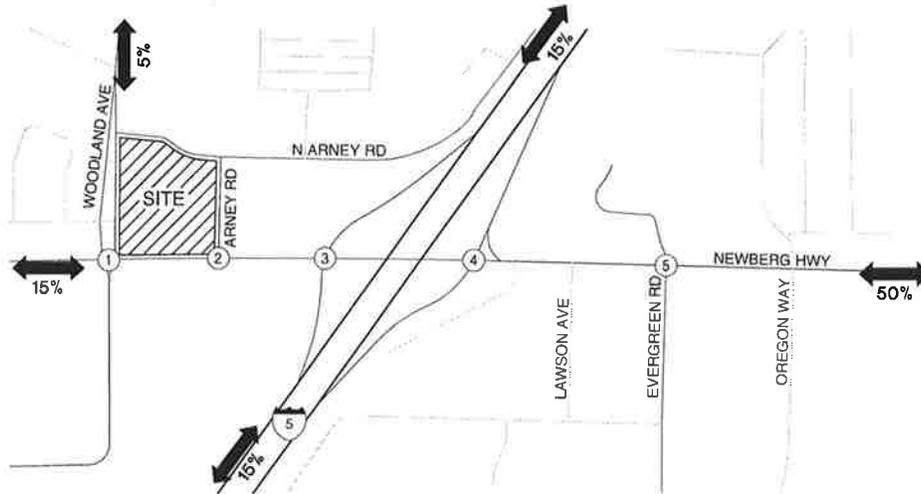
The reasonable “worst-case” trip generation and distribution for the existing zoning with the auto-restricted overlay is summarized in Figure 5. The 2027 traffic operations analysis for the current auto-overlay restricted commercial zoning is shown in Figure 6. As shown, all intersections within the IAMP study area are forecast to operate within OHP mobility standards.

*The traffic operations worksheets for the 2027 total traffic conditions with the current commercial zoning overlay restriction are shown in Attachment “B.”*

### Proposed Commercial Zoning without Auto Overlay Restriction

The reasonable “worst-case” trip generation and distribution for the existing zoning with the auto-restriction removed is summarized in Figure 9. The 2027 total traffic operations analysis for the unrestricted commercial zoning is shown in Figure 10. As shown, all intersections within the IAMP study area are forecast to operate acceptably. Based on this analysis, the proposed removal of the zoning overlay is not forecast to significantly affect the transportation system, and the applicable provisions of the TPR can be met.

*The traffic operations worksheets for the 2027 total traffic conditions with the unrestricted commercial zoning are shown in Attachment “C.”*



**LEGEND**

**EXISTING ZONING, AUTO OVERLAY RESTRICTION**

	TOTAL	IN	OUT
PM PEAK HOUR TRIPS	180	90	90
LESS PASS-BY	(70)	(35)	(35)
NET NEW PM TRIPS	110	55	55

NOTE: NEGATIVE NUMBERS INDICATE PASS-BY TRIPS

**ADDED NET NEW TRIPS - EXISTING COMMERCIAL ZONING WITH AUTO OVERLAY RESTRICTION, WEEKDAY PM PEAK HOUR WOODBURN, OREGON**

FIGURE  
**5**

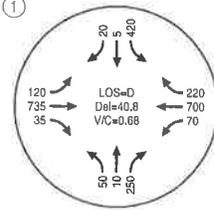
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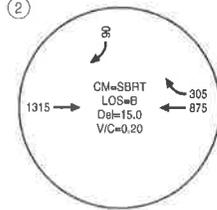
(NO SCALE)



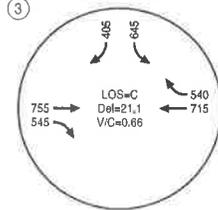
① HWY 219 / WOODLAND AVE



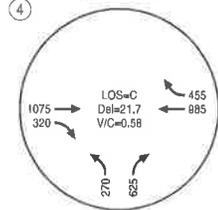
② HWY 219 / ARNEY ROAD



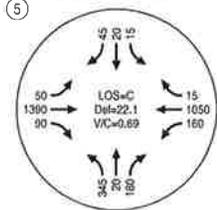
③ HWY 219 / I-5 SB RAMP



④ HWY 214 / I-5 NB RAMP



⑤ HWY 214 / EVERGREEN ROAD



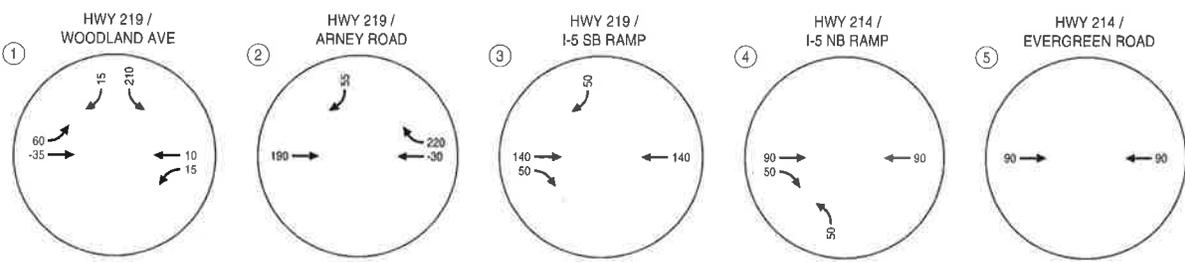
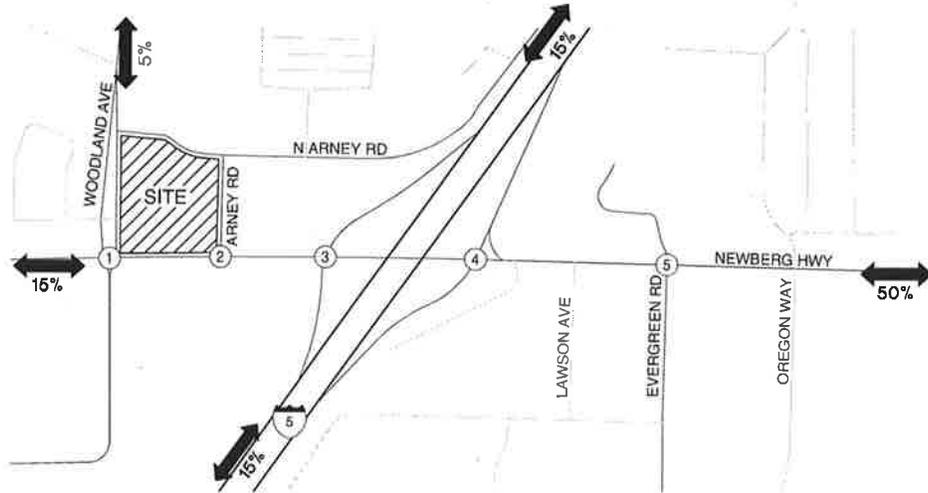
**LEGEND**

- 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

**2027 TOTAL TRAFFIC CONDITIONS - EXISTING COMMERCIAL ZONING WITH AUTO OVERLAY RESTRICTION, WEEKDAY PM PEAK HOUR WOODBURN, OREGON**

FIGURE 6

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**LEGEND**

**EXISTING ZONING, NO AUTO OVERLAY RESTRICTION**

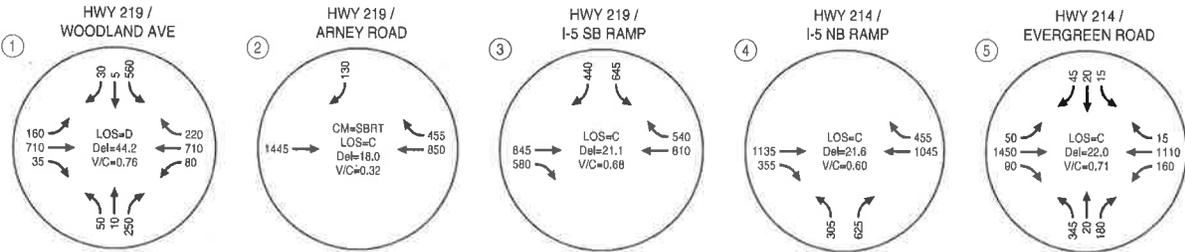
	TOTAL	IN	OUT
PM PEAK HOUR TRIPS	580	290	290
LESS PASS-BY	(230)	(115)	(115)
NET NEW PM TRIPS	350	175	175

NOTE: NEGATIVE NUMBERS INDICATE PASS-BY TRIPS

**ADDED NET NEW TRIPS - EXISTING COMMERCIAL ZONING  
NO AUTO OVERLAY RESTRICTION, WEEKDAY PM PEAK HOUR  
WOODBURN, OREGON**

FIGURE  
**7**

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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

**2027 TOTAL TRAFFIC CONDITIONS - EXISTING COMMERCIAL ZONING NO AUTO OVERLAY RESTRICTION, WEEKDAY PM PEAK HOUR WOODBURN, OREGON**

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## CONCLUSIONS

Based on the analysis presented in this letter, the proposed removal of the auto-restriction overlay on the commercial zone for tax lot #6600 in Woodburn, Oregon can be completed consistent with OAR 660-012-0060, as addressed below.

### OAR 660-012-0060

(1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule.

***Response: The transportation impacts of the proposed zoning modification are not forecast to significantly affect the planned interchange improvements and transportation facilities.***

(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);

***Response: No change to the functional classification or planned transportation facility is proposed.***

(b) Change standards implementing a functional classification system; or

***Response: No change to the standards of the functional classification system is proposed.***

(c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.

(A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;

***Response: All types and levels of travel and access are consistent with the functional classification of the planned transportation facility.***

(B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or

***Response: The transportation impacts of the proposed zoning modification are not forecast to degrade the performance of the planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan.***

(C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.

**Response: The transportation impacts of the proposed zoning modification are not forecast to degrade the performance of the planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.**

We trust this letter adequately addresses the transportation issues associated with the proposed removal of the auto-restriction overlay on tax lot #6600 in Woodburn, Oregon. If you have any questions or comments, please contact us at (503) 228-5230.

Sincerely,  
KITTELSON & ASSOCIATES, INC.



Diego Arguea, P.E.  
Senior Engineer



Matthew Hughart, AICP  
Associate Planner

Cc: Aaron Ensign, Ensign Investment LLC  
Cathy Corliss, Angelo Planning Group  
Terry Cole, Oregon Department of Transportation  
Julia Kuhn, Kittelson & Associates, Inc.

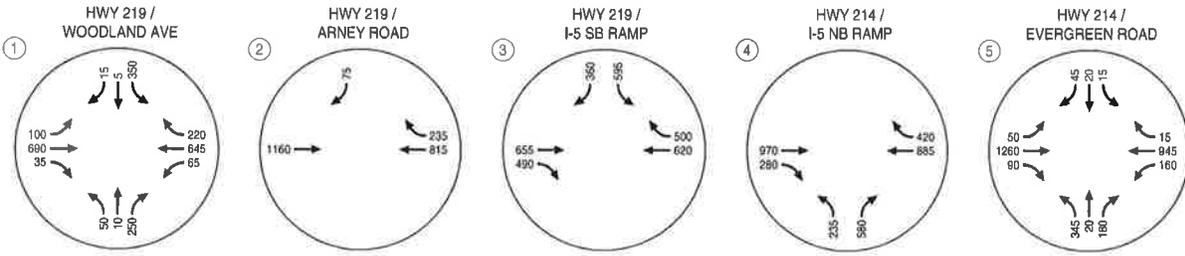


EXPIRES: Dec. 31 2013

## REFERENCES

1. Department of Land Conservation and Development. *Oregon Administrative Rules, Division 12, Transportation Planning*. Website consulted September 7, 2012.  
[http://arcweb.sos.state.or.us/pages/rules/oars\\_600/oar\\_660/660\\_012.html](http://arcweb.sos.state.or.us/pages/rules/oars_600/oar_660/660_012.html)
2. Federal Highway Administration and Oregon Department of Transportation. Woodburn Interchange Project Revised *Environmental Assessment*. November 2006.
3. *Woodburn Transportation System Plan*. October 2005.
4. Transportation Research Board. *Highway Capacity Manual*. 2000.

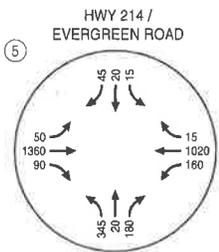
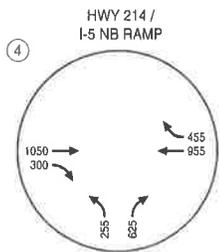
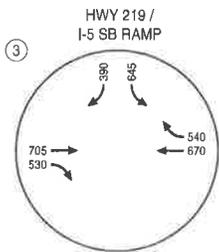
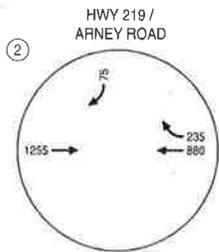
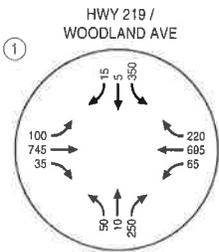
Attachment A  
Forecast Traffic Volumes



**2020 WOODBURN TSP TRAFFIC VOLUMES  
WEEKDAY PM PEAK HOUR  
WOODBURN, OREGON**

FIGURE  
**A1**

H:\proj\12389 - Woodburn Ensign Property\dwgs\figs\12389fig01.dwg Sep 27, 2012 - 10:52am - dargusa Layout Tab: FigA1



NOTE: BACKGROUND REGIONAL ANNUAL GROWTH RATE OF 1% APPLIED TO 2020 TSP VOLUMES TO ARRIVE AT 2027 FORECAST VOLUMES

**2027 FORECAST TRAFFIC VOLUMES  
WEEKDAY PM PEAK HOUR  
WOODBURN, OREGON**

FIGURE  
**A2**

H:\projects\123899 - Woodburn Ensign Property\dwg\figs\123899fig01.dwg Sep 27, 2012 - 10:53am - darguea Layout Tab: FigA2

Attachment B  
2027 Traffic Operations  
Worksheets: Existing Zoning  
with Overlay Restriction

Kittelson & Associates, Inc. -- Project # 12399  
 Ensign Property Rezone -- Woodburn, Oregon  
 2027 Total Traffic Conditions with Auto Overlay -- Weekday PM Peak Hour

Scenario Report

Scenario: pm  
 Command: pm  
 Volume: pm  
 Geometry: pm  
 Impact Fee: Default Impact Fee  
 Trip Generation: pm  
 Trip Distribution: Default Trip Distribution  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Default Configuration

Kittelson & Associates, Inc. -- Project # 12399  
 Ensign Property Rezone -- Woodburn, Oregon  
 2027 Total Traffic Conditions with Auto Overlay -- Weekday PM Peak Hour

Impact Analysis Report  
 Level Of Service

Intersection	Base		Future		Change in
	Del/ LOS Veh	V/ c	Del/ LOS Veh	V/ c	
# 27 Hwy 214/Evergreen Road	C	22.2 0.678	C	22.1 0.687	-0.067 D/V
# 28 Hwy 214/I-5 NB ramp	C	21.5 0.575	C	21.7 0.579	+ 0.164 D/V
# 29 Hwy 214/I-5 SB ramp	C	21.1 0.642	C	21.1 0.657	-0.021 D/V
# 30 Hwy 214/Arney Road	B	14.1 0.160	C	15.0 0.197	+ 0.887 D/V
# 31 Hwy 214/Woodland Avenue	D	39.2 0.646	D	40.8 0.683	+ 1.636 D/V

Level of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)

Intersection #27 Hwy 214/Evergreen Road

Cycle (sec):	120	Critical Vol./Cap. (X):	0.687
Loss Time (sec):	8	Average Delay (sec/veh):	22.1
Optimal Cycle:	48	Level of Service:	C

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Split Phase	Split Phase	Prot+Permit	Prot+Permit
Rights:	Include	Include	Include	Include
Min. Green:	0 0 0	0 0 0	0 0 0	0 0 0
Y+R:	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0
Lanes:	1 1 0 0 1	1 0 0 1 0	1 0 2 0 1	1 0 1 1 0

Volume Module:

Base Vol:	345	20	180	15	20	45	50	1260	90	160	945	15
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.08	1.00	1.00	1.08	1.00
Initial Bse:	345	20	180	15	20	45	50	1361	90	160	1021	15
Added Vol:	0	0	0	0	0	0	0	28	0	0	28	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	345	20	180	15	20	45	50	1389	90	160	1049	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	345	20	180	15	20	45	50	1389	90	160	1049	15
Reduc Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	345	20	180	15	20	45	50	1389	90	160	1049	15
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	345	20	180	15	20	45	50	1389	90	160	1049	15

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.84	0.91	0.86	0.86	0.92	0.92	0.82	0.91	0.91	0.91
Lanes:	1.89	0.11	1.00	1.00	0.31	0.69	1.00	2.00	1.00	1.00	1.97	0.03
Final Sat.:	3396	197	1596	1736	504	1133	1752	3505	1557	1736	3417	49

Capacity Analysis Module:

Vol/Sat:	0.10	0.10	0.11	0.01	0.04	0.04	0.03	0.40	0.06	0.09	0.31	0.31
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green/Cycle:	0.16	0.16	0.16	0.06	0.06	0.06	0.64	0.58	0.58	0.73	0.65	0.65
Volume/Cap:	0.62	0.62	0.69	0.15	0.69	0.69	0.14	0.69	0.10	0.47	0.47	0.47
Delay/Veh:	48.6	48.6	54.6	54.4	74.5	74.5	8.6	18.8	11.4	15.1	10.7	10.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	48.6	48.6	54.6	54.4	74.5	74.5	8.6	18.8	11.4	15.1	10.7	10.7
LOS by Move:	D	D	D	D	E	E	A	B	B	B	B	B
HCM2kAvgQ:	7	7	8	1	4	4	1	18	1	2	10	10

Note: Queue reported is the number of cars per lane.  
 Traffic 8.0.0715 (c) 2008 Dowling Assoc. Licensed to KITTELSON, PORTLAND

Level of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)

Intersection #28 Hwy 214/I-5 NB ramp

Cycle (sec):	120	Critical Vol./Cap. (X):	0.579
Loss Time (sec):	8	Average Delay (sec/veh):	21.7
Optimal Cycle:	37	Level of Service:	C

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Split Phase	Split Phase	Permitted	Permitted
Rights:	Include	Include	Include	Include
Min. Green:	0 0 0	0 0 0	0 0 0	0 0 0
Y+R:	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0
Lanes:	1 0 1 0 1	0 0 0 0 0	0 0 2 0 1	0 0 2 0 1

Volume Module:

Base Vol:	235	0	580	0	0	0	970	280	0	885	420
Growth Adj:	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
Initial Bse:	254	0	626	0	0	0	1048	302	0	956	454
Added Vol:	8	0	0	0	0	0	28	8	0	28	0
Pass-by:	10	0	0	0	0	0	0	10	0	0	0
Initial Fut:	272	0	626	0	0	0	1076	320	0	984	454
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	272	0	626	0	0	0	1076	320	0	984	454
Reduc Vol:	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	272	0	626	0	0	0	1076	320	0	984	454
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	272	0	626	0	0	0	1076	320	0	984	454

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.80	1.00	0.80	1.00	1.00	1.00	1.00	0.95	0.85	1.00	0.90
Lanes:	1.30	0.00	1.70	0.00	0.00	0.00	0.00	2.00	1.00	0.00	2.00
Final Sat.:	1979	0	2579	0	0	0	0	3610	1615	0	3432

Capacity Analysis Module:

Vol/Sat:	0.14	0.00	0.24	0.00	0.00	0.00	0.00	0.30	0.20	0.00	0.29
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****
Green/Cycle:	0.42	0.00	0.42	0.00	0.00	0.00	0.00	0.51	0.51	0.00	0.51
Volume/Cap:	0.33	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.39	0.00	0.56
Delay/Veh:	23.5	0.0	27.3	0.0	0.0	0.0	0.0	20.6	18.0	0.0	20.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	23.5	0.0	27.3	0.0	0.0	0.0	0.0	20.6	18.0	0.0	20.3
LOS by Move:	C	A	C	A	A	A	A	C	B	A	C
HCM2kAvgQ:	5	0	11	0	0	0	0	14	7	0	13

Note: Queue reported is the number of cars per lane.  
 Traffic 8.0.0715 (c) 2008 Dowling Assoc. Licensed to KITTELSON, PORTLAND



Kittelton & Associates, Inc. -- Project # 12399  
 Ensign Property Rezone -- Woodburn, Oregon  
 2027 Total Traffic Conditions with Auto Overlay -- Weekday PM Peak Hour

Level of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)

Intersection #31 Hwy 214/Woodland Avenue

Cycle (sec): 120 Critical Vol./Cap.(X): 0.683  
 Loss Time (sec): 12 Average Delay (sec/veh): 40.8  
 Optimal Cycle: 59 Level of Service: D

Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0 0	1	0	1! 0 0	1	0	2 0 1	1	0	2 0 1

Volume Module:

Base Vol:	50	10	250	350	5	15	100	690	35	65	645	220
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	50	10	250	350	5	15	100	745	35	65	697	220
Added Vol:	0	0	0	40	0	5	8	0	0	4	3	0
pass-by:	0	0	0	30	0	0	10	-10	0	0	0	0
Initial Fut:	50	10	250	420	5	20	118	735	35	69	700	220
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	50	10	250	420	5	20	118	735	35	69	700	220
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	50	10	250	420	5	20	118	735	35	69	700	220
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	50	10	250	420	5	20	118	735	35	69	700	220

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.76	0.76	0.76	0.94	0.94	0.94	0.92	0.92	0.83	0.91	0.91	0.82
Lanes:	0.16	0.03	0.81	1.89	0.02	0.09	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	233	47	1167	3378	38	152	1753	3505	1568	1736	3473	1554

Capacity Analysis Module:

Vol/Sat:	0.21	0.21	0.21	0.12	0.13	0.13	0.07	0.21	0.02	0.04	0.20	0.14
Crit Moves:	****			****			****			****		
Green/Cycle:	0.31	0.31	0.31	0.19	0.19	0.19	0.10	0.33	0.33	0.06	0.29	0.29
Volume/Cap:	0.68	0.68	0.68	0.64	0.68	0.68	0.68	0.63	0.07	0.63	0.68	0.48
Delay/Veh:	40.2	40.2	40.2	46.7	48.0	48.0	63.0	35.2	27.5	66.5	39.3	35.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	40.2	40.2	40.2	46.7	48.0	48.0	63.0	35.2	27.5	66.5	39.3	35.5
LOS by Move:	D	D	D	D	D	D	E	D	C	E	D	D
HCM2kAvgQ:	11	11	11	8	9	9	6	13	1	4	13	7

Note: Queue reported is the number of cars per lane.

Attachment C  
2027 Traffic Operations  
Worksheets: Existing Zoning  
without Overlay Restriction

Kittelson & Associates, Inc. -- Project # 12399  
 Ensign Property Rezone -- Woodburn, Oregon  
 2027 Total Traffic Conditions no Auto Overlay -- Weekday PM Peak Hour

Scenario Report

Scenario: pm  
 Command: pm  
 Volume: pm  
 Geometry: pm  
 Impact Fee: Default Impact Fee  
 Trip Generation: pm  
 Trip Distribution: Default Trip Distribution  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Default Configuration

Kittelson & Associates, Inc. -- Project # 12399  
 Ensign Property Rezone -- Woodburn, Oregon  
 2027 Total Traffic Conditions no Auto Overlay -- Weekday PM Peak Hour

Impact Analysis Report  
 Level Of Service

Intersection	Base		Future		Change in
	LOS	Veh C	LOS	Veh C	
# 27 Hwy 214/Evergreen Road	C	22.2 0.678	C	22.0 0.705	-0.169 D/V
# 28 Hwy 214/I-5 NB ramp	C	21.5 0.575	C	21.6 0.600	+ 0.113 D/V
# 29 Hwy 214/I-5 SB ramp	C	21.1 0.642	C	21.1 0.684	-0.005 D/V
# 30 Hwy 214/Arney Road	B	14.1 0.160	C	18.0 0.320	+ 3.836 D/V
# 31 Hwy 214/Woodland Avenue	D	39.2 0.646	D	44.2 0.764	+ 5.049 D/V

Kittelson & Associates, Inc. -- Project # 12399  
 Ensign Property Rezone -- Woodburn, Oregon  
 2027 Total Traffic Conditions no Auto Overlay -- Weekday PM Peak Hour

Level of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)

Intersection #27 Hwy 214/Evergreen Road  
 Cycle (sec): 120 Critical Vol./Cap.(X): 0.705  
 Loss Time (sec): 8 Average Delay (sec/veh): 22.0  
 Optimal Cycle: 50 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	1	0	0	1	0	1	0	2	0	1	1

Volume Module:

Base Vol:	345	20	180	15	20	45	50	1260	90	160	945	15
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.08	1.00	1.00	1.08	1.00
Initial Bse:	345	20	180	15	20	45	50	1361	90	160	1021	15
Added Vol:	0	0	0	0	0	0	0	88	0	0	88	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	345	20	180	15	20	45	50	1449	90	160	1109	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	345	20	180	15	20	45	50	1449	90	160	1109	15
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	345	20	180	15	20	45	50	1449	90	160	1109	15
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	345	20	180	15	20	45	50	1449	90	160	1109	15

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.84	0.91	0.86	0.86	0.92	0.92	0.82	0.91	0.91	0.91
Lanes:	1.89	0.11	1.00	1.00	0.31	0.69	1.00	2.00	1.00	1.00	1.97	0.03
Final Sat.:	3396	197	1596	1736	504	1133	1752	3505	1557	1736	3420	46

Capacity Analysis Module:

Vol/Sat:	0.10	0.10	0.11	0.01	0.04	0.04	0.03	0.41	0.06	0.09	0.32	0.32
Crit Moves:	****			****			****			****		
Green/Cycle:	0.16	0.16	0.16	0.06	0.06	0.06	0.64	0.59	0.59	0.73	0.66	0.66
Volume/Cap:	0.63	0.63	0.70	0.15	0.70	0.70	0.15	0.70	0.10	0.49	0.49	0.49
Delay/Veh:	49.5	49.5	56.4	54.6	77.5	77.5	8.4	18.6	10.9	16.5	10.5	10.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	49.5	49.5	56.4	54.6	77.5	77.5	8.4	18.6	10.9	16.5	10.5	10.5
LOS by Move:	D	D	E	D	E	E	A	B	B	B	B	B
HCM2kAvgQ:	7	7	8	1	4	4	1	19	1	2	11	11

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. -- Project # 12399  
 Ensign Property Rezone -- Woodburn, Oregon  
 2027 Total Traffic Conditions no Auto Overlay -- Weekday PM Peak Hour

Level of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)

Intersection #28 Hwy 214/I-5 NB ramp  
 Cycle (sec): 120 Critical Vol./Cap.(X): 0.600  
 Loss Time (sec): 8 Average Delay (sec/veh): 21.6  
 Optimal Cycle: 39 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	0	0	0	0	2	0	0	1

Volume Module:

Base Vol:	235	0	580	0	0	0	0	0	970	280	0	885
Growth Adj:	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
Initial Bse:	254	0	626	0	0	0	0	0	1048	302	0	956
Added Vol:	26	0	0	0	0	0	0	0	88	26	0	88
pass-by:	25	0	0	0	0	0	0	0	0	25	0	0
Initial Fut:	305	0	626	0	0	0	0	0	1136	353	0	1044
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	305	0	626	0	0	0	0	0	1136	353	0	1044
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	305	0	626	0	0	0	0	0	1136	353	0	1044
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	305	0	626	0	0	0	0	0	1136	353	0	1044

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.80	1.00	0.80	1.00	1.00	1.00	1.00	0.95	0.85	1.00	0.90	0.81
Lanes:	1.33	0.00	1.67	0.00	0.00	0.00	0.00	2.00	1.00	0.00	2.00	1.00
Final Sat.:	2023	0	2550	0	0	0	0	3610	1615	0	3432	1535

Capacity Analysis Module:

Vol/Sat:	0.15	0.00	0.25	0.00	0.00	0.00	0.00	0.31	0.22	0.00	0.30	0.30
Crit Moves:	****			****			****			****		
Green/Cycle:	0.41	0.00	0.41	0.00	0.00	0.00	0.00	0.52	0.52	0.00	0.52	0.52
Volume/Cap:	0.37	0.00	0.60	0.00	0.00	0.00	0.00	0.60	0.42	0.00	0.58	0.56
Delay/Veh:	24.7	0.0	28.4	0.0	0.0	0.0	0.0	20.4	17.7	0.0	20.0	20.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	24.7	0.0	28.4	0.0	0.0	0.0	0.0	20.4	17.7	0.0	20.0	20.2
LOS by Move:	C	A	C	A	A	A	A	A	C	B	A	C
HCM2kAvgQ:	6	0	11	0	0	0	0	15	8	0	13	11

Note: Queue reported is the number of cars per lane.



Kittelson & Associates, Inc. -- Project # 12399  
 Ensign Property Rezone -- Woodburn, Oregon  
 2027 Total Traffic Conditions no Auto Overlay -- Weekday PM Peak Hour

Level of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)

Intersection #31 Hwy 214/Woodland Avenue

Cycle (sec): 120 Critical Vol./Cap.(X): 0.764  
 Loss Time (sec): 12 Average Delay (sec/veh): 44.2  
 Optimal Cycle: 73 Level of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1	0	1	0	1	0	2	0	1	1

Volume Module:

Base Vol:	50	10	250	350	5	15	100	690	35	65	645	220
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	50	10	250	350	5	15	100	745	35	65	697	220
Added Vol:	0	0	0	126	0	16	26	0	0	14	11	0
pass-by:	0	0	0	85	0	0	35	-35	0	0	0	0
Initial Fut:	50	10	250	561	5	31	161	710	35	79	708	220
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	50	10	250	561	5	31	161	710	35	79	708	220
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	50	10	250	561	5	31	161	710	35	79	708	220
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	50	10	250	561	5	31	161	710	35	79	708	220

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.76	0.76	0.76	0.94	0.94	0.94	0.92	0.92	0.83	0.91	0.91	0.82
Lanes:	0.16	0.03	0.81	1.89	0.01	0.10	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	233	47	1167	3361	28	175	1753	3505	1568	1736	3473	1554

Capacity Analysis Module:

Vol/Sat:	0.21	0.21	0.21	0.17	0.18	0.18	0.09	0.20	0.02	0.05	0.20	0.14
Crit Moves:	****			****			****			****		
Green/Cycle:	0.28	0.28	0.28	0.23	0.23	0.23	0.12	0.32	0.32	0.07	0.27	0.27
Volume/Cap:	0.76	0.76	0.76	0.72	0.76	0.76	0.76	0.64	0.07	0.64	0.76	0.53
Delay/Veh:	47.9	47.9	47.9	45.5	47.5	47.5	66.3	36.5	28.8	65.1	44.3	38.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.9	47.9	47.9	45.5	47.5	47.5	66.3	36.5	28.8	65.1	44.3	38.9
LOS by Move:	D	D	D	D	D	D	E	D	C	E	D	D
HCM2kAvgQ:	12	12	12	11	13	13	8	12	1	4	14	7

Note: Queue reported is the number of cars per lane.

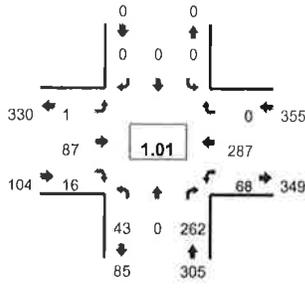
Traffic 8.0.0715 (c) 2008 Dowling Assoc. Licensed to KITTELSON, PORTLAND

Type of peak hour being reported: System Peak

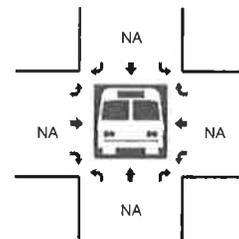
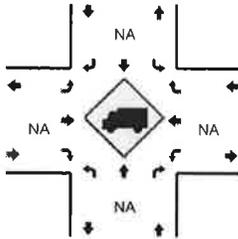
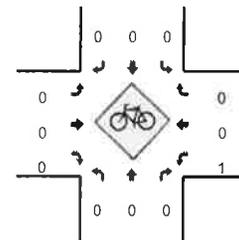
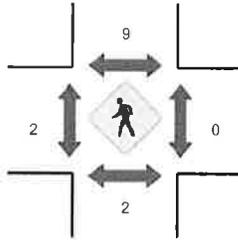
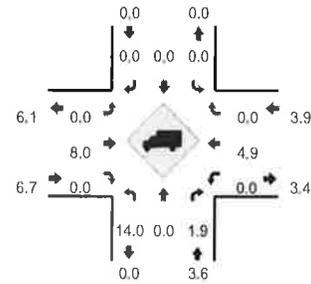
Method for determining peak hour: Total Entering Volume

LOCATION: N Arney Rd -- Robin Ave/N Arney Rd  
 CITY/STATE: Woodburn, OR

QC JOB #: 12777501  
 DATE: Thu, Sep 04 2014



Peak-Hour: 4:00 PM -- 5:00 PM  
 Peak 15-Min: 4:20 PM -- 4:35 PM



5-Min Count Period	N Arney Rd (Northbound)				N Arney Rd (Southbound)				Robin Ave/N Arney Rd (Eastbound)				Robin Ave/N Arney Rd (Westbound)				Total	Hourly Totals	
	Beginning At	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right			U
4:00 PM	5	0	18	0	0	0	0	0	0	0	1	0	0	3	26	0	0	53	
4:05 PM	5	0	31	0	0	0	0	0	0	0	9	3	1	2	20	0	0	71	
4:10 PM	4	0	18	0	0	0	0	0	0	0	6	1	0	6	22	0	0	57	
4:15 PM	3	0	27	1	0	0	0	0	0	0	11	2	0	11	12	0	0	67	
4:20 PM	4	0	19	0	0	0	0	0	0	0	5	1	0	11	14	0	0	54	
4:25 PM	3	0	27	0	0	0	0	0	0	0	3	3	0	11	27	0	0	74	
4:30 PM	3	0	21	0	0	0	0	0	0	0	6	0	0	1	31	0	0	62	
4:35 PM	4	0	14	0	0	0	0	0	0	0	10	1	0	10	21	0	0	60	
4:40 PM	4	0	23	0	0	0	0	0	0	0	14	1	0	3	34	0	0	79	
4:45 PM	3	0	20	0	0	0	0	0	0	0	5	0	0	6	25	0	0	59	
4:50 PM	0	0	26	0	0	0	0	0	0	0	8	3	0	3	29	0	0	69	
4:55 PM	4	0	18	0	0	0	0	0	0	0	9	1	0	1	26	0	0	59	764
5:00 PM	3	0	21	0	0	0	0	0	0	0	10	0	0	3	20	0	0	57	768
5:05 PM	0	0	12	0	0	0	0	0	0	0	1	1	0	5	30	0	0	49	746
5:10 PM	0	0	20	0	0	0	0	0	0	0	6	0	0	8	14	0	0	48	737
5:15 PM	4	0	18	0	0	0	0	0	0	0	6	0	0	4	32	0	0	64	734
5:20 PM	0	0	9	0	0	0	0	0	0	0	5	0	0	5	22	0	0	41	721
5:25 PM	1	0	24	0	0	0	0	0	0	0	6	1	0	2	21	0	0	55	702
5:30 PM	8	0	14	0	0	0	0	0	0	0	3	0	0	0	21	0	0	46	686
5:35 PM	6	0	18	0	0	0	0	0	0	0	3	0	0	1	27	0	0	55	681
5:40 PM	2	0	20	0	0	0	0	0	0	0	6	0	0	0	28	0	0	56	658
5:45 PM	1	0	20	0	0	0	0	0	0	0	1	1	0	2	17	0	0	42	641
5:50 PM	2	0	23	0	0	0	0	0	0	0	3	1	0	2	22	0	0	53	625
5:55 PM	2	0	23	0	0	0	0	0	0	0	3	1	0	6	21	0	0	56	622
<b>Peak 15-Min Flowrates</b>		<b>Northbound</b>				<b>Southbound</b>				<b>Eastbound</b>				<b>Westbound</b>					
		Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		<b>Total</b>
All Vehicles	40	0	268	0	0	0	0	0	0	0	56	16	0	92	288	0	0		760
Heavy Trucks	8	0	8		0	0	0		0	0	0			0	16	0			32
Pedestrians		0				12					0				0				12
Bicycles	0	0	0		0	0	0		0	0	0			0	0	0			0
Railroad																			
Stopped Buses																			

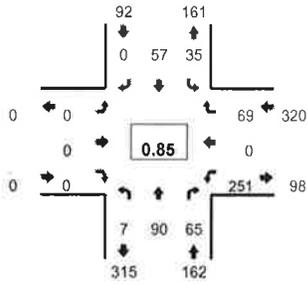
Comments:

Type of peak hour being reported: System Peak

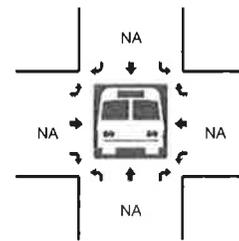
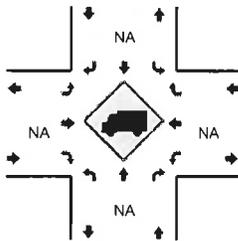
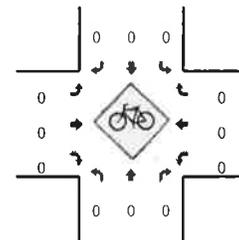
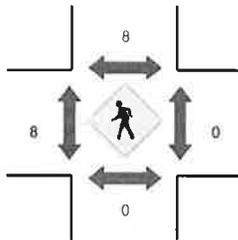
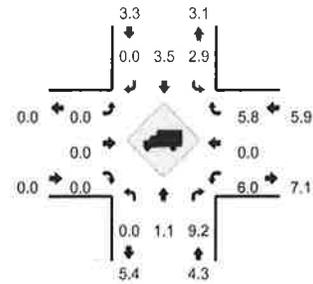
Method for determining peak hour: Total Entering Volume

LOCATION: Woodland Ave -- Robin Ave  
CITY/STATE: Woodburn, OR

QC JOB #: 1277502  
DATE: Thu, Sep 04 2014



Peak-Hour: 4:00 PM -- 5:00 PM  
Peak 15-Min: 4:20 PM -- 4:35 PM



5-Min Count Period Beginning At	Woodland Ave (Northbound)				Woodland Ave (Southbound)				Robin Ave (Eastbound)				Robin Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	7	0	2	0	2	0	0	0	0	0	0	24	0	2	0	37	
4:05 PM	0	9	9	0	6	2	0	2	0	0	0	0	8	0	6	0	42	
4:10 PM	0	7	1	0	3	4	0	0	0	0	0	0	13	0	10	0	38	
4:15 PM	0	3	13	0	3	7	0	0	0	0	0	0	8	0	9	0	43	
4:20 PM	0	9	5	1	2	5	0	0	0	0	0	0	21	0	5	0	48	
4:25 PM	0	9	0	3	2	3	0	0	0	0	0	0	36	0	1	0	54	
4:30 PM	0	10	5	1	3	9	0	0	0	0	0	0	33	0	6	0	67	
4:35 PM	0	4	5	0	3	3	0	0	0	0	0	0	19	0	1	0	35	
4:40 PM	0	8	11	0	4	3	0	0	0	0	0	0	22	0	5	0	53	
4:45 PM	0	8	2	0	2	8	0	0	0	0	0	0	27	0	8	0	55	
4:50 PM	0	7	9	0	1	4	0	0	0	0	0	0	10	0	10	0	41	
4:55 PM	0	9	5	0	4	7	0	0	0	0	0	0	30	0	6	0	61	574
5:00 PM	0	4	4	1	2	3	0	0	0	0	0	0	10	0	8	0	32	569
5:05 PM	0	5	2	0	0	6	0	1	0	0	0	0	19	0	10	0	43	570
5:10 PM	0	4	6	0	3	3	0	0	0	0	0	0	2	0	17	0	35	567
5:15 PM	0	9	1	0	2	11	0	0	0	0	0	0	21	0	17	0	61	585
5:20 PM	0	10	3	0	2	10	0	0	0	0	0	0	20	0	8	0	53	590
5:25 PM	0	8	4	0	2	6	0	0	0	0	0	0	38	0	2	0	60	596
5:30 PM	0	7	4	5	1	4	0	0	0	0	0	0	22	0	4	0	47	576
5:35 PM	0	7	2	1	2	3	0	0	0	0	0	0	31	0	4	0	50	591
5:40 PM	0	3	3	2	2	2	0	0	0	0	0	0	27	0	2	0	41	579
5:45 PM	0	5	1	2	1	5	0	0	0	0	0	0	17	0	0	0	31	555
5:50 PM	0	10	4	1	3	7	0	0	0	0	0	0	23	0	1	0	49	563
5:55 PM	0	4	1	2	1	3	0	0	0	0	0	0	24	0	1	0	36	538
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	112	40	20	28	68	0	0	0	0	0	0	350	0	48	0	676	
Heavy Trucks	0	0	0		0	4	0		0	0	0		24	0	0		28	
Pedestrians	0	0	0		0	20	0		0	20	0		0	0	0		40	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: N Arney Rd south of Robin Ave/N Arney Rd										QC JOB #: 12777507
SPECIFIC LOCATION: 0 ft from										DIRECTION: NB
CITY/STATE: Woodburn, OR										DATE: Sep 03 2014 - Sep 07 2014
Start Time	Mon	Tue	Wed 03-Sep-14	Thu 04-Sep-14	Fri 05-Sep-14	Average Weekday Hourly Traffic	Sat 06-Sep-14	Sun 07-Sep-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM			13	13	5	10	20	20	14	
1:00 AM			7	4	8	6	6	9	7	
2:00 AM			7	4	7	6	15	3	7	
3:00 AM			3	6	7	5	7	10	7	
4:00 AM			19	25	22	22	14	8	18	
5:00 AM			58	59	51	56	32	8	42	
6:00 AM			103	82	91	92	59	54	78	
7:00 AM			126	137	138	134	116	76	119	
8:00 AM			166	158	137	154	146	113	144	
9:00 AM			265	256	268	263	329	283	280	
10:00 AM			358	377	455	397	558	592	466	
11:00 AM			403	380	471	418	584	631	494	
12:00 PM			426	423	479	443	577	624	506	
1:00 PM			385	391	481	419	533	621	482	
2:00 PM			336	360	405	367	534	605	448	
3:00 PM			342	332	368	347	476	483	400	
4:00 PM			326	307	371	335	380	461	369	
5:00 PM			275	251	334	287	424	353	327	
6:00 PM			260	237	289	262	298	240	265	
7:00 PM			220	226	266	237	218	139	214	
8:00 PM			106	132	168	135	125	73	121	
9:00 PM			72	80	78	77	98	53	76	
10:00 PM			32	46	42	40	48	21	38	
11:00 PM			18	13	39	23	43	15	26	
Day Total			4326	4299	4980	4535	5640	5495	4950	
% Weekday Average			95.4%	94.8%	109.8%					
% Week Average			87.4%	86.8%	100.6%	91.6%	113.9%	111.0%		
AM Peak Volume			11:00 AM 403	11:00 AM 380	11:00 AM 471	11:00 AM 418	11:00 AM 584	11:00 AM 631	11:00 AM 494	
PM Peak Volume			12:00 PM 426	12:00 PM 423	1:00 PM 481	12:00 PM 443	12:00 PM 577	12:00 PM 624	12:00 PM 506	
Comments:										

LOCATION: N Arney Rd south of Robln Ave/N Arney Rd		QC JOB #: 12777507			
SPECIFIC LOCATION: 0 ft from		DIRECTION: NB			
CITY/STATE: Woodburn, OR		DATE: Sep 06 2014 - Sep 07 2014			
Start Time		Sat 06-Sep-14	Sun 07-Sep-14	Average Weekend Hourly Traffic	Average Weekend Profile
12:00 AM		20	20	20	
1:00 AM		6	9	8	
2:00 AM		15	3	9	
3:00 AM		7	10	9	
4:00 AM		14	8	11	
5:00 AM		32	8	20	
6:00 AM		59	54	57	
7:00 AM		116	76	96	
8:00 AM		146	113	130	
9:00 AM		329	283	306	
10:00 AM		558	592	575	
11:00 AM		584	631	608	
12:00 PM		577	624	601	
1:00 PM		533	621	577	
2:00 PM		534	605	570	
3:00 PM		476	483	480	
4:00 PM		380	461	421	
5:00 PM		424	353	389	
6:00 PM		298	240	269	
7:00 PM		218	139	179	
8:00 PM		125	73	99	
9:00 PM		98	53	76	
10:00 PM		48	21	35	
11:00 PM		43	15	29	
<b>Day Total</b>		5640	5495	5574	
% Weekday Average					
% Week Average		101.2%	98.6%		
AM Peak Volume		11:00 AM 584	11:00 AM 631	11:00 AM 608	
PM Peak Volume		12:00 PM 577	12:00 PM 624	12:00 PM 601	
Comments:					

LOCATION: N Arney Rd south of Robln Ave/N Arney Rd										QC JOB #: 12777507
SPECIFIC LOCATION: 0 ft from										DIRECTION: NB/SB
CITY/STATE: Woodburn, OR										DATE: Sep 03 2014 - Sep 07 2014
Start Time	Mon	Tue	Wed 03-Sep-14	Thu 04-Sep-14	Fri 05-Sep-14	Average Weekday Hourly Traffic	Sat 06-Sep-14	Sun 07-Sep-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM			20	19	8	16	25	22	19	
1:00 AM			9	6	14	10	6	10	9	
2:00 AM			8	6	9	8	20	5	10	
3:00 AM			5	6	11	7	11	12	9	
4:00 AM			21	29	28	26	18	8	21	
5:00 AM			68	69	70	69	36	13	51	
6:00 AM			117	95	112	108	75	67	93	
7:00 AM			144	163	161	156	137	92	139	
8:00 AM			183	171	153	169	157	139	161	
9:00 AM			288	271	284	281	359	308	302	
10:00 AM			375	403	480	419	596	633	497	
11:00 AM			445	421	517	461	642	679	541	
12:00 PM			456	493	537	495	631	692	562	
1:00 PM			433	440	509	461	604	700	537	
2:00 PM			380	407	458	415	614	746	521	
3:00 PM			377	363	418	386	543	610	462	
4:00 PM			390	399	465	425	448	593	463	
5:00 PM			314	292	380	329	495	437	384	
6:00 PM			304	287	333	308	349	294	313	
7:00 PM			247	263	314	275	276	211	262	
8:00 PM			147	163	215	175	172	85	156	
9:00 PM			98	101	121	107	131	64	103	
10:00 PM			41	55	55	50	58	33	48	
11:00 PM			24	17	59	33	52	21	35	
Day Total			4894	4939	5731	5189	6455	6474	5698	
% Weekday Average			94.3%	95.2%	110.4%					
% Week Average			85.9%	86.7%	100.6%	91.1%	113.3%	113.6%		
AM Peak Volume			11:00 AM 445	11:00 AM 421	11:00 AM 517	11:00 AM 461	11:00 AM 642	11:00 AM 679	11:00 AM 541	
PM Peak Volume			12:00 PM 456	12:00 PM 493	12:00 PM 537	12:00 PM 495	12:00 PM 631	2:00 PM 746	12:00 PM 562	
Comments:										

LOCATION: N Arney Rd south of Robin Ave/N Arney Rd		QC JOB #: 12777507			
SPECIFIC LOCATION: 0 ft from		DIRECTION: NB/SB			
CITY/STATE: Woodburn, OR		DATE: Sep 06 2014 - Sep 07 2014			
Start Time		Sat 06-Sep-14	Sun 07-Sep-14	Average Weekend Hourly Traffic	Average Weekend Profile
12:00 AM		25	22	24	
1:00 AM		6	10	8	
2:00 AM		20	5	13	
3:00 AM		11	12	12	
4:00 AM		18	8	13	
5:00 AM		36	13	25	
6:00 AM		75	67	71	
7:00 AM		137	92	115	
8:00 AM		157	139	148	
9:00 AM		359	308	334	
10:00 AM		596	633	615	
11:00 AM		642	679	661	
12:00 PM		631	692	662	
1:00 PM		604	700	652	
2:00 PM		614	746	680	
3:00 PM		543	610	577	
4:00 PM		448	593	521	
5:00 PM		495	437	466	
6:00 PM		349	294	322	
7:00 PM		276	211	244	
8:00 PM		172	85	129	
9:00 PM		131	64	98	
10:00 PM		58	33	46	
11:00 PM		52	21	37	
<b>Day Total</b>		6455	6474	6473	
% Weekday Average					
% Week Average		99.7%	100.0%		
AM Peak Volume		11:00 AM 642	11:00 AM 679	11:00 AM 661	
PM Peak Volume		12:00 PM 631	2:00 PM 746	2:00 PM 680	
Comments:					

LOCATION: N Arney Rd south of Robln Ave/N Arney Rd								QC JOB #: 12777507		
SPECIFIC LOCATION: 0 ft from								DIRECTION: SB		
CITY/STATE: Woodburn, OR								DATE: Sep 03 2014 - Sep 07 2014		
Start Time	Mon	Tue	Wed 03-Sep-14	Thu 04-Sep-14	Fri 05-Sep-14	Average Weekday Hourly Traffic	Sat 06-Sep-14	Sun 07-Sep-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM			7	6	3	5	5	2	5	
1:00 AM			2	2	6	3	0	1	2	
2:00 AM			1	2	2	2	5	2	2	
3:00 AM			2	0	4	2	4	2	2	
4:00 AM			2	4	6	4	4	0	3	
5:00 AM			10	10	19	13	4	5	10	
6:00 AM			14	13	21	16	16	13	15	
7:00 AM			18	26	23	22	21	16	21	
8:00 AM			17	13	16	15	11	26	17	
9:00 AM			23	15	16	18	30	25	22	
10:00 AM			17	26	25	23	38	41	29	
11:00 AM			42	41	48	43	58	48	47	
12:00 PM			30	70	58	53	54	68	56	
1:00 PM			48	49	28	42	71	79	55	
2:00 PM			44	47	53	48	80	141	73	
3:00 PM			35	31	50	39	67	127	62	
4:00 PM			64	92	114	90	68	132	94	
5:00 PM			39	41	46	42	71	84	56	
6:00 PM			44	50	44	46	51	54	49	
7:00 PM			27	37	48	37	58	72	48	
8:00 PM			41	31	47	40	47	12	36	
9:00 PM			26	21	43	30	33	11	27	
10:00 PM			9	9	13	10	10	12	11	
11:00 PM			6	4	20	10	9	6	9	
<b>Day Total</b>			568	640	751	653	815	979	751	
% Weekday Average			87.0%	98.0%	115.0%					
% Week Average			75.6%	85.2%	100.0%	87.0%	108.5%	130.4%		
AM Peak Volume			11:00 AM 42	11:00 AM 41	11:00 AM 46	11:00 AM 43	11:00 AM 58	11:00 AM 48	11:00 AM 47	
PM Peak Volume			4:00 PM 64	4:00 PM 92	4:00 PM 114	4:00 PM 90	2:00 PM 80	2:00 PM 141	4:00 PM 94	
Comments:										

LOCATION: N Arney Rd south of Robln Ave/N Arney Rd			QC JOB #: 12777507	
SPECIFIC LOCATION: 0 ft from			DIRECTION: SB	
CITY/STATE: Woodburn, OR			DATE: Sep 06 2014 - Sep 07 2014	
Start Time	Sat 06-Sep-14	Sun 07-Sep-14	Average Weekend Hourly Traffic	Average Weekend Profile
12:00 AM	5	2	4	
1:00 AM	0	1	1	
2:00 AM	5	2	4	
3:00 AM	4	2	3	
4:00 AM	4	0	2	
5:00 AM	4	5	5	
6:00 AM	16	13	15	
7:00 AM	21	16	19	
8:00 AM	11	26	19	
9:00 AM	30	25	28	
10:00 AM	38	41	40	
11:00 AM	58	48	53	
12:00 PM	54	68	61	
1:00 PM	71	79	75	
2:00 PM	80	141	111	
3:00 PM	67	127	97	
4:00 PM	68	132	100	
5:00 PM	71	84	78	
6:00 PM	51	54	53	
7:00 PM	58	72	65	
8:00 PM	47	12	30	
9:00 PM	33	11	22	
10:00 PM	10	12	11	
11:00 PM	9	6	8	
<b>Day Total</b>	<b>815</b>	<b>979</b>	<b>904</b>	
% Weekday Average				
% Week Average	90.2%	108.3%		
AM Peak Volume	11:00 AM 58	11:00 AM 48	11:00 AM 53	
PM Peak Volume	2:00 PM 80	2:00 PM 141	2:00 PM 111	
Comments:				

LOCATION: Robin Ave west of N Arney Rd  
 SPECIFIC LOCATION: 0 ft from  
 CITY/STATE: Woodburn, OR

QC JOB #: 12777508  
 DIRECTION: EB  
 DATE: Sep 03 2014 - Sep 07 2014

Start Time	Mon	Tue	Wed 03-Sep-14	Thu 04-Sep-14	Fri 05-Sep-14	Average Weekday Hourly Traffic	Sat 06-Sep-14	Sun 07-Sep-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM			5	7	3	5	4	4	5	
1:00 AM			4	4	4	4	1	1	3	
2:00 AM			1	3	1	2	4	1	2	
3:00 AM			2	1	5	3	2	2	2	
4:00 AM			4	6	8	6	3	2	5	
5:00 AM			13	12	19	15	5	4	11	
6:00 AM			23	25	37	28	16	13	23	
7:00 AM			30	39	31	33	28	20	30	
8:00 AM			31	33	36	34	27	32	32	
9:00 AM			34	38	37	36	58	48	43	
10:00 AM			52	54	51	52	68	82	61	
11:00 AM			70	55	77	67	86	93	76	
12:00 PM			58	59	61	59	96	98	74	
1:00 PM			63	65	65	64	74	136	81	
2:00 PM			57	85	54	65	129	210	107	
3:00 PM			65	60	75	67	63	183	89	
4:00 PM			63	142	149	118	101	197	130	
5:00 PM			81	105	50	79	119	102	91	
6:00 PM			46	68	51	55	46	37	50	
7:00 PM			37	35	55	42	47	63	47	
8:00 PM			38	31	38	36	29	17	31	
9:00 PM			18	18	32	23	23	13	21	
10:00 PM			10	16	13	13	8	10	11	
11:00 PM			5	4	14	8	11	6	8	
Day Total			810	965	968	914	1048	1374	1033	
% Weekday Average			88.6%	105.6%	105.9%					
% Week Average			78.4%	93.4%	93.7%	88.5%	101.5%	133.0%		
AM Peak Volume			11:00 AM 70	11:00 AM 55	11:00 AM 77	11:00 AM 67	11:00 AM 86	11:00 AM 93	11:00 AM 76	
PM Peak Volume			5:00 PM 81	4:00 PM 142	4:00 PM 149	4:00 PM 118	2:00 PM 129	2:00 PM 210	4:00 PM 130	

Comments:

LOCATION: Robin Ave west of N Arney Rd		QC JOB #: 12777508			
SPECIFIC LOCATION: 0 ft from		DIRECTION: EB			
CITY/STATE: Woodburn, OR		DATE: Sep 06 2014 - Sep 07 2014			
Start Time		Sat 06-Sep-14	Sun 07-Sep-14	Average Weekend Hourly Traffic	Average Weekend Profile
12:00 AM		4	4	4	
1:00 AM		1	1	1	
2:00 AM		4	1	3	
3:00 AM		2	2	2	
4:00 AM		3	2	3	
5:00 AM		5	4	5	
6:00 AM		16	13	15	
7:00 AM		28	20	24	
8:00 AM		27	32	30	
9:00 AM		58	48	53	
10:00 AM		68	82	75	
11:00 AM		86	93	90	
12:00 PM		96	98	97	
1:00 PM		74	136	105	
2:00 PM		129	210	170	
3:00 PM		63	183	123	
4:00 PM		101	197	149	
5:00 PM		119	102	111	
6:00 PM		46	37	42	
7:00 PM		47	63	55	
8:00 PM		29	17	23	
9:00 PM		23	13	18	
10:00 PM		8	10	9	
11:00 PM		11	6	9	
<b>Day Total</b>		1048	1374	1216	
% Weekday Average					
% Week Average		86.2%	113.0%		
AM Peak Volume		11:00 AM 86	11:00 AM 93	11:00 AM 90	
PM Peak Volume		2:00 PM 129	2:00 PM 210	2:00 PM 170	
Comments.					

LOCATION: Robin Ave west of N Arney Rd							QC JOB #: 12777508			
SPECIFIC LOCATION: 0 ft from							DIRECTION: EB/WB			
CITY/STATE: Woodburn, OR							DATE: Sep 03 2014 - Sep 07 2014			
Start Time	Mon	Tue	Wed 03-Sep-14	Thu 04-Sep-14	Fri 05-Sep-14	Average Weekday Hourly Traffic	Sat 06-Sep-14	Sun 07-Sep-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM			26	22	10	19	24	34	23	
1:00 AM			15	9	15	13	16	12	13	
2:00 AM			10	8	7	8	15	4	9	
3:00 AM			16	18	16	17	11	11	14	
4:00 AM			19	20	24	21	13	7	17	
5:00 AM			78	61	51	63	22	9	44	
6:00 AM			104	105	114	108	54	41	84	
7:00 AM			135	159	153	149	105	69	124	
8:00 AM			166	155	148	156	136	94	140	
9:00 AM			180	191	182	184	215	176	189	
10:00 AM			230	229	246	235	304	340	270	
11:00 AM			357	316	420	364	505	491	418	
12:00 PM			389	398	462	416	551	564	473	
1:00 PM			466	438	532	478	593	608	527	
2:00 PM			458	492	516	489	623	556	529	
3:00 PM			449	438	464	450	588	544	496	
4:00 PM			379	377	352	369	595	489	438	
5:00 PM			408	367	472	416	568	613	486	
6:00 PM			336	349	428	371	514	536	433	
7:00 PM			343	341	347	344	445	449	385	
8:00 PM			269	285	358	304	390	185	297	
9:00 PM			243	266	335	281	351	103	260	
10:00 PM			95	97	110	101	106	56	93	
11:00 PM			41	29	64	45	73	28	47	
<b>Day Total</b>			5212	5168	5826	5401	6815	6019	5809	
% Weekday Average			96.5%	95.7%	107.9%					
% Week Average			89.7%	89.0%	100.3%	93.0%	117.3%	103.6%		
AM Peak Volume			11:00 AM 357	11:00 AM 316	11:00 AM 420	11:00 AM 364	11:00 AM 505	11:00 AM 491	11:00 AM 418	
PM Peak Volume			1:00 PM 466	2:00 PM 492	1:00 PM 532	2:00 PM 489	2:00 PM 623	5:00 PM 613	2:00 PM 529	
Comments:										

LOCATION: Robin Ave west of N Arney Rd  
 SPECIFIC LOCATION: 0 ft from  
 CITY/STATE: Woodburn, OR

QC JOB #: 12777508  
 DIRECTION: EB/WB

DATE: Sep 06 2014 - Sep 07 2014

Start Time	Sat 06-Sep-14	Sun 07-Sep-14	Average Weekend Hourly Traffic	Average Weekend Profile
12:00 AM	24	34	29	
1:00 AM	16	12	14	
2:00 AM	15	4	10	
3:00 AM	11	11	11	
4:00 AM	13	7	10	
5:00 AM	22	9	16	
6:00 AM	54	41	48	
7:00 AM	105	69	87	
8:00 AM	136	94	115	
9:00 AM	215	176	196	
10:00 AM	304	340	322	
11:00 AM	505	491	498	
12:00 PM	551	564	558	
1:00 PM	593	608	601	
2:00 PM	623	556	590	
3:00 PM	586	544	565	
4:00 PM	595	489	542	
5:00 PM	568	613	591	
6:00 PM	514	536	525	
7:00 PM	445	449	447	
8:00 PM	390	185	288	
9:00 PM	351	103	227	
10:00 PM	106	56	81	
11:00 PM	73	28	51	
<b>Day Total</b>	<b>6815</b>	<b>6019</b>	<b>6422</b>	
% Weekday Average				
% Week Average	106.1%	93.7%		
AM Peak Volume	11:00 AM 505	11:00 AM 491	11:00 AM 498	
PM Peak Volume	2:00 PM 623	5:00 PM 613	1:00 PM 601	

Comments:

LOCATION: Robin Ave west of N Arney Rd							QC JOB #: 12777508			
SPECIFIC LOCATION: 0 ft from							DIRECTION: WB			
CITY/STATE: Woodburn, OR							DATE: Sep 03 2014 - Sep 07 2014			
Start Time	Mon	Tue	Wed 03-Sep-14	Thu 04-Sep-14	Fri 05-Sep-14	Average Weekday Hourly Traffic	Sat 06-Sep-14	Sun 07-Sep-14	Average Week Hourly Traffic	Average Week Profile
12:00 AM			21	15	7	14	20	30	19	
1:00 AM			11	5	11	9	15	11	11	
2:00 AM			9	5	6	7	11	3	7	
3:00 AM			14	17	11	14	9	9	12	
4:00 AM			15	14	16	15	10	5	12	
5:00 AM			65	49	32	49	17	5	34	
6:00 AM			81	80	77	79	38	28	61	
7:00 AM			105	120	122	116	77	49	95	
8:00 AM			135	122	110	122	109	62	108	
9:00 AM			146	153	145	148	157	128	146	
10:00 AM			178	175	195	183	236	258	208	
11:00 AM			287	281	343	297	419	398	342	
12:00 PM			331	339	401	357	455	466	398	
1:00 PM			403	371	467	414	519	472	446	
2:00 PM			401	407	462	423	494	346	422	
3:00 PM			384	378	389	384	523	361	407	
4:00 PM			316	235	203	251	494	292	308	
5:00 PM			327	262	422	337	449	511	394	
6:00 PM			290	281	377	316	468	499	383	
7:00 PM			306	306	292	301	398	386	338	
8:00 PM			231	254	320	268	361	168	267	
9:00 PM			225	248	303	259	328	90	239	
10:00 PM			85	81	97	88	98	46	81	
11:00 PM			36	25	50	37	62	22	39	
Day Total			4402	4203	4858	4488	5767	4645	4777	
% Weekday Average			98.1%	93.6%	108.2%					
% Week Average			92.1%	88.0%	101.7%	94.0%	120.7%	97.2%		
AM Peak Volume			11:00 AM 287	11:00 AM 261	11:00 AM 343	11:00 AM 297	11:00 AM 419	11:00 AM 398	11:00 AM 342	
PM Peak Volume			1:00 PM 403	2:00 PM 407	1:00 PM 467	2:00 PM 423	3:00 PM 523	5:00 PM 511	1:00 PM 446	
Comments:										

LOCATION: Robin Ave west of N Arney Rd  
 SPECIFIC LOCATION: 0 ft from  
 CITY/STATE: Woodburn, OR

QC JOB #: 12777508  
 DIRECTION: WB  
 DATE: Sep 06 2014 - Sep 07 2014

Start Time	Sat 06-Sep-14	Sun 07-Sep-14	Average Weekend Hourly Traffic	Average Weekend Profile
12:00 AM	20	30	25	
1:00 AM	15	11	13	
2:00 AM	11	3	7	
3:00 AM	9	9	9	
4:00 AM	10	5	8	
5:00 AM	17	5	11	
6:00 AM	38	28	33	
7:00 AM	77	49	63	
8:00 AM	109	62	86	
9:00 AM	157	128	143	
10:00 AM	236	258	247	
11:00 AM	419	398	409	
12:00 PM	455	466	461	
1:00 PM	519	472	496	
2:00 PM	494	346	420	
3:00 PM	523	361	442	
4:00 PM	494	292	393	
5:00 PM	449	511	480	
6:00 PM	468	499	484	
7:00 PM	398	386	392	
8:00 PM	361	168	265	
9:00 PM	328	90	209	
10:00 PM	98	46	72	
11:00 PM	62	22	42	
<b>Day Total</b>	<b>5767</b>	<b>4645</b>	<b>5210</b>	
% Weekday Average				
% Week Average	110.7%	89.2%		
AM Peak Volume	11:00 AM 419	11:00 AM 398	11:00 AM 409	
PM Peak Volume	3:00 PM 523	5:00 PM 511	1:00 PM 496	

Comments:

Existing Plus Project Traffic Conditions  
3: Driveway & Arney Road

PM Peak Hour  
10/1/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↑	↓	
Volume (veh/h)	15	65	207	265	84	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	71	225	288	91	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	829	91	91			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	829	91	91			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	93	85			
cM capacity (veh/h)	289	966	1504			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	16	71	225	288	91	
Volume Left	16	0	225	0	0	
Volume Right	0	71	0	0	0	
cSH	289	966	1504	1700	1700	
Volume to Capacity	0.06	0.07	0.15	0.17	0.05	
Queue Length 95th (ft)	4	6	13	0	0	
Control Delay (s)	18.2	9.0	7.8	0.0	0.0	
Lane LOS	C	A	A			
Approach Delay (s)	10.7		3.4		0.0	
Approach LOS	B					

Intersection Summary					
Average Delay			3.9		
Intersection Capacity Utilization			28.1%	ICU Level of Service	A
Analysis Period (min)			15		