GROUP MACKENZIE

TRANSPORTATION IMPACT ANALYSIS

CITY OF WEST LINN
POLICE STATION

West Linn, Oregon

Prepared For
City of West Linn

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. INTRODUCTION

This transportation impact analysis has been prepared for the City of West Linn to construct a new police station on the northeast corner of the 8th Avenue/13th Street intersection in West Linn, just west of the Willamette Town Center. A site vicinity map is shown in Figure 1. As shown, the development site is surrounded by 13th Street to the west, 8th Avenue to the south, and commercial properties to the north and east.

PROJECT DESCRIPTION

Figure 2 shows the proposed site plan, which includes the removal of three single-family residential units and construction of a new police station, up to 23,000 SF. The new building will include emergency dispatch capabilities, evidence processing facilities, training, storage, operations space, and K-9 unit accommodations.

Public access to the site will be provided by a single full-access driveway to 8th Avenue opposite the 12th Street approach, creating a common four-way intersection. A secondary limited-use full-access driveway will be established to 13th Street. This access will be gated and used by police vehicles in times of emergency.

Redevelopment of the subject site is expected to be complete by 2014.

SCOPE OF REPORT

This study supports the proposed site development and complies with the traffic impact study requirements of City of West Linn. Formal scoping discussions were held with City staff and outlined in the August 2, 2012 "Proposed Scope for Preparing Traffic Impact Study" letter. Through the scoping process, the following study intersections were identified for analysis:

- 8th Avenue/13th Street
- 8th Avenue/12th Street
- 8th Avenue/10th Street
- Willamette Falls Drive/12th Street
- Willamette Falls Drive/10th Street

This study analyzes the traffic-related impacts of the proposed development and addresses the following transportation items:

- Review of intersection crash histories and safety at all study intersections.
- Analysis of sight distance requirements at each site access.
- Existing year 2012 weekday AM and PM peak hour traffic volumes and operating conditions at all study intersections.
- Future background traffic growth estimates for the study area intersections.
- Site trip generation and distribution parameters based on custom trip generation rates, current traffic count patterns and engineering judgment.
- Forecast year 2014 pre- and post-development traffic volumes and operations during the AM and PM peak hours.
- Identification of measures to mitigate site traffic impacts on the public street system.

II. EXISTING CONDITIONS

EXISTING SITE CONDITIONS

The approximately 1.6-acre site currently has three existing single-family residential units, each on their own R-10 zoned parcels, and a larger vacant lot zoned for mixed-use (MU). No rezoning is required as both zones allow police stations as a conditional use.

TRANSPORTATION FACILITIES

The following is a summary of the study area roadway classifications and descriptions.

TABLE 1 – ROADWAY CHARACTERISTICS

Roadway	Classification	Lanes	Speed Limit (mph)	Sidewalks	Bicycle Lanes	On-Street Parking
Willamette Falls Drive	Arterial	2	25	Yes	No	Yes
10th Street	Arterial	3	25	Yes	No	No
12th Street	Arterial/Local*	2	25	Yes	No	Yes
8th Avenue	Local	2	25	East of site	No	Partial(West and East)
13th Street	Local	2	NP	No	No	Yes-Shoulder

* 12th Street is classified as "Local" north of Willamette Falls Drive and "Arterial" south of Willamette Falls Drive.

Figure 3 presents the existing lane configurations and traffic control at each of the study intersections.

PEDESTRIAN/BICYCLE/TRANSIT FACILITIES

Continuous sidewalks are provided along both sides of Willamette Falls Drive, 10th Street, and 12th Street in the vicinity of the development, with a continuous sidewalk along the north side of 8th Avenue east of the site. Sidewalks are intermittent along the south side of 8th Avenue and non-existent west and north of the site along 8th Avenue and 13th Street.

No bicycle lanes are provided along any study area roadways in the vicinity of the development.

The site is located within a potential transit supportive area as identified by the West Linn Transportation System Plan (TSP). TriMet currently operates one public transit route in the site vicinity. Route #154 (Willamette) provides service along Willamette Falls Drive between the Oregon City Transit Center and the Willamette area of West Linn. Service is provided between the hours of 6:20 AM and 7:15 PM on weekdays at approximately 70-minute headways. This route has bus stops both inbound and outbound within two blocks of the site – inbound at the 10th Street/8th Avenue intersection and outbound along the south side of Willamette Falls Drive at 11th and 12th Streets. However, accessing these transit facilities requires crosswalk use at two-way stop-controlled intersections across the free flowing traffic movements. These uncontrolled vehicular volumes are significantly high during the PM peak hour.

EXISTING TRAFFIC

Existing turn movement traffic counts were obtained on a mid-week/school day in September 2012 during the morning (7:00-9:00 AM) and afternoon (4:00-6:00 PM) peak commute periods. Figures 4 and 5 present existing 2012 turning movement volumes at all study intersections during the weekday AM and PM peak hours, respectively. The system peak hour periods were identified to be 7:20-8:20 AM and 4:50-5:50 PM. It should be noted that peak hour traffic flows expressed in these figures account for a slight imbalance in traffic flows between several study intersections due to private driveway traffic, public and private parking turnover, and 11th Street access to Willamette Falls Drive between 10th and 12th Streets. All traffic count data is included in the Appendix.

The traffic counts collected for this study correlate well with the traffic counts taken for the West Linn TSP. However, the persistence of heavy PM peak hour through volumes on the major arterial streets in this district of West Linn when compared to daily traffic volumes is a sign of a high percentage of cut-through traffic and potential diversion away from I-205. The 24-hour counts included in the West Linn TSP taken on Willamette Falls Drive just west of the Fields Bridge across the Tualatin River indicate that greater than 20% of the daily eastbound traffic on Willamette Falls Drive occurs during the PM peak hour. This is twice the typical 10% rate that occurs for roadway in suburban settings.

The situation can likely be attributed to I-5/I-205 congestion which causes traffic to divert through the Stafford basin area onto other roadways such as Eck Road, Borland Road, and Johnson Road to pass through this district of West Linn. The influence this cut-through traffic has on traffic operations and safety in this district should be monitored by the City and considered with any future transportation studies and plans.

CRASH ANALYSIS

When evaluating intersection safety, consideration is given to the total number and types of crashes occurring and the number of vehicles entering the intersection. This leads to the concept known as "crash rate", usually expressed in terms of the number of crashes occurring per one million vehicles entering the intersection (crashes/mev). Intersections having a crash rate less than 1.0/mev are generally considered relatively safe, and with crash rates higher than 1.0/mev, consideration may be given to correcting operational problems.

Intersection and segment crash data was provided by the Oregon Department of Transportation (ODOT) Crash Analysis and Reporting Unit (CARU) for January 2007 through December 2011. The following table summarizes crashes by year and calculated intersection crash rates for the five-year data period for all study intersections. All crash data is provided in the Appendix.

In calculating the crash rates shown in the table, annual traffic entering the intersections was estimated by multiplying the average daily traffic (ADT) entering the intersection by 365. ADT was estimated by multiplying the intersection PM peak hour volumes by a factor of 10.

TABLE 2 – CRASH DATA BY YEAR							
Intersection	2007	2008	2009	2010	2011	Total	Crash Rate (crashes/mev)
8th Avenue/13th Street	0	0	0	0	0	0	0.00
8th Avenue/12th Street	0	0	0	0	0	0	0.00
8th Avenue/10th Street	3	1	2	3	1	10	0.39
Willamette Falls Drive/12th Street	0	0	0	1	1	2	0.08
Willamette Falls Drive/10th Street	1	0	1	1	2	5	0.18

All study intersections have crash rates well below 1.0 crashes/mev threshold indicating no apparent safety hazard. Study intersection crash histories are summarized in the following table for intersections where crashes were reported, showing crashes by crash type.

TABLE 3 – CRASH DATA BY CRASH TYPE						
Intersection	Angle	Turning	Rear-End	Sideswipe	Non-Collision	Total
8th Avenue/10th Street	4	6	0	0	0	10
Willamette Falls Drive/12th Street	1	1	0	0	0	2
Willamette Falls Drive/10th Street	1	2	2	0	0	5
Total	**6**	**9**	**2**	**0**	**0**	**17**

As presented in Table 3, the most predominant crash type along in the study area is turning crashes (9 crashes). All of these crashes occurred due to a failure to yield right-of-way at a stop-controlled intersection.

Angle crashes are the next most predominant accident type (6 crashes). All of these crashes also occurred due to a failure to yield at a stop-controlled intersection.

The 2 rear-end crashes occurred due to following too closely.

Turning and angle crash severity is typically greater relative to rear-end crash severity. These crash types are of concern due to the higher chance of injury; however, there were no fatalities reported and all but 4 of the 17 crashes were property damage only. One of the injury crashes involved a bicyclist.

Despite the slightly increasing trends in the study area crash history, the crash rates and crash severities are typically low. Furthermore, most of these crashes occurred due to human error at stop-controlled intersections, not due to poor roadway design and/or conditions. Under current conditions, there is no apparent need for additional safety measures at these locations.

SIGHT DISTANCE ANALYSIS

Sight distance was evaluated at both proposed site accesses along 8th Avenue and 13th Street to ensure compliance with engineering standards.

Access to 8th Avenue

Sight distance along the site frontage to 8th Avenue is abundant with no sight obstructions exist at the proposed site access location. From the location of the proposed site access driveway, intersection sight distance was measured to be in excess of 335 feet in both directions along 8th Avenue. This distance exceeds the minimum 335-foot standard specified by AASHTO's 2011 publication, *A Policy on Geometric Design of Highways and Streets*, based on an assumed design speed of 30 MPH.

Access to 13th Street

Sight distance along the site frontage to 13th Street is adequate with no sight obstructions existing at the proposed site access location. Intersection sight distance is continuous the full length of this section of 13th Street from the dead end to the north to the 8th Avenue/13th Street intersection to the south. Therefore, drivers leaving the site access can see any vehicles approaching along 13th Street.

III. PRE-DEVELOPMENT CONDITIONS

BACKGROUND TRAFFIC

Background traffic growth is general growth not related to traffic from approved or in-process projects. Based on historical traffic growth trends for the 10th Street corridor, this area of West Linn has experienced little traffic growth over the past several years. This trend is summarized in the Appendix using current traffic counts matched with turning movement count information from the West Linn TSP.

For the purpose of producing a conservative analysis of future traffic conditions, a background traffic growth rate of 2.0% was applied to existing 2012 traffic volumes to reflect a 1% traffic growth rate over two years, to achieve year 2014 pre-development conditions.

IN-PROCESS TRAFFIC

In-process traffic volumes are generated by approved projects not yet complete at the time of this analysis. Even though the Willamette Marketplace development is fully built, site observation suggests the development is only 80% occupied. To account for full occupancy, 20% of the primary site trips projected in the Transportation Impact Analysis for Willamette Marketplace Redevelopment and supplemental trip generation letter prepared by Kittelson & Associates, Inc. were applied to the roadway network using the directional distributions from the same document.

Figures 6 and 7 present the combination of the 2-year background traffic growth estimates and the in-process trip volumes for the weekday AM and PM peak hours.

PLANNED TRANSPORTATION IMPROVEMENTS

Based on a review of West Linn's capital improvement plan and the ODOT STIP, there are no public transportation projects planned in the study area over the next two years.

PRE-DEVELOPMENT TRAFFIC

Pre-development traffic for the forecast year 2014 is the sum of existing traffic volumes, background traffic growth, and in-process traffic volumes. Figures 8 and 9 present the resulting 2014 pre-development traffic volumes from the weekday AM and PM peak hours.

IV. SITE DEVELOPMENT

DEVELOPMENT PLAN

The subject site will redevelop in a manner consistent with the site plan shown in Figure 2. This will consist of the removal of three single-family residential units. In their place, a new approximately 23,000 SF police station will be constructed with emergency dispatch capabilities, evidence processing facilities, training, storage, and operations space, and K-9 unit accommodations. Access to the site will be provided by a primary full-access driveway for the public to 8th Avenue opposite 12th Street, and a secondary emergency access driveway to 13th Street to be used in times of emergency.

SITE ACCESS IMPROVEMENTS

The following site access improvements are proposed:

- Construct a primary full-access driveway to 8th Avenue opposite 12th Street.
- Construct a gated secondary full-access driveway to 13th Street just north of Christy Court, for emergency purposes.

Figure 10 identifies the lane configurations and traffic control devices assumed in place at all study intersections and proposed site accesses for the 2014 post-development condition.

TRIP GENERATION

The Institute of Transportation Engineers (ITE) publishes trip generation rates for a variety of land uses in the ITE *Trip Generation, 8th Edition*. However, a police station is not included in the ITE publication. ITE's Government Office Building land use is not used for this study for a few reasons, one of which being insufficient sample size used to determine trip generation rates. ITE's *Trip Generation Handbook, 2nd Edition* recommends collecting local data when only 1 or 2 data points are provided by ITE, as is the case.

In 2009, Portland State University (PSU) published a research report titled "Police Station PM Peak Hour Trip Generation in the Portland Metro Area". This report published the findings of a PSU research team working in cooperation with Group Mackenzie to determine trip generation rates for police stations in Portland's metropolitan area. The police facilities selected for this study were located in various jurisdictions, including City of Portland, Multnomah County, City of Milwaukie, and City of Troutdale.

The PSU report showed that after eliminating one outlying sample point, a reasonable correlation exists between facility square footage and vehicle trips generated during the PM peak hour as defined by the following formula below where building size is expressed in terms of 1,000 square feet:

Weekday PM Peak Hour Trip Rate = 1.5787 x Building Size + 2.87

Although the PSU study did not research AM peak hour conditions, the PM peak hour trip rate determined by this study should represent a conservative estimate of AM peak hour trips given that police activities are pretty consistent throughout a typical weekday. As

such, anticipated trip generation for the proposed development is shown in the following table.

TABLE 4 – TRIP GENERATION								
Land Use	Size (SF)	Trip Type	Weekday AM Peak Hour			Weekday PM Peak Hour		
			Total	Enter	Exit	Total	Enter	Exit
Police Station	23,000	Total Trips	39	19	20	39	19	20
		Pass-by Trips	**0**	**0**	**0**	**0**	**0**	**0**
		Primary Trips	**39**	**19**	**20**	**39**	**19**	**20**

As shown in the previous table, during the weekday AM and PM peak hours, the proposed development will generate 39 primary trips (50% entering and 50% exiting was assumed). Due to the nature of the development, no pass-by trips were assumed.

TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT

The distribution of site trips is based on the site's location relative to jurisdictional boundaries, available access to the adjacent street system, existing intersection turning movement patterns and professional judgment. The weekday AM and PM primary site trip distribution patterns selected for the development proposal are described as follows:

- 45% to and from the north on 10th Street
- 25% to and from the east on Willamette Falls Drive
- 20% to and from the west on Willamette Falls Drive
- 10% to and from the south on 12th Street

Figure 11 illustrates the primary site trip assignments for the weekday AM and PM peak hours.

POST-DEVELOPMENT TRAFFIC

Year 2014 post-development traffic volumes are the sum of the site trips shown in Figure 11 and the year 2014 pre-development traffic volumes.

Figures 12 and 13 illustrate the resulting 2014 post-development traffic volumes for the weekday AM and PM peak hours, respectively.

V. INTERSECTION AND ROADWAY ANALYSIS

OPERATIONS ANALYSIS

All intersection operations analyses described in this report were performed using *2010 Highway Capacity Manual* methodologies. To ensure this analysis reflects reasonable "worst-case" conditions, peak 15-minute flow rates for the specified peak hour periods were used to evaluate intersection operations. As such, the analysis reflects conditions likely to occur during the peak 15-minute period of the specified peak hour. Operations during all other weekday hours will likely be better than those described in this analysis.

Intersection operation characteristics are generally defined by two mobility standards: volume-to-capacity (v/c) ratio and level-of-service (LOS). LOS is based on the average control delay per vehicle for a particular movement, lane, approach or entire intersection. The City of West Linn relies on LOS to evaluate intersection performance, with LOS D or better as the mobility standard for both signalized and unsignalized intersections.

Analysis of weekday AM and PM peak hour conditions were conducted at all study intersections for three scenarios: 2012 Existing, 2014 Pre-Development, and 2014 Post-Development.

ANALYSIS METHODOLOGY

Intersection capacity calculations were conducted using the software program *Synchro* (Version 8), which is based on *HCM* methodologies, and *SimTraffic* utilizing ODOT analysis procedures. The vehicle delay-based analysis capabilities of the latter were used because the *HCM* outputs of *Synchro* were not representative of real-world observations. This is due to *HCM*'s application being geared toward isolated intersections, whereas key intersections such as the 8th Avenue/10th Street intersection are affected by the presence of the I-205 signals to the north and the all way stop-controlled intersection with Willamette Falls Drive to the south. The *SimTraffic* program is better able to capture the traffic flow patterns that exist on the major roadways of 10th Street and Willamette Falls Drive, and account for the metering effects of individual intersection traffic controls.

It should also be emphasized that travel time runs were conducted in the field to measure actual travel time and driver delay along the study area roadways and key intersections so they could be compared to the operational analyses of existing conditions. The findings of three separate PM peak hour travel time runs indicated that heading eastbound on 8th Avenue from the development site and making a left-turn onto 10th Street averages just over 1 minute. The *SimTraffic* analysis closely reflects this level of delay with 5 unique vehicle simulation runs averaging 70.7 seconds of delay per vehicle in the PM peak hour. Therefore, in our professional opinion, the traffic flow characteristics of the *SimTraffic* model better represents real world conditions. Therefore, this model was used as the basis for all other analysis scenarios. All *SimTraffic* analysis outputs are included in the Appendix.

UNMITIGATED ANALYSIS RESULTS

The following tables summarize the unmitigated weekday AM and PM peak hour operation analysis results. Intersection numbers correspond to numbering presented in the report figures. The *SimTraffic* results are expressed in terms of average driver delay in seconds followed by the equivalent LOS "A" through "F" rating. Results are reported for the critical approach/lane at two-way stop-controlled intersections and the intersection as a whole for the all-way stop-control.

TABLE 5 – INTERSECTION OPERATION ANALYSIS – AM PEAK HOUR

Intersection	Traffic Control	Mobility Standard	2012 Existing	2014 Pre-Dev.	2014 Post-Dev.
1. 8th Avenue/13th Street	Two-way Stop	LOS D	3.8 s (A)	3.8 s (A)	3.8 s (A)
2. 8th Avenue/12th Street	Two-way Stop	LOS D	2.3 s (A)	2.9 s (A)	4.5 s (A)
3. 8th Avenue/10th Street	Two-way Stop	LOS D	18.8 s (C)	23.2 s (C)	24.6 s (C)
4. Willamette Falls Drive/12th Street	Two-way Stop	LOS D	7.3 s (A)	7.3 s (A)	7.1 s (A)
5. Willamette Falls Drive/10th Street	All-way Stop	LOS D	7.8 s (A)	9.1 s (A)	9.1 s (A)

TABLE 6 – INTERSECTION OPERATION ANALYSIS – PM PEAK HOUR

Intersection	Traffic Control	Mobility Standard	2012 Existing	2014 Pre-Dev.	2014 Post-Dev.
1. 8th Avenue/13th Street	Two-way Stop	LOS D	4.2 s (A)	3.4 s (A)	4.1 s (A)
2. 8th Avenue/12th Street	Two-way Stop	LOS D	4.4 s (A)	4.3 s (A)	5.2 s (A)
3. 8th Avenue/10th Street	Two-way Stop	LOS D	70.7 s (F)	153.1 s (F)	215.9 s (F)
4. Willamette Falls Drive/12th Street	Two-way Stop	LOS D	26.4 s (D)	46.7 s (E)	66.8 s (F)
5. Willamette Falls Drive/10th Street	All-way Stop	LOS D	10.7 s (B)	12.9 s (B)	13.2 s (B)

Based on the findings summarized in the two tables above, all intersections operate adequately at LOS C or better during the weekday AM peak hour under all analysis scenarios. However, during the weekday PM peak hour, the 8th Avenue/10th Street intersection and Willamette Falls Drive/12th Street intersection suffer excessive congestion in the PM peak hour under Pre- and Post-Development scenarios. Additional description of these two individual intersection operations analysis and potential mitigation measures is included below.

8th Avenue/10th Street

The PM peak hour deficiency at the 8th Avenue/10th Street intersection occurs because traffic volumes on 10th Street are heavy enough to significantly inhibit stop-controlled side street movements.

The critical movement that experiences the worst delay is the eastbound left-turn lane on 8th Avenue. With the increased traffic in each successive scenario, the delay increases significantly for this particular movement. However, the lane already operates at an LOS F today in the PM peak hour as confirmed by travel time runs.

Similarly, the westbound movements from 8th Court deteriorate toward an LOS E in the 2014 pre- and post-development scenarios.

Potential improvements to mitigate the heavy vehicle delays from 8th Avenue include signalization, additional lane treatments, and/or turn movement restrictions.

The West Linn TSP identifies two projects that will affect how this intersection functions in the future. One is the widening of 10th Street between the interchange and Willamette Falls Drive. The second is the restriction of left-turn movements, but only when 8th Court is extended to Willamette Falls Drive.

ODOT does not support the signalization of the 8th Avenue/10th Street intersection due to its proximity to the 10th Street/I-205 interchange ramps, and widening 10th Street will not significantly decrease side street delay. As such, restriction of turning movements is the only feasible mitigation measure to consider at this time.

Until 8th Court is extended to Willamette Falls Drive, only certain turn movements can be restricted without significantly affecting existing circulation and access to private property. Consequently, the northbound left-turn is a good candidate for interim turn restrictions because traffic demand for this movement is low and the affected traffic can easily reroute further west on Willamette Falls Drive and turn right onto 12th Street to access 8th Avenue.

The added benefit of blocking the northbound turn-lane is that it can improve pedestrian safety across 10th Street within the marked crosswalk on the south leg which connects directly at the Route #154 (Willamette) bus stop on the east side of 10th Street. The potential turn restriction would consist of converting the northbound left turn lane into a pedestrian refuge. Besides providing a safety benefit to pedestrians/transit users, it would also reduce conflicts between vehicular traffic movements, thereby reducing vehicular delay.

Willamette Falls Drive/12th Street

The PM peak hour deficiency at the Willamette Falls Drive/12th Street intersection occurs because traffic volumes on Willamette Falls Drive are heavy enough to significantly inhibit stop-controlled side street movements.

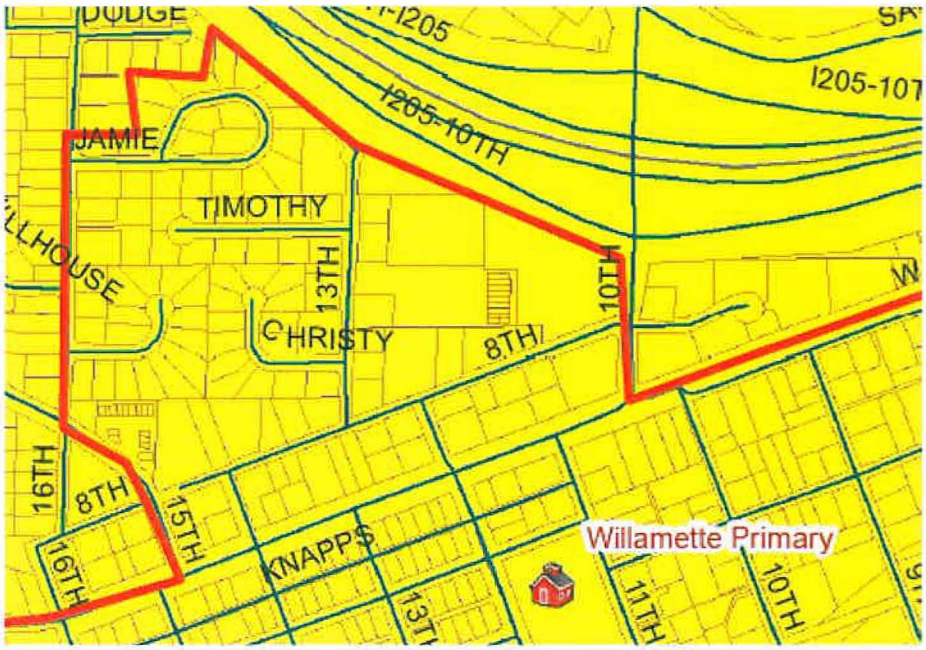
In a similar manner to the 8th Avenue/10th Street intersection, side street delay increases significantly in each successive scenario.

Future improvements identified in the West Linn TSP call for all-way stop or traffic signal when warrants are met. However, based on MUTCD criteria, forecast traffic volumes and the intersection crash history do not necessarily warrant such improvements. Nevertheless, some form of mitigation is necessary given the proposed site development will result in further deterioration of PM peak hour operations from LOS E to LOS F.

Two potential options have been identified to address the need for mitigation. One is to add short left-turn pockets on the Willamette Falls Drive approaches to increase mainline capacity movements and, thereby, decrease vehicle delay for the critical side-street approaches.

The second option is to proceed with transitioning this intersection into an all-way stop, even though MUTCD volume-based warrants are not yet satisfied. Besides benefitting the minor approach movements, all-way stop control would improve pedestrian access across Willamette Falls Drive, as crosswalks could be established on all intersecting legs. Today most pedestrians use the marked crosswalk on the west leg which connects directly at Route #154 (Willamette) bus stop on the south side of Willamette Falls Drive.

Additionally, this intersection is within the published walking boundary of Willamette Primary School to the south, and it is the most direct Willamette Falls Drive crosswalk between the school and the retail and residential land uses north of Willamette Falls Drive. Students are forced to cross free-flowing traffic at this location.



A change to all-way stop control will increase delay for eastbound traffic on Willamette Falls Drive, which in turn, may decrease cut-through potential; an issue that was described earlier in the *Existing Conditions* section of this report.

Other factors should also be considered in the context of adding all way stop-control at this intersection.

- This area is part of the Willamette Town Center, and as designated by Metro's 2040 Growth Concept Map, it extends several blocks in all directions. The heart of this particular town center includes the historic Willamette central business district as identified as a "Main Street" corridor by the 2040 Growth Concept (Willamette Falls Drive from 10th to 16th Streets). This area is meant to meet the commercial needs of the immediate neighborhood, be accessible to pedestrians, and be well served by transit.
- All way stop-control at this intersection will have the added benefit of metering vehicular traffic, such that all other downstream vehicular movements will experience greater gaps and potential decreased delay.

RECOMMENDED MITIGATION MEASURES

After considering the array of mitigation measures identified above, the following public improvements are recommended for City consideration as proper conditions of approval to mitigate the traffic impacts of the proposed police station facility:

8th Avenue/10th Street

- Eliminate northbound left-turn movement on 10th Street approach by constructing a pedestrian refuge island, and restrict potential left-turns from the through lane by installing "NO LEFT TURN" signage. Supportive reasons for this improvement are as follows:
  - A northbound left-turn restriction decreases conflicts between vehicular traffic movements, thereby decreasing traffic delay (improving LOS) for the stop-controlled movements, particularly for the more critical eastbound left-turn movement.
  - Eliminating northbound left-turns moves in the direction of meeting the planned improvements for this intersection, as identified in the City's TSP.
  - Providing a pedestrian refuge across 10th Street improves pedestrian/transit user safety by allowing pedestrians to cross the street in two stages.
  - The left-turn restriction is for a low-volume movement. Affected traffic will redirect easily to 12th Street on Willamette Falls Drive to access 8th Avenue.

Willamette Falls Drive/12th Street

- Option 1: Provide short 50-foot left-turn "pockets" on the eastbound and westbound approaches of Willamette Falls Drive. Supportive reasons for this improvement are as follows:
  - Left-turn pockets remove left-turning traffic from the through traffic stream, preventing vehicle blockage, thus allowing all movements to function more efficiently.
  - Short 50-foot pockets do not significantly affect on-street parking along Willamette Falls Drive. More storage length can be provided at the expense of on-street parking if necessary.
  - Left-turn pockets can be provided without any intersection widening.
- Option 2: Change two-way stop-control to all way stop-control, install crosswalks and provide left-turn "pockets" on the eastbound and westbound approaches of Willamette Falls Drive. Supportive reasons for this improvement are as follows:
  - All way stop-control and striped crosswalks enhances pedestrian crossing safety.
  - Reduces delay to side-street drivers.
  - Added delay to eastbound users discourages cut-through travel on Willamette Falls Drive.
  - The same benefits described in Option 1 for the left-turn turn pockets apply here.

MITIGATED ANALYSIS RESULTS

8th Avenue/10th Street

The table below shows the PM peak hour operations analysis results for the pre-development, post-development, and mitigated post-development scenarios. As shown, with northbound left-turns restricted, driver delay for the critical eastbound left turn

movement decreases from 216 seconds to 117 seconds. Although the level of service remained at LOS F, driver delay was still reduced to below pre-development levels. Additionally, driver delays on the less critical westbound approach are enhanced from LOS E to LOS D.

TABLE 7 – 8TH AVENUE / 10TH STREET MITIGATED OPERATIONS ANALYSIS – PM PEAK HOUR					
Approach/Movement	**Traffic Control**	**Mobility Standard**	**2014 Pre-Dev.**	**2014 Post-Dev.**	**2014 Mitigated Post-Dev.**
Eastbound Left	Stop-controlled	LOS D	153.1 s (F)	215.9 s (F)	116.6 s (F)
Eastbound Through-Right	Stop-controlled	LOS D	9.5 s (A)	12.8 s (B)	10.0 s (A)
Westbound Left-Through	Stop-controlled	LOS D	35.9 s (E)	45.3 s (E)	34.4 s (D)
Westbound Right	Stop-controlled	LOS D	33.3 s (D)	35.6 s (E)	30.0 s (D)
Southbound Left	-	LOS D	6.5 s (A)	6.5 s (A)	6.7 s (A)

Willamette Falls Drive/12th Street

As shown in the table below, mitigation Option 1 decreases delays on the critical side-street approaches, resulting in LOS D operations in the PM peak hour. Under mitigation Option 2, delays are decreased for the critical side-street movements and westbound movements, resulting in LOS B or better operations in the PM peak hour. However, the eastbound approach will perform poorly at LOS E/F during the PM peak hour.

TABLE 8 – WILLAMETTE FALLS DRIVE / 12TH STREET MITIGATED OPERATIONS ANALYSIS – PM PEAK HOUR					
Approach/Movement	**Traffic Control**	**Mobility Standard**	**2014 Pre-Dev.**	**2014 Post-Dev.**	**2014 Mitigated Post-Dev.**
OPTION 1					
Northbound Left-Through-Right	Stop-controlled	LOS D	46.7 s (E)	66.8 s (F)	29.9 s (D)
Southbound Left-Through-Right	Stop-controlled	LOS D	40.5 s (E)	39.5 s (E)	27.9 s (D)
Eastbound Left (50' feet)	-	LOS D	-		2.0 s (A)
Westbound Left (50' feet)	-	LOS D	-		10.1 s (B)
OPTION 2					
All-way stop-control		LOS D	-	-	76.7 s (F)*

*Northbound, Southbound, and Westbound approaches would experience LOS B or better at the expense of heavy Eastbound traffic which would experience delay in excess of LOS E & F thresholds.

VII. SUMMARY

The following are key findings supported by analysis results presented in this report:

SITE CONDITIONS

- The approximately 1.6-acre site currently has three existing single-family residences.

EXISTING TRANSPORTATION FACILITIES

- The proposed development site is in close proximity to public transit and some pedestrian facilities. There are no continuous bicycle lanes in the site vicinity.

REVIEW OF INTERSECTION CRASH DATA

- All study intersections have low crash rates below 1.0 crashes per million entering vehicles, based on five years of historical data.

REVIEW OF INTERSECTION SIGHT DISTANCE

- Adequate sight distance is available at the proposed site accesses along 8th Avenue and 13th Street.

BACKGROUND AND IN-PROCESS TRAFFIC

- Based on historical traffic growth trends for the 10th Street corridor, the Willamette area has experienced little traffic growth over the past several years. However, to produce a conservative analysis of future traffic conditions, an annual traffic growth rate of 1.0% was utilized in this study.
- Additional in-process traffic to account for full occupancy at the Willamette Marketplace development was added to the roadway network using the directional distributions from Kittelson & Associates' latest Transportation Impact Analysis of the site.

SITE DEVELOPMENT PLAN

- Site development will consist of removing the three existing single-family residences and constructing an approximately 23,000 SF police station.
- Access to the site will be provided by a primary full-access driveway to 8th Avenue opposite the 12th Street approach and a secondary full-access driveway to 13th Street for emergency use.
- Using the trip generation information gathered from existing police stations in the Portland metropolitan area, the proposed development is projected to generate 39 primary trips during the weekday AM and PM peak hours.
- The proposed development is expected to be completed by 2014.

TRAFFIC OPERATIONS

- Traffic operations at all study intersections will meet mobility standards for the weekday AM peak hour. However, two study intersections will not meet mobility standards in the PM peak hour. Mitigation measures are needed at both the 8th Avenue/10th Street and Willamette Falls Drive/12th Street intersections to operate at mobility standards.

MITIGATION MEASURES

- Recommended mitigation at the 8th Avenue/10th Street intersection includes eliminating the northbound left-turn lane, installing a pedestrian refuge island, and restricting potential left-turns from the through lane by posting "NO LEFT TURN" signage.
- Recommended mitigation at the Willamette Falls Drive/12th Street intersection includes two potential options:
  - Option 1: Maintain two-way stop-control and construct short 50-foot left turn pockets on the eastbound and westbound approaches of Willamette Falls Drive.
  - Option 2: Implement all-way stop-control, and install crosswalks on all intersecting legs.

VIII. CONCLUSIONS

Based on the findings documented in this study, the following recommendations are made to ensure the proposed site development will not significantly or adversely impact traffic operations or safety at all study intersections and proposed site accesses:

1. Restrict northbound left-turn movements at the 8th Avenue/10th Street intersection by eliminating the left-turn lane, installing a pedestrian refuge island, and restricting potential left-turns from the through lane by posting "NO LEFT TURN" signage.
2. Implement one of two mitigation measures at the Willamette Falls Drive/12th Street intersection:
   - Option 1: Maintain two-way stop-control and construct short 50-foot left turn pockets on the eastbound and westbound approaches of Willamette Falls Drive.
   - Option 2: Implement all-way stop-control, and install crosswalks on all intersecting legs.

VIII. APPENDICES

A. Figures

B. Traffic Count Data Sheets

C. Intersection Crash Data

D. Historical Traffic Growth

E. Intersection Capacity Calculations

APPENDIX A
Figures

NOT TO SCALE

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

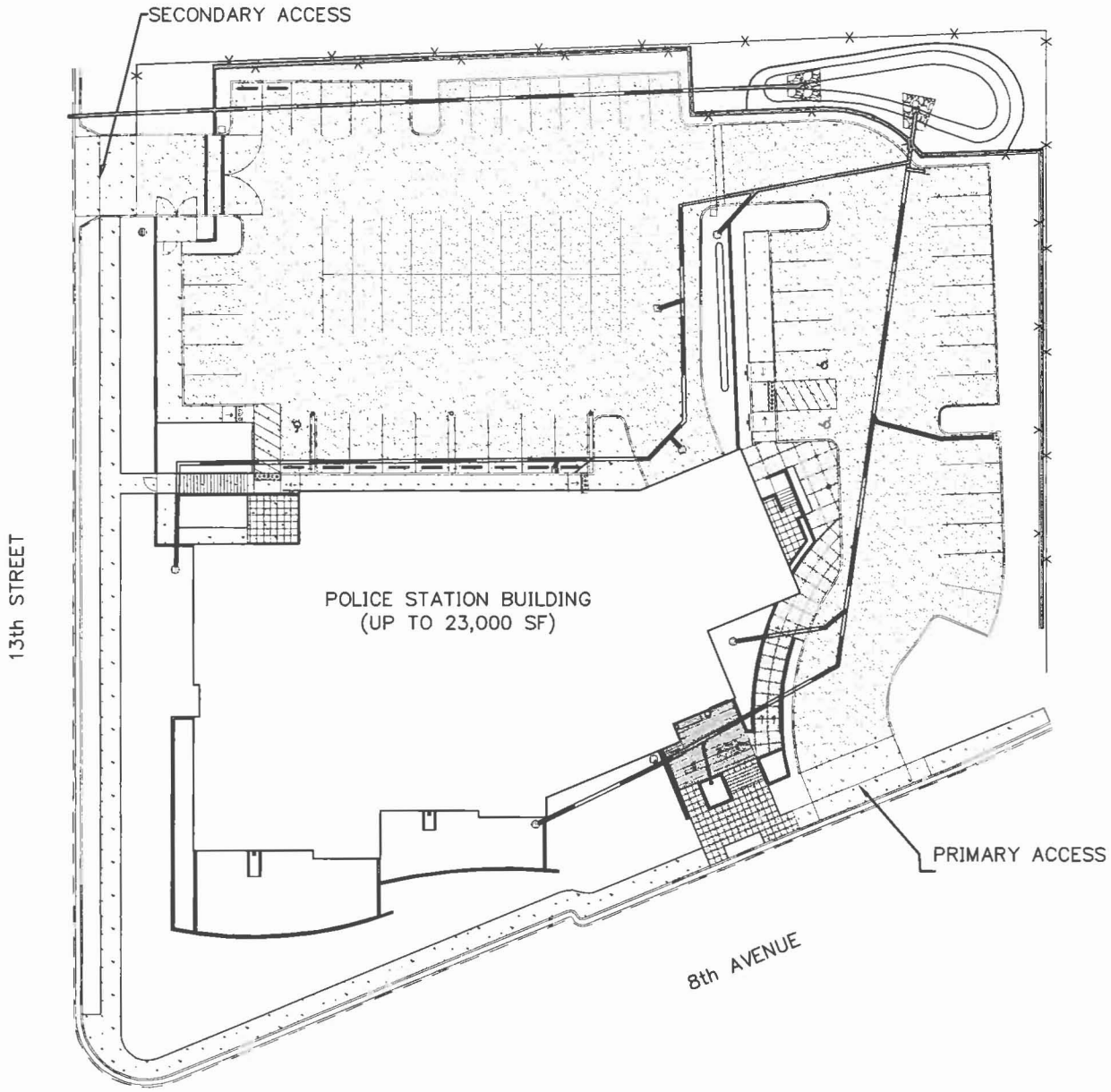
DATE: 11.08.12
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

SITE VICINITY MAP

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 1

NOT TO SCALE



GROUP MACKENZIE

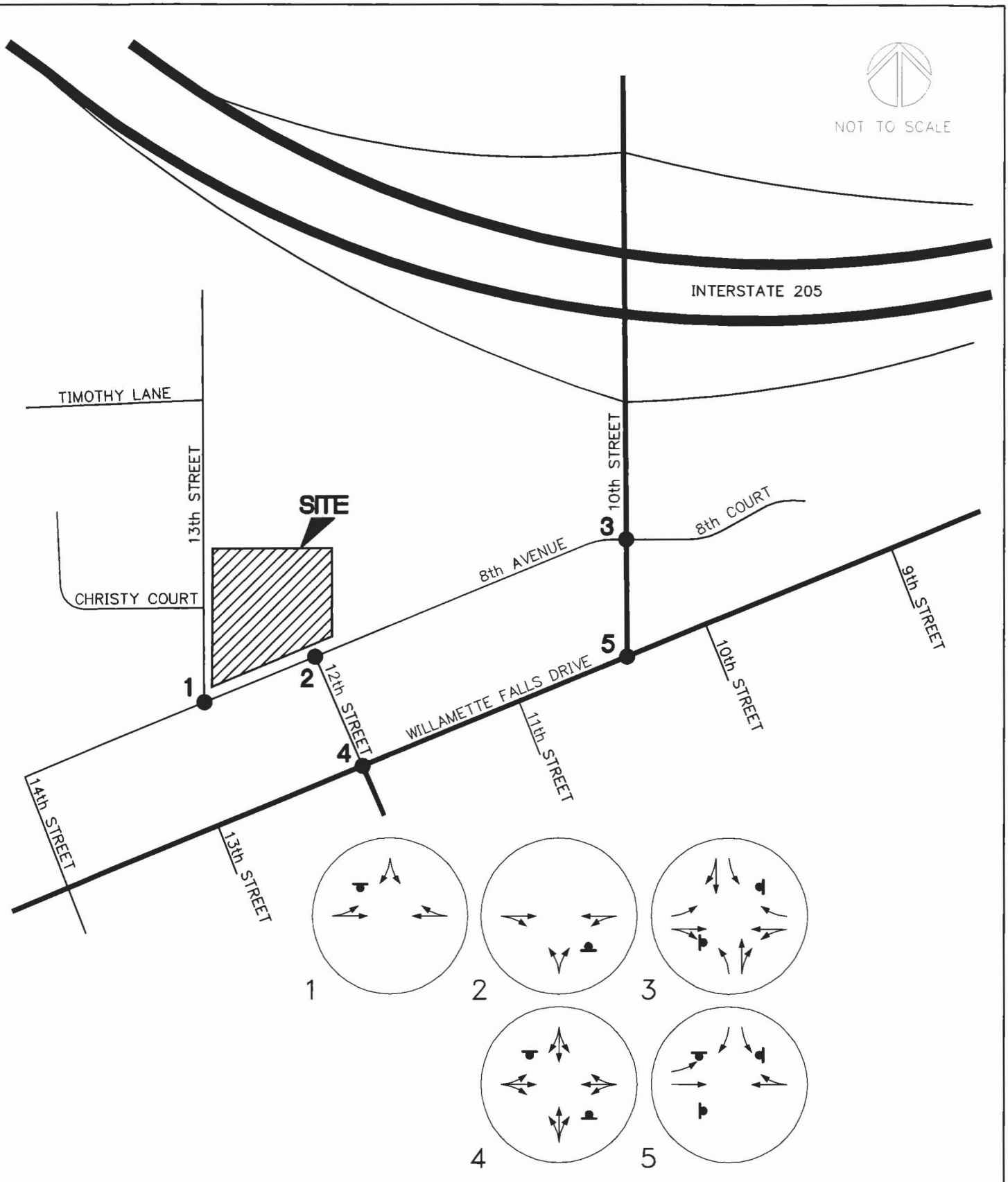
Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

DATE: 11.08.12
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

SITE PLAN

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 2



GROUP MACKENZIE

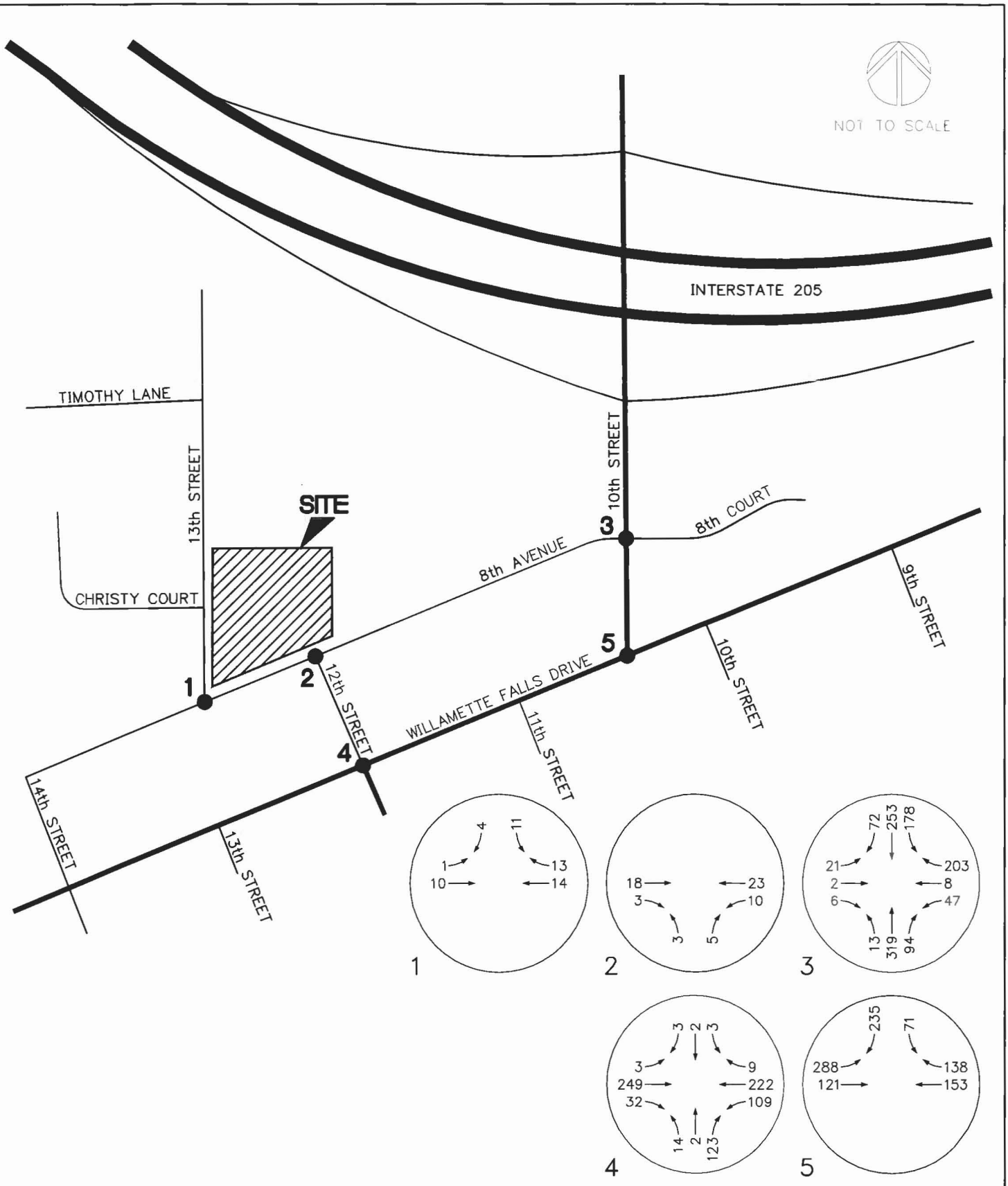
Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

DATE: 11.08.12
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 3



GROUP MACKENZIE

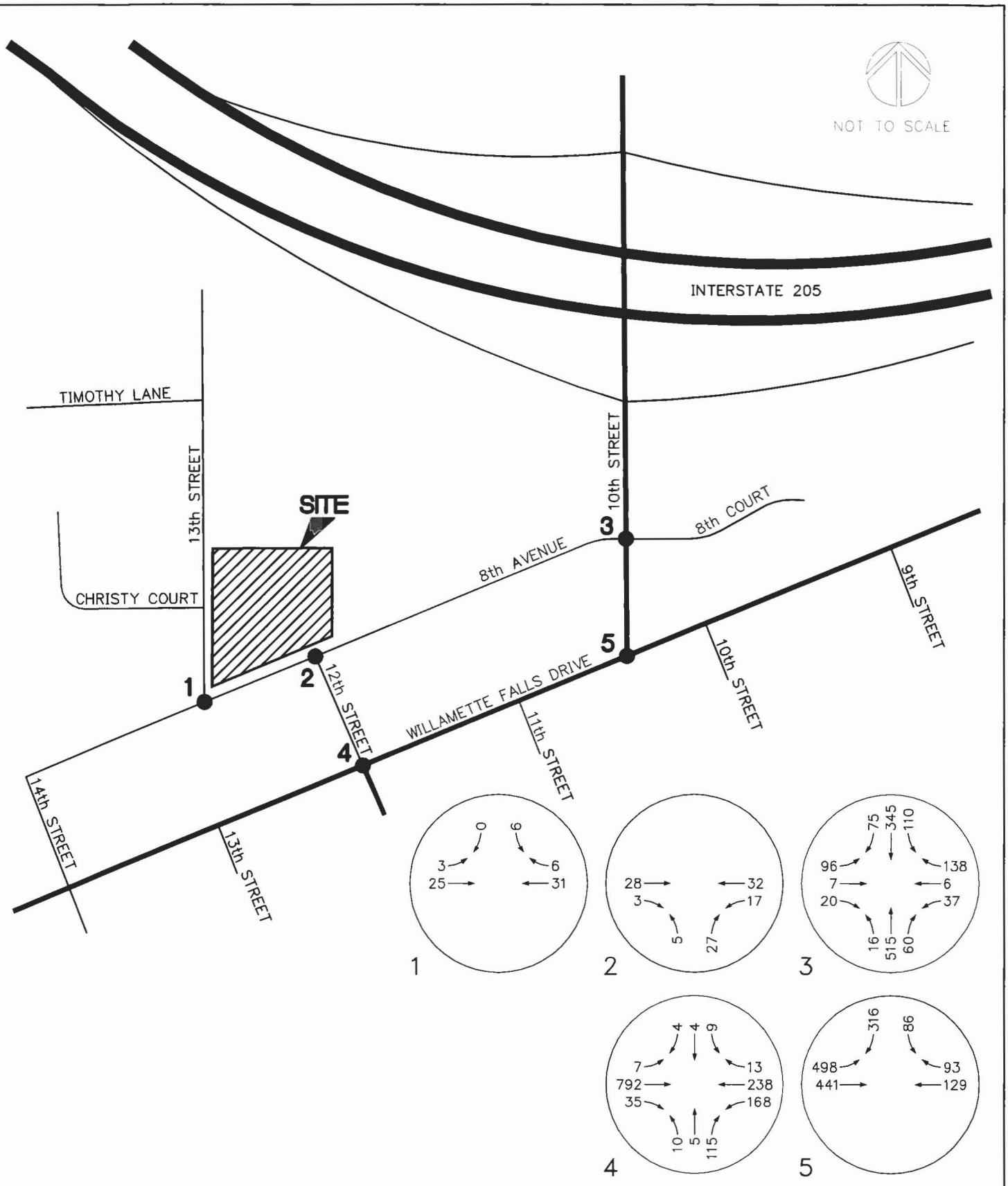
Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

DATE: 11.08.12
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

2012 EXISTING TRAFFIC VOLUMES - WEEKDAY AM PEAK HOUR

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 4



GROUP MACKENZIE

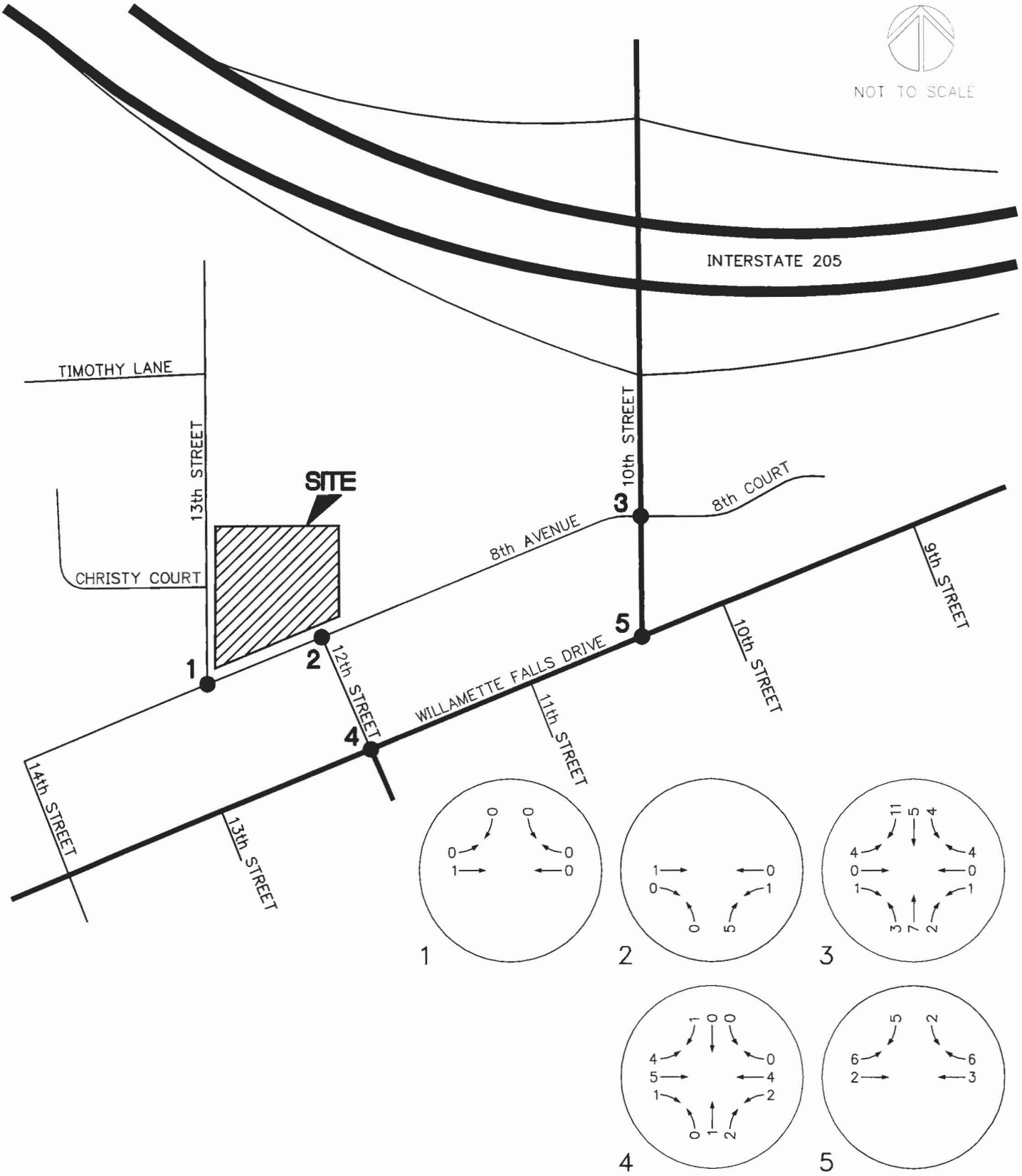
Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

DATE: 11.08.12
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

2012 EXISTING TRAFFIC VOLUMES - WEEKDAY PM PEAK HOUR

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 5



GROUP MACKENZIE

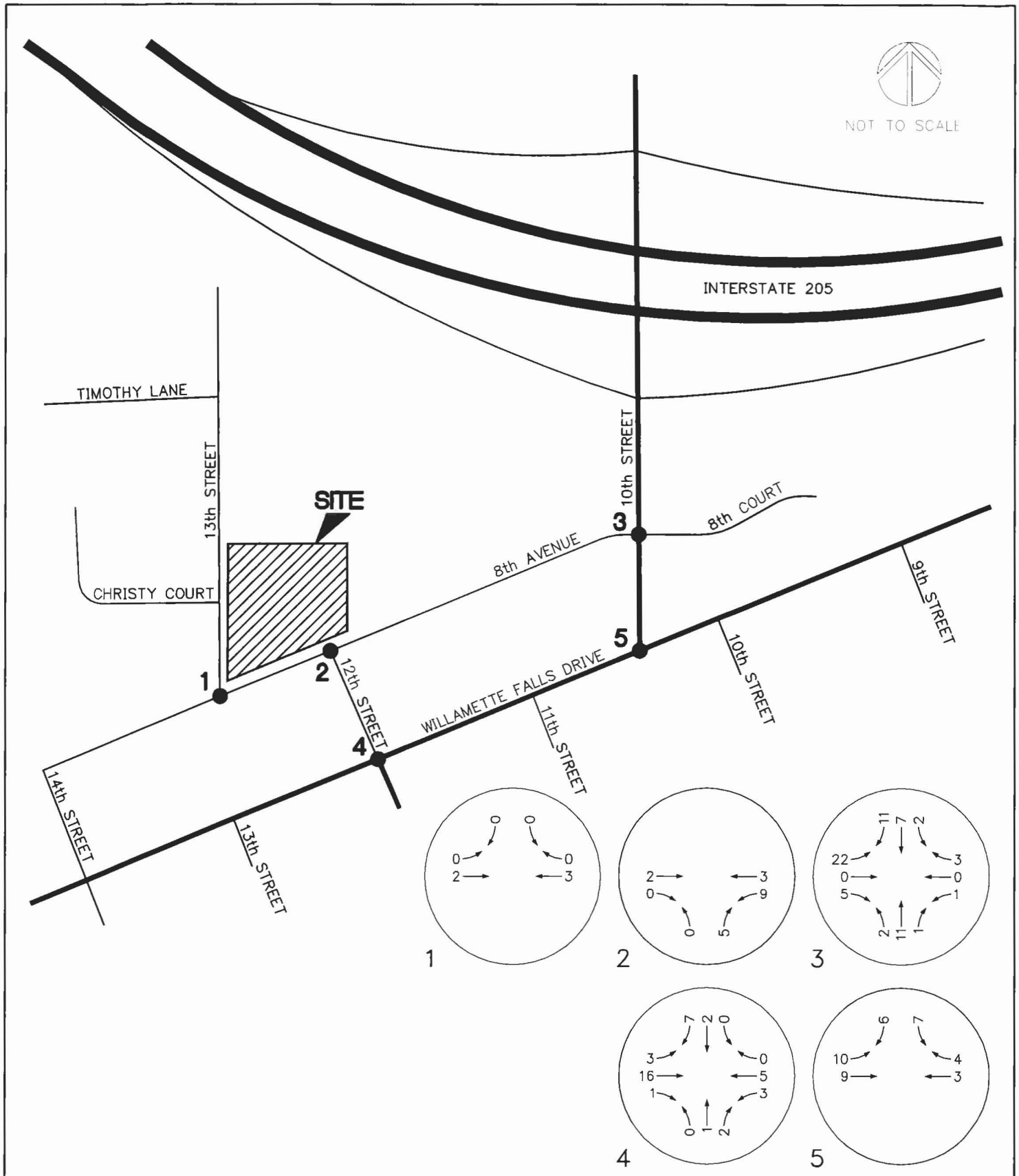
Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

DATE: 11.08.12
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

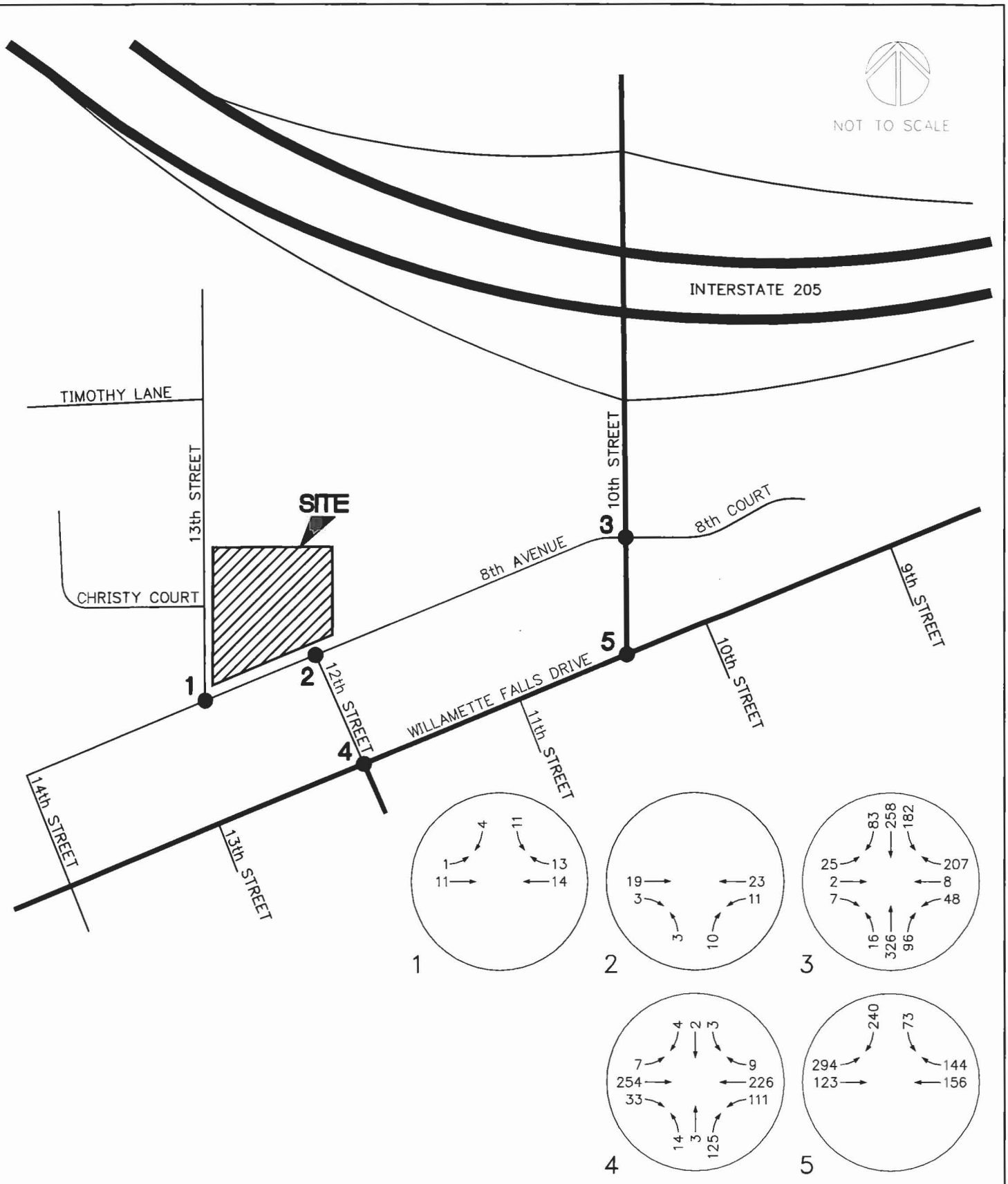
2-YEAR BACKGROUND TRAFFIC GROWTH + IN-PROCESS TRIPS - WEEKDAY AM PEAK HOUR

WEST LINN POLICE STATION
WEST LINN, OREGON

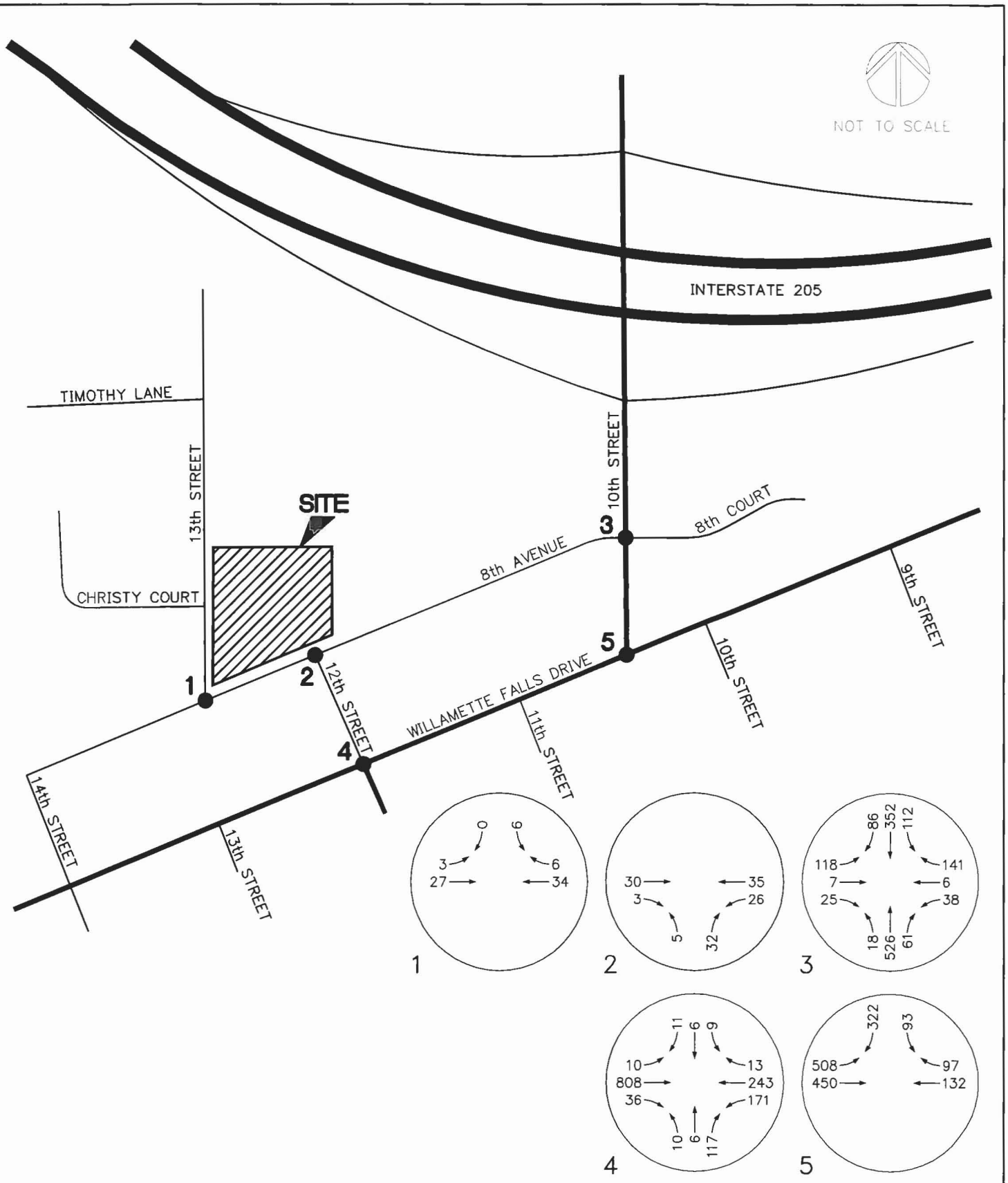
FIGURE 6



GROUP MACKENZIE Portland OR 503.224.9560 · Vancouver WA 360.695.7879 · Seattle WA 206.749.9993	DATE: 11.08.12 DRAWN BY: JRB CHECKED BY: BJD JOB NO: 2120180.00	2-YEAR BACKGROUND TRAFFIC GROWTH + IN-PROCESS TRIPS - WEEKDAY PM PEAK HOUR WEST LINN POLICE STATION WEST LINN, OREGON	FIGURE 7



GROUP MACKENZIE Portland OR 503.224.9560 Vancouver WA 360.695.7879 Seattle WA 206.749.9993	DATE: 11.08.12 DRAWN BY: JRB CHECKED BY: BJD JOB NO: 2120180.00	2014 PRE-DEVELOPMENT TRAFFIC VOLUMES - WEEKDAY AM PEAK HOUR WEST LINN POLICE STATION WEST LINN, OREGON	FIGURE 8



GROUP MACKENZIE

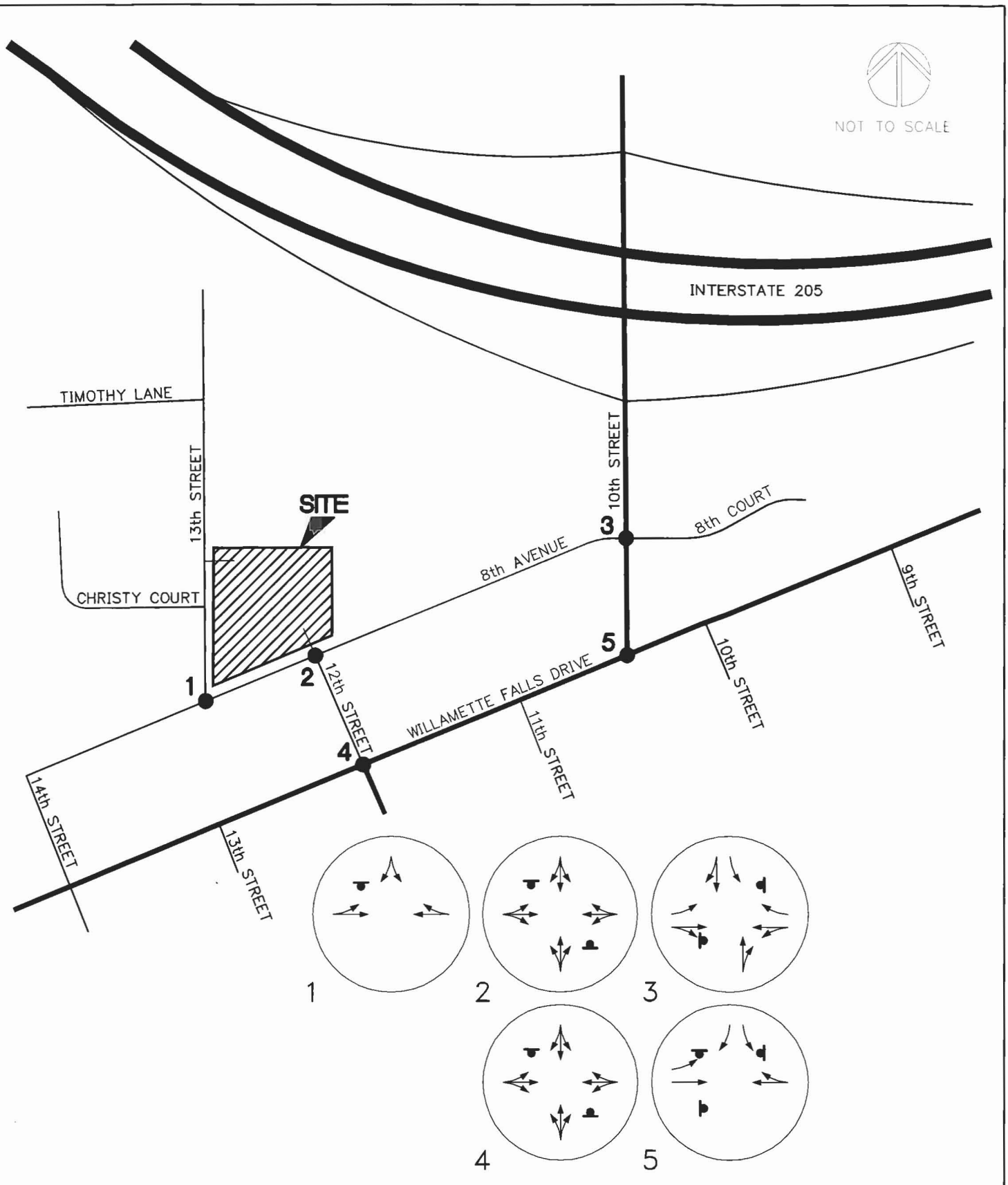
Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

DATE: 11.08.12
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

2014 PRE-DEVELOPMENT TRAFFIC VOLUMES - WEEKDAY PM PEAK HOUR

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 9



GROUP MACKENZIE

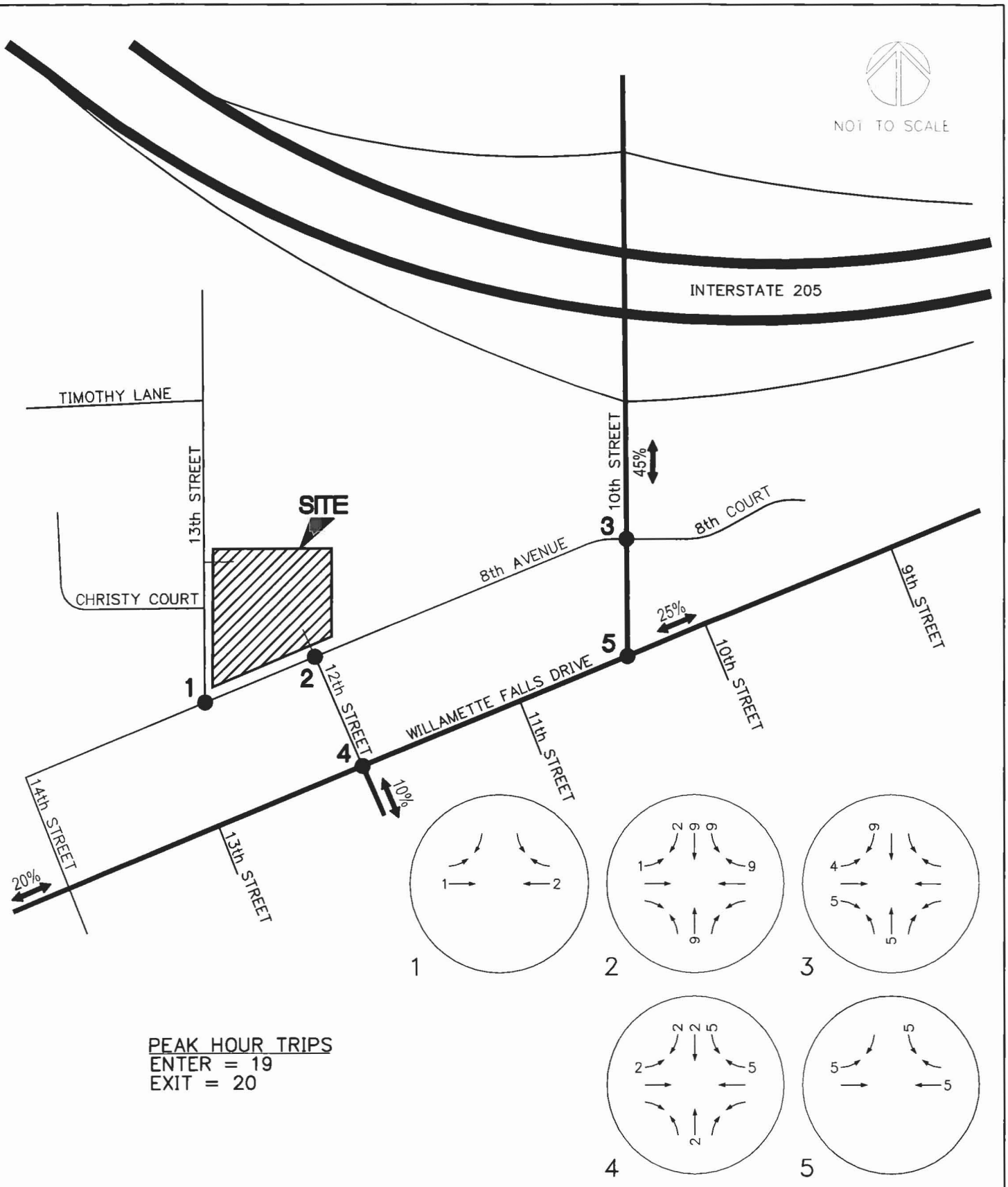
Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

DATE: 11.08.12
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

ASSUMED LANE CONFIGURATIONS AND TRAFFIC CONTROL

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 10



PEAK HOUR TRIPS
ENTER = 19
EXIT = 20

GROUP MACKENZIE

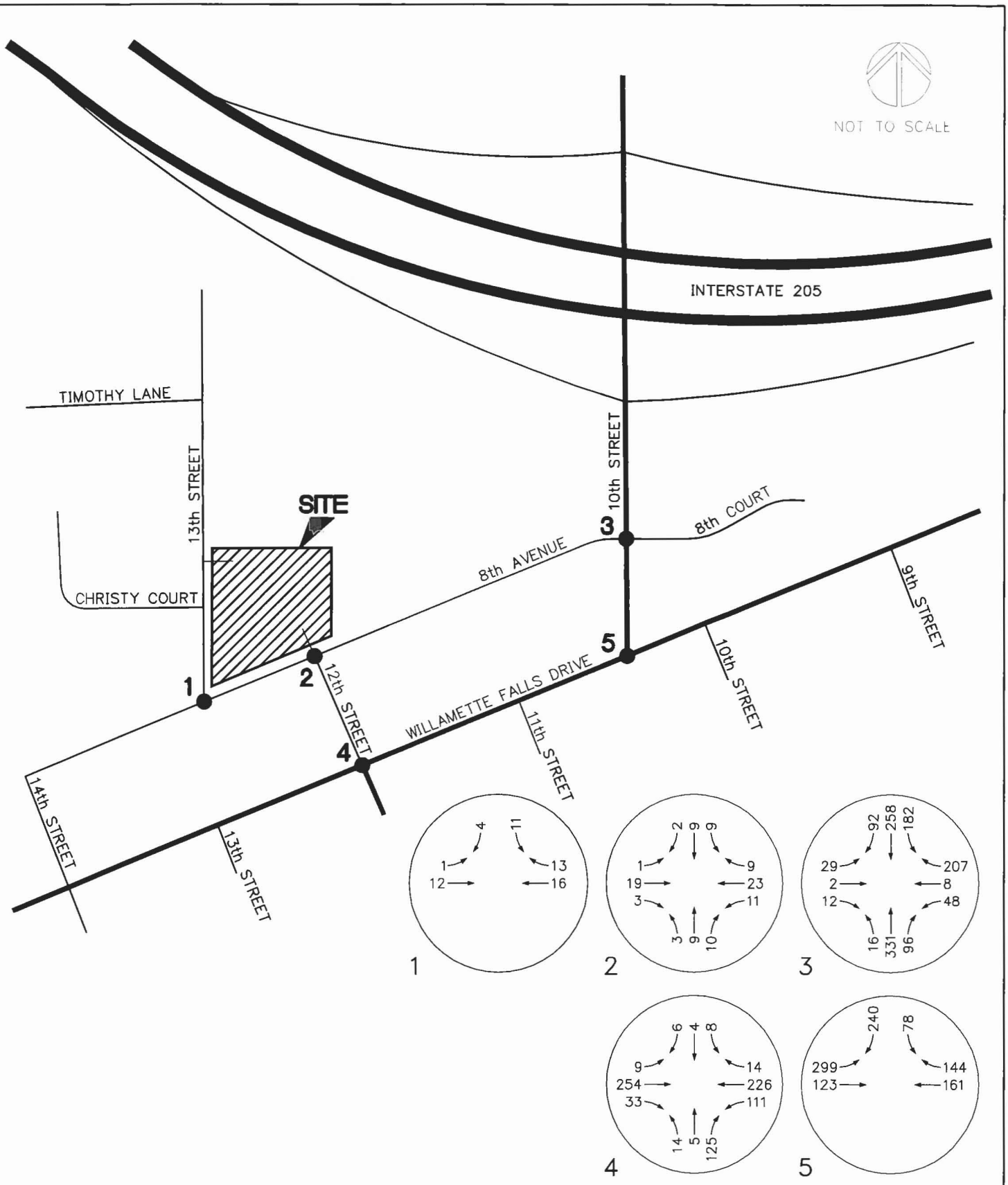
Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

DATE: 11.08.12
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

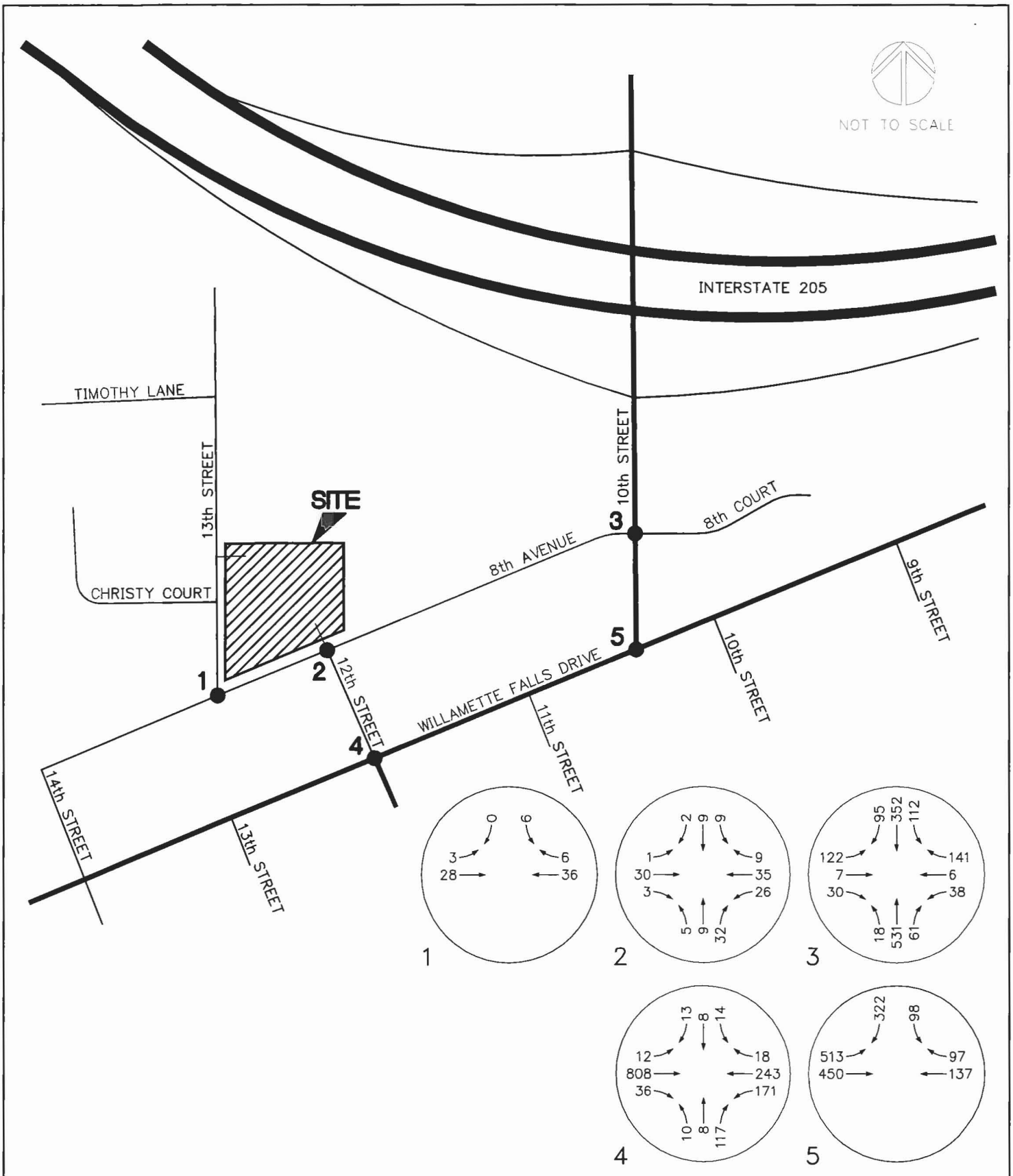
SITE TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT - WEEKDAY AM/PM PEAK HOURS

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 11



GROUP MACKENZIE Portland OR 503.224.9560 · Vancouver WA 360.695.7879 · Seattle WA 206.749.9993	DATE: 11.08.12 DRAWN BY: JRB CHECKED BY: BJD JOB NO: 2120180.00	2014 POST-DEVELOPMENT TRAFFIC VOLUMES - WEEKDAY AM PEAK HOUR WEST LINN POLICE STATION WEST LINN, OREGON	FIGURE 12



GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

DATE: 11.08.12
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

2014 POST-DEVELOPMENT TRAFFIC VOLUMES - WEEKDAY PM PEAK HOUR

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 13

APPENDIX B
Traffic Count
Data Sheets

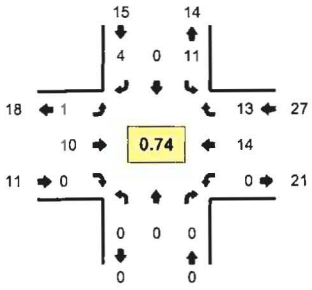
Type of peak hour being reported: System Peak

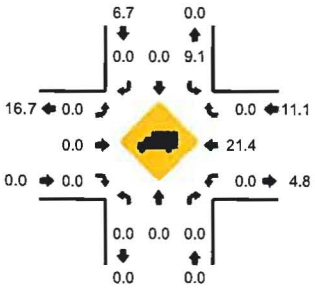
Method for determining peak hour: Total Entering Volume

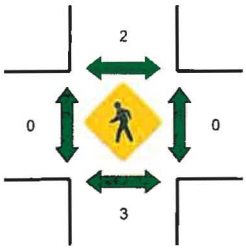
LOCATION: 13th St -- 8th Ave
CITY/STATE: West Linn, OR

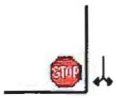
QC JOB #: 10805301
DATE: Tue, Sep 11 2012

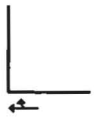
Peak-Hour: 7:20 AM -- 8:20 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

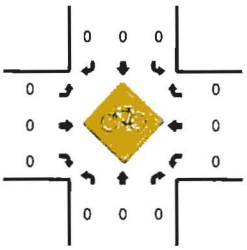


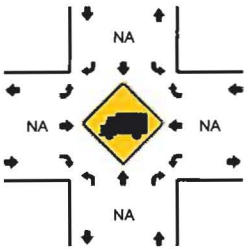


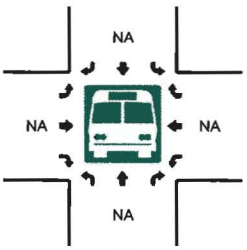












5-Min Count Period Beginning At	13th St (Northbound)				13th St (Southbound)				8th Ave (Eastbound)				8th Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	3	
7:05 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	
7:10 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	6	0	7	
7:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3	
7:20 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0	4	
7:25 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	3	
7:30 AM	0	0	0	0	4	0	1	0	0	2	0	0	0	0	0	0	7	
7:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	
7:40 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	2	0	0	4	
7:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	6	0	8	
7:50 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	
7:55 AM	0	0	0	0	2	0	0	0	0	4	0	0	0	2	0	0	8	53
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	51
8:05 AM	0	0	0	0	2	0	0	0	1	1	0	0	0	3	0	0	7	56
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	50
8:15 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	4	0	0	6	53
8:20 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5	54
8:25 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3	54
8:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	48
8:35 AM	0	0	0	0	5	0	0	0	1	1	0	0	0	1	0	0	8	54
8:40 AM	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	3	53
8:45 AM	0	0	0	0	1	0	1	0	0	3	0	0	0	0	0	0	5	50
8:50 AM	0	0	0	0	3	0	0	0	0	3	0	0	0	1	1	0	8	56
8:55 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	3	2	0	6	54

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	12	0	4	0	0	16	0	0	0	16	24	0	72
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 9/14/2012 1:40 PM

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

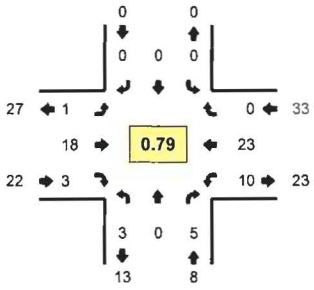
Type of peak hour being reported: System Peak

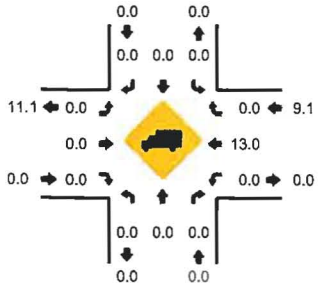
Method for determining peak hour: Total Entering Volume

LOCATION: 12th St -- 8th Ave
CITY/STATE: West Linn, OR

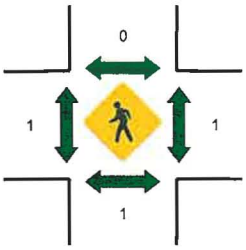
QC JOB #: 10805303
DATE: Tue, Sep 11 2012

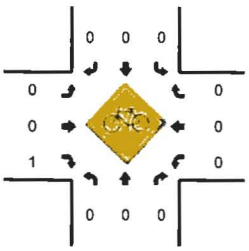
Peak-Hour: 7:20 AM -- 8:20 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

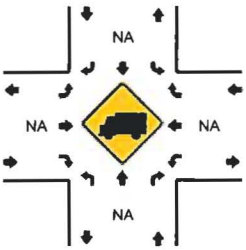


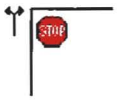


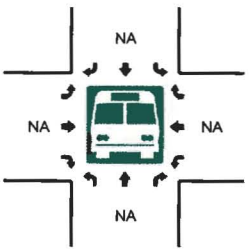
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES











5-Min Count Period Beginning At	12th St (Northbound)				12th St (Southbound)				8th Ave (Eastbound)				8th Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3	
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:10 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	6	0	0	7	
7:15 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	4	
7:20 AM	0	0	1	0	0	0	0	0	0	2	0	0	0	3	0	0	6	
7:25 AM	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	4	
7:30 AM	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	6	
7:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	
7:40 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	3	
7:45 AM	1	0	0	0	0	0	0	0	0	0	1	0	1	6	0	0	9	
7:50 AM	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	3	
7:55 AM	0	0	0	0	0	0	0	0	0	6	0	0	1	1	0	0	8	57
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	57
8:05 AM	1	0	1	0	0	0	0	0	0	2	0	1	1	2	0	0	8	65
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	60
8:15 AM	0	0	2	0	0	0	0	0	0	1	0	0	0	4	0	0	7	63
8:20 AM	0	0	1	0	0	0	0	0	0	2	0	0	1	3	0	0	7	64
8:25 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	4	64
8:30 AM	0	0	1	0	0	0	0	0	0	1	0	0	2	1	0	0	5	63
8:35 AM	0	0	0	0	0	0	0	0	0	6	0	0	3	1	0	0	10	69
8:40 AM	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	4	70
8:45 AM	1	0	1	0	0	0	0	0	0	4	0	0	2	0	0	0	8	69
8:50 AM	0	0	0	0	0	0	0	0	0	6	0	0	3	1	0	0	10	76
8:55 AM	0	0	2	0	0	0	0	0	0	0	0	0	3	4	0	0	9	77

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	0	0	0	0	0	0	0	0	24	4	0	12	32	0	0	80
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		
Pedestrians		0				0				0				0			
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		
Railroad Stopped Buses																	

Comments:

Report generated on 9/14/2012 1:40 PM

SOURCE: Quality Counts, LLC (http://www.qualitycou

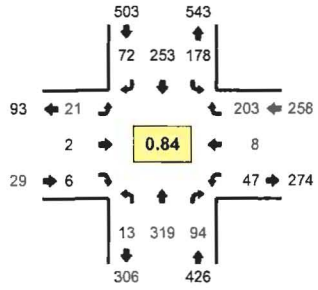
Type of peak hour being reported: System Peak

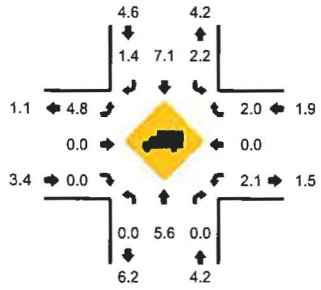
Method for determining peak hour: Total Entering Volume

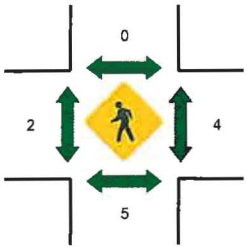
LOCATION: 10th St -- 8th Ave
CITY/STATE: West Linn, OR

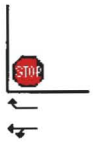
QC JOB #: 10805305
DATE: Tue, Sep 11 2012

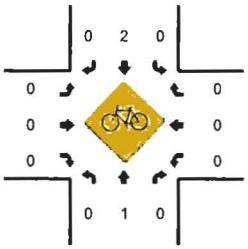
Peak-Hour: 7:20 AM -- 8:20 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

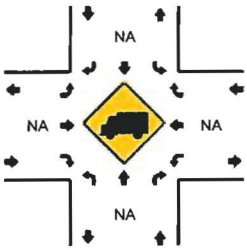


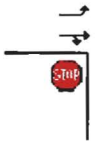


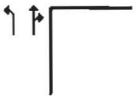


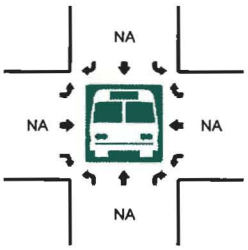












5-Min Count Period Beginning At	10th St (Northbound)				10th St (Southbound)				8th Ave (Eastbound)				8th Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	16	3	0	9	9	1	0	0	1	0	0	2	0	7	0	48	
7:05 AM	0	23	3	0	18	10	1	0	1	0	0	0	1	0	9	0	66	
7:10 AM	0	32	5	0	14	11	1	0	0	1	0	0	3	1	15	0	83	
7:15 AM	3	22	10	0	14	6	4	0	3	0	1	0	4	0	14	0	81	
7:20 AM	0	20	9	0	20	13	7	0	1	0	1	0	4	2	18	0	95	
7:25 AM	1	27	8	0	12	21	6	0	3	0	1	0	4	1	21	0	105	
7:30 AM	0	25	6	0	16	17	0	0	3	0	2	0	4	1	19	0	93	
7:35 AM	2	25	5	0	11	24	6	0	0	0	0	0	6	2	9	0	90	
7:40 AM	1	29	6	0	15	37	6	0	0	0	0	0	1	0	16	0	111	
7:45 AM	0	47	5	0	19	27	12	0	1	0	0	0	3	0	17	0	131	
7:50 AM	2	39	10	0	16	22	8	0	0	0	0	0	2	1	13	0	113	
7:55 AM	4	32	13	0	17	23	5	0	3	1	1	0	6	0	13	0	118	1134
8:00 AM	2	17	5	0	16	20	6	0	1	0	0	0	6	0	27	0	100	1186
8:05 AM	1	18	6	0	16	17	8	0	6	1	1	0	2	1	15	0	92	1212
8:10 AM	0	21	12	0	13	15	5	0	1	0	0	0	7	0	17	0	91	1220
8:15 AM	0	19	9	0	7	17	3	0	2	0	0	0	2	0	18	0	77	1216
8:20 AM	0	19	4	0	15	14	11	0	3	1	0	0	1	2	15	0	85	1206
8:25 AM	0	19	9	0	15	19	7	0	2	0	1	0	2	1	15	0	90	1191
8:30 AM	0	29	5	0	19	14	7	0	2	1	0	0	7	2	18	0	104	1202
8:35 AM	2	18	3	0	13	10	4	0	5	0	0	0	2	1	17	0	75	1187
8:40 AM	0	27	9	0	14	13	1	0	5	0	0	0	3	1	12	0	85	1161
8:45 AM	1	31	12	0	13	23	7	0	4	0	0	0	4	1	15	0	111	1141
8:50 AM	1	15	5	0	17	19	10	0	13	3	0	0	5	1	25	0	114	1142
8:55 AM	2	13	5	0	12	17	9	0	6	0	1	0	1	2	17	0	85	1109

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	24	472	112	0	208	288	100	0	16	4	4	0	44	4	172	0	1448
Heavy Trucks	0	28	0		4	12	4		0	0	0		0	0	4		52
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 9/14/2012 1:40 PM

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

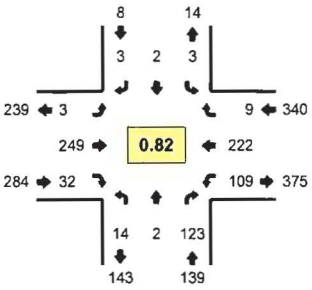
Type of peak hour being reported: System Peak

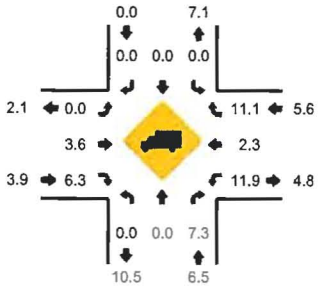
Method for determining peak hour: Total Entering Volume

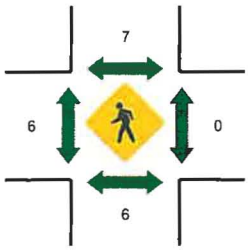
LOCATION: 12th St -- Willamette Falls Dr
CITY/STATE: West Linn, OR

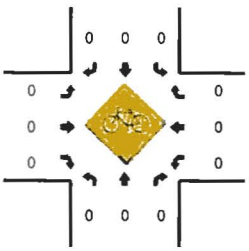
QC JOB #: 10805307
DATE: Tue, Sep 11 2012

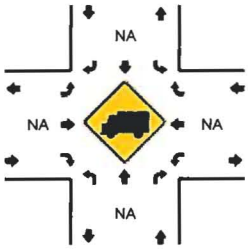
Peak-Hour: 7:20 AM -- 8:20 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

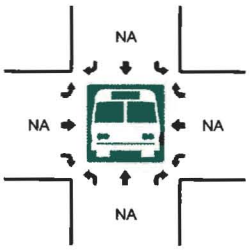












5-Min Count Period Beginning At	12th St (Northbound)				12th St (Southbound)				Willamette Falls Dr (Eastbound)				Willamette Falls Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	3	0	0	0	0	0	0	16	0	0	4	9	1	0	33	
7:05 AM	0	0	5	0	0	0	0	0	0	18	1	0	4	10	0	0	38	
7:10 AM	1	0	5	0	0	0	0	0	0	25	1	0	4	12	0	0	48	
7:15 AM	0	0	3	0	0	0	0	0	0	21	0	0	6	17	0	0	47	
7:20 AM	0	0	8	0	0	0	0	0	1	21	2	0	11	11	0	0	54	
7:25 AM	0	0	6	0	0	0	0	0	0	19	2	0	6	22	1	0	56	
7:30 AM	1	0	4	0	0	0	0	0	0	15	0	0	7	14	0	0	41	
7:35 AM	0	0	8	0	1	0	0	0	0	16	4	0	11	24	2	0	66	
7:40 AM	2	0	18	0	1	1	0	0	0	20	6	0	16	18	1	0	83	
7:45 AM	1	0	21	0	0	1	1	0	0	26	6	0	19	17	1	0	93	
7:50 AM	5	1	19	0	0	0	0	0	0	24	4	0	8	15	0	0	76	
7:55 AM	1	0	8	0	0	0	1	0	0	21	2	0	11	23	0	0	67	702
8:00 AM	4	0	6	0	0	0	1	0	0	17	3	0	8	28	1	0	68	737
8:05 AM	0	1	8	0	1	0	0	0	0	23	1	0	2	16	1	0	53	752
8:10 AM	0	0	7	0	0	0	0	0	0	24	1	0	7	13	2	0	54	758
8:15 AM	0	0	10	0	0	0	0	0	2	23	1	0	3	21	0	0	60	771
8:20 AM	1	0	6	0	0	0	1	0	0	14	0	0	5	19	2	0	48	765
8:25 AM	1	0	5	0	0	0	0	0	0	20	0	0	14	20	0	0	60	769
8:30 AM	1	0	6	0	0	0	1	0	0	16	0	0	8	18	1	0	51	779
8:35 AM	0	0	7	0	0	1	1	0	0	14	1	0	4	11	0	0	39	752
8:40 AM	0	1	5	0	2	0	0	0	0	28	1	0	3	15	0	0	55	724
8:45 AM	0	0	13	0	0	0	0	0	1	22	1	0	3	25	0	0	65	696
8:50 AM	1	0	3	0	0	0	0	0	0	19	0	0	5	23	0	0	51	671
8:55 AM	1	0	3	0	2	1	0	0	0	13	1	0	3	17	2	0	43	647

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	28	4	192	0	0	4	8	0	0	284	48	0	152	220	4	0	944
Heavy Trucks	0	0	12		0	0	0		0	12	0		16	0	0		40
Pedestrians		4				8				8				0			20
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 9/14/2012 1:40 PM

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

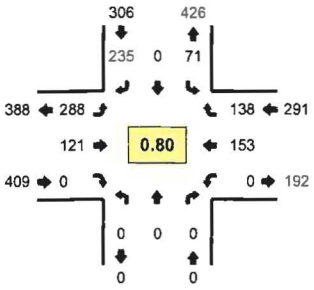
Type of peak hour being reported: System Peak

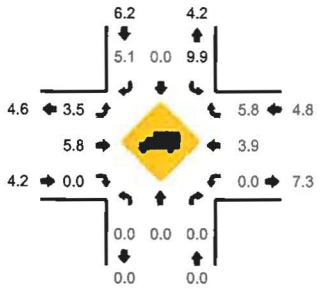
Method for determining peak hour: Total Entering Volume

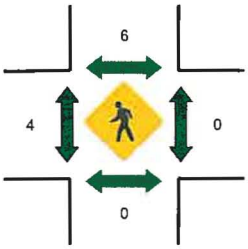
LOCATION: 10th St -- Willamette Falls Dr
CITY/STATE: West Linn, OR

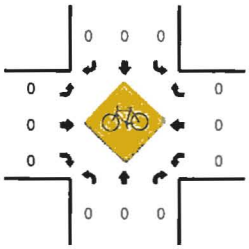
QC JOB #: 10805309
DATE: Tue, Sep 11 2012

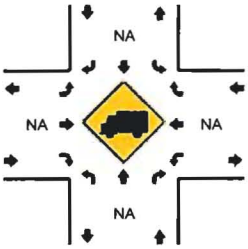
Peak-Hour: 7:20 AM -- 8:20 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

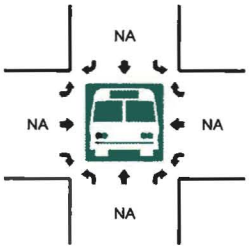












5-Min Count Period Beginning At	10th St (Northbound)				10th St (Southbound)				Willamette Falls Dr (Eastbound)				Willamette Falls Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	4	0	6	0	15	5	0	0	0	10	2	0	42	
7:05 AM	0	0	0	0	4	0	7	0	21	4	0	0	0	9	6	0	51	
7:10 AM	0	0	0	0	3	0	11	0	26	4	0	0	0	6	10	0	60	
7:15 AM	0	0	0	0	1	0	8	0	20	3	0	0	0	13	16	0	61	
7:20 AM	0	0	0	0	7	0	13	0	21	7	0	0	0	10	7	0	65	
7:25 AM	0	0	0	0	4	0	20	0	20	5	0	0	0	11	16	0	76	
7:30 AM	0	0	0	0	4	0	14	0	21	6	0	0	0	11	11	0	67	
7:35 AM	0	0	0	0	2	0	27	0	24	6	0	0	0	16	7	0	82	
7:40 AM	0	0	0	0	1	0	36	0	26	8	0	0	0	14	10	0	95	
7:45 AM	0	0	0	0	5	0	29	0	41	10	0	0	0	16	13	0	114	
7:50 AM	0	0	0	0	9	0	15	0	37	13	0	0	0	10	12	0	96	
7:55 AM	0	0	0	0	9	0	19	0	33	9	0	0	0	17	16	0	103	912
8:00 AM	0	0	0	0	4	0	24	0	22	11	0	0	0	16	5	0	82	952
8:05 AM	0	0	0	0	10	0	12	0	11	12	0	0	0	9	11	0	65	966
8:10 AM	0	0	0	0	6	0	14	0	19	16	0	0	0	12	18	0	85	991
8:15 AM	0	0	0	0	10	0	12	0	13	18	0	0	0	11	12	0	76	1006
8:20 AM	0	0	0	0	4	0	12	0	15	6	0	0	0	15	8	0	60	1001
8:25 AM	0	0	0	0	2	0	20	0	17	9	0	0	0	20	8	0	76	1001
8:30 AM	0	0	0	0	3	0	15	0	16	7	0	0	0	14	18	0	73	1007
8:35 AM	0	0	0	0	5	0	9	0	14	4	0	0	0	6	8	0	46	971
8:40 AM	0	0	0	0	2	0	15	0	27	10	0	0	0	8	9	0	71	947
8:45 AM	0	0	0	0	3	0	17	0	30	9	0	0	0	13	13	0	85	918
8:50 AM	0	0	0	0	4	0	20	0	21	5	0	0	0	15	3	0	68	890
8:55 AM	0	0	0	0	4	0	15	0	17	4	0	0	0	9	3	0	52	839

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	92	0	252	0	444	128	0	0	0	172	164	0	1252
Heavy Trucks	0	0	0		8	0	8		16	12	0		0	8	12		64
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/14/2012 1:40 PM

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

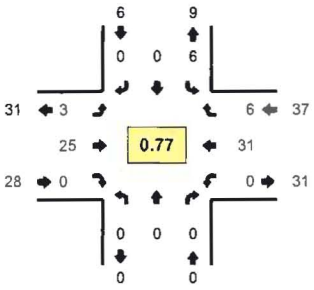
Type of peak hour being reported: System Peak

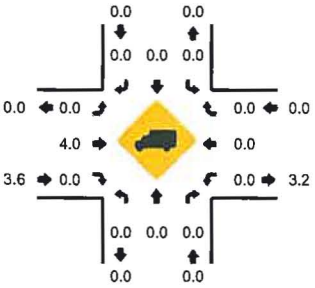
Method for determining peak hour: Total Entering Volume

LOCATION: 13th St -- 8th Ave
CITY/STATE: West Linn, OR

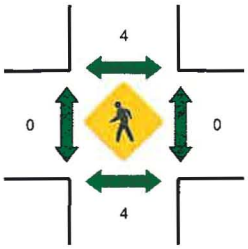
QC JOB #: 10805302
DATE: Tue, Sep 11 2012

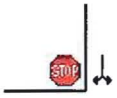
Peak-Hour: 4:50 PM -- 5:50 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

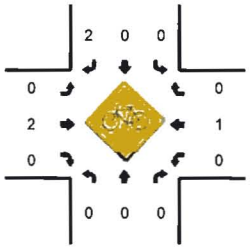


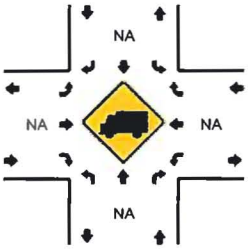


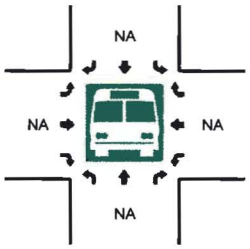
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES











5-Min Count Period Beginning At	13th St (Northbound)				13th St (Southbound)				8th Ave (Eastbound)				8th 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	0	0	0	1	0	0	0	1	0	0	0	0	3	0	0	5	
4:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	
4:10 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	3	1	0	7	
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	2	1	0	4	
4:20 PM	0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0	4	
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	1	0	4	
4:35 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	4	
4:40 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	5	
4:45 PM	0	0	0	0	1	0	0	0	1	4	0	0	0	1	2	0	9	
4:50 PM	0	0	0	0	1	0	0	0	0	3	0	0	0	3	1	0	8	
4:55 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	54
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	0	6	55
5:05 PM	0	0	0	0	0	0	0	0	1	2	0	0	0	4	0	0	7	60
5:10 PM	0	0	0	0	1	0	0	0	0	3	0	0	0	4	2	0	10	63
5:15 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	3	1	0	6	65
5:20 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	3	0	0	5	66
5:25 PM	0	0	0	0	1	0	0	0	1	3	0	0	0	1	1	0	7	73
5:30 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	3	0	0	5	74
5:35 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	0	7	77
5:40 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	3	75
5:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	0	5	71
5:50 PM	0	0	0	0	0	0	0	0	0	2	0	1	0	2	0	0	5	68
5:55 PM	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	3	69

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	8	0	0	0	4	24	0	0	0	44	12	0	92
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/14/2012 1:38 PM

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

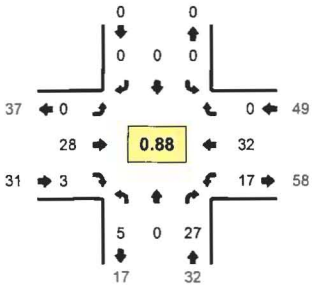
Type of peak hour being reported: System Peak

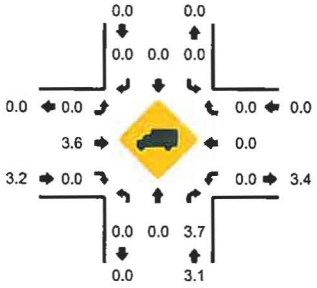
Method for determining peak hour: Total Entering Volume

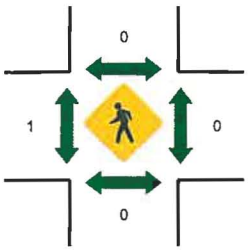
LOCATION: 12th St -- 8th Ave
CITY/STATE: West Linn, OR

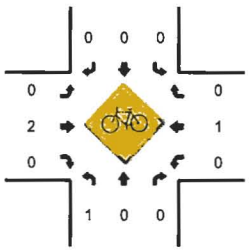
QC JOB #: 10805304
DATE: Tue, Sep 11 2012

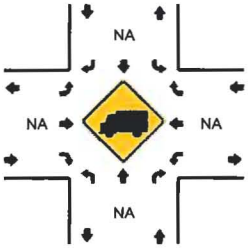
Peak-Hour: 4:50 PM -- 5:50 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

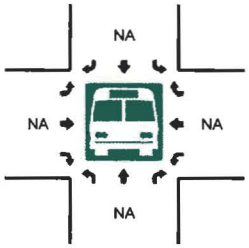












5-Min Count Period Beginning At	12th St (Northbound)				12th St (Southbound)				8th Ave (Eastbound)				8th Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	1	3	0	1	7	
4:05 PM	0	0	3	0	0	0	0	0	0	0	0	0	1	2	0	1	7	
4:10 PM	0	0	5	0	0	0	0	0	0	3	0	0	1	5	0	0	14	
4:15 PM	1	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	6	
4:20 PM	0	0	0	0	0	0	0	0	0	1	0	0	5	1	0	0	7	
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	
4:30 PM	0	0	2	0	0	0	0	0	0	2	0	0	0	2	0	0	6	
4:35 PM	0	0	1	0	0	0	0	0	0	0	1	0	2	3	0	0	7	
4:40 PM	1	0	2	0	0	0	0	0	0	0	1	0	1	2	0	0	7	
4:45 PM	0	0	1	0	0	0	0	0	0	4	1	0	1	3	0	0	10	
4:50 PM	1	0	3	0	0	0	0	0	0	4	0	0	2	3	0	0	13	
4:55 PM	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	8	94
5:00 PM	0	0	3	0	0	0	0	0	0	1	0	0	1	5	0	0	10	97
5:05 PM	1	0	1	0	0	0	0	0	0	2	0	0	1	3	0	1	9	99
5:10 PM	0	0	3	0	0	0	0	0	0	3	1	0	0	6	0	0	13	98
5:15 PM	1	0	1	0	0	0	0	0	0	1	0	0	3	3	0	1	10	102
5:20 PM	1	0	2	0	0	0	0	0	0	3	0	0	2	2	0	0	10	105
5:25 PM	0	0	2	0	0	0	0	0	0	3	1	0	0	2	0	1	9	112
5:30 PM	0	0	4	0	0	0	0	0	0	2	0	0	0	3	0	0	9	115
5:35 PM	0	0	2	0	0	0	0	0	0	3	1	0	1	2	0	0	9	117
5:40 PM	0	0	1	0	0	0	0	0	0	2	0	0	1	1	0	0	5	115
5:45 PM	1	0	1	0	0	0	0	0	0	2	0	0	1	2	0	0	7	112
5:50 PM	0	0	1	0	0	0	0	0	0	3	0	0	0	2	0	0	6	105
5:55 PM	0	0	1	0	0	0	0	0	0	2	1	0	0	0	0	0	4	101

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	0	20	0	0	0	0	0	0	24	4	0	16	48	0	8	128
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/14/2012 1:38 PM

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

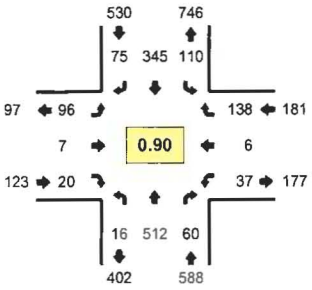
Type of peak hour being reported: System Peak

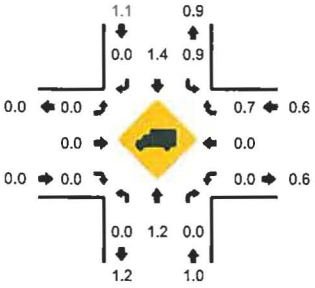
Method for determining peak hour: Total Entering Volume

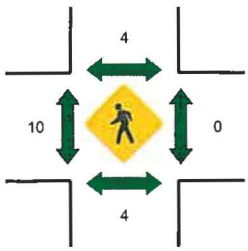
LOCATION: 10th St -- 8th Ave
CITY/STATE: West Linn, OR

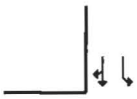
QC JOB #: 10805306
DATE: Tue, Sep 11 2012

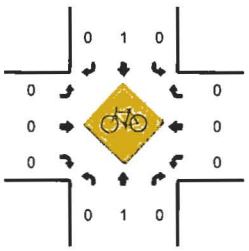
Peak-Hour: 4:50 PM -- 5:50 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

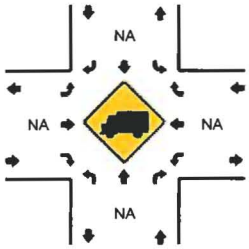


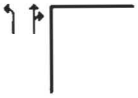


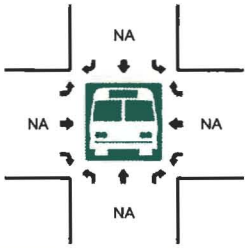












5-Min Count Period Beginning At	10th St (Northbound)				10th St (Southbound)				8th Ave (Eastbound)				8th Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	34	7	0	6	27	8	0	4	0	1	0	3	1	15	0	106	
4:05 PM	3	27	4	0	14	24	6	0	8	0	1	0	1	0	17	0	105	
4:10 PM	2	35	1	0	14	19	7	0	5	1	2	0	2	0	13	0	101	
4:15 PM	2	28	7	0	12	19	6	0	8	1	4	0	1	0	13	0	101	
4:20 PM	2	32	8	0	9	25	5	0	2	1	3	0	5	0	17	0	109	
4:25 PM	0	42	6	0	7	17	11	0	7	1	1	0	4	1	14	0	111	
4:30 PM	0	36	3	0	9	18	4	0	9	3	1	0	2	1	11	0	97	
4:35 PM	1	42	10	0	9	24	8	0	4	0	2	0	2	0	17	0	119	
4:40 PM	3	27	5	0	12	18	4	0	3	1	1	0	4	0	12	0	90	
4:45 PM	1	35	2	0	5	30	8	0	7	2	0	0	3	0	7	0	100	
4:50 PM	0	36	4	0	7	34	11	0	8	1	2	0	4	0	15	0	122	
4:55 PM	1	37	6	0	4	39	4	0	8	0	3	0	0	1	8	0	111	1272
5:00 PM	1	56	3	0	8	22	3	0	9	0	3	0	0	0	6	0	111	1277
5:05 PM	2	52	4	0	6	27	4	0	9	0	2	0	4	0	11	0	121	1293
5:10 PM	1	49	6	0	10	29	10	0	11	0	0	0	5	1	13	0	135	1327
5:15 PM	1	52	6	0	10	33	10	0	14	0	1	0	5	0	7	0	139	1365
5:20 PM	1	35	5	0	14	26	4	0	8	1	4	0	3	0	13	0	114	1370
5:25 PM	2	34	5	0	12	27	8	0	9	0	1	0	3	2	10	0	113	1372
5:30 PM	2	44	5	0	11	28	3	0	8	1	1	0	1	0	10	0	114	1389
5:35 PM	1	40	6	0	10	21	7	0	6	1	2	0	3	0	18	0	115	1385
5:40 PM	2	39	5	0	9	29	3	0	3	2	0	0	1	2	15	0	110	1405
5:45 PM	2	38	5	0	9	30	8	0	3	1	1	0	8	0	12	0	117	1422
5:50 PM	2	26	3	0	6	25	5	0	8	0	2	0	1	1	17	0	96	1396
5:55 PM	1	32	2	0	9	35	8	0	6	0	0	0	2	0	12	0	107	1392

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	16	612	64	0	104	356	96	0	136	0	12	0	56	4	124	0	1580
Heavy Trucks	0	8	0		0	8	0		0	0	0		0	0	0		16
Pedestrians		8				8				12				0			28
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/14/2012 1:38 PM

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

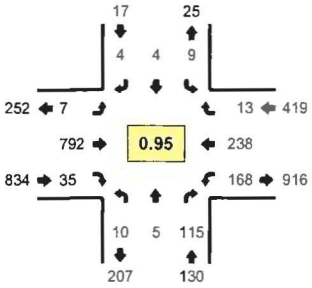
Type of peak hour being reported: System Peak

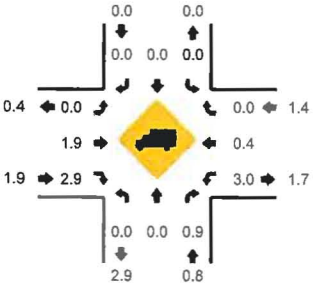
Method for determining peak hour: Total Entering Volume

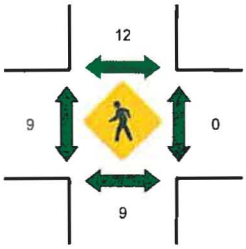
LOCATION: 12th St -- Willamette Falls Dr
CITY/STATE: West Linn, OR

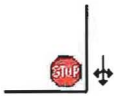
QC JOB #: 10805308
DATE: Tue, Sep 11 2012

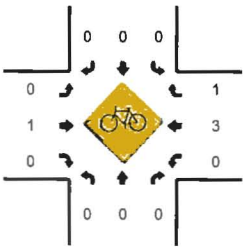
Peak-Hour: 4:50 PM -- 5:50 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

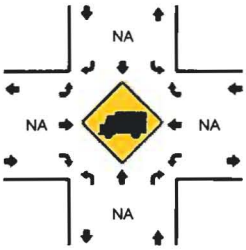


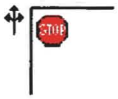


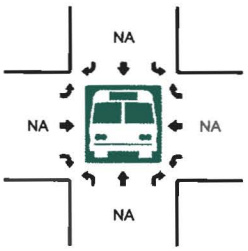












5-Min Count Period Beginning At	12th St (Northbound)				12th St (Southbound)				Willamette Falls Dr (Eastbound)				Willamette Falls Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	11	0	0	0	0	0	1	56	1	0	10	21	0	0	100	
4:05 PM	0	0	9	0	0	0	0	0	2	42	3	0	6	12	0	0	74	
4:10 PM	0	0	6	0	0	0	1	0	0	47	5	0	6	17	3	0	85	
4:15 PM	0	0	10	0	0	0	1	0	0	41	1	0	6	11	1	0	71	
4:20 PM	1	0	9	0	0	0	1	0	0	87	0	0	5	13	0	0	116	
4:25 PM	1	0	10	0	1	0	0	0	0	72	4	0	8	17	0	0	113	
4:30 PM	1	1	10	0	1	0	0	0	0	75	0	0	5	14	1	0	108	
4:35 PM	1	0	10	0	0	1	0	0	1	57	3	0	5	19	3	0	100	
4:40 PM	0	0	9	0	0	1	2	0	0	58	2	0	11	4	4	0	91	
4:45 PM	1	0	11	0	1	1	1	0	1	55	4	0	12	19	1	0	107	
4:50 PM	2	1	6	0	0	0	0	0	0	53	7	0	17	18	2	0	106	
4:55 PM	2	1	9	0	1	0	0	0	0	63	5	0	27	22	2	0	132	1203
5:00 PM	2	1	15	0	2	0	0	0	0	69	3	0	9	13	1	0	115	1218
5:05 PM	0	0	13	0	1	0	1	0	1	65	6	0	9	22	2	0	120	1264
5:10 PM	2	1	7	0	2	0	1	0	1	80	1	0	10	25	1	0	131	1310
5:15 PM	0	0	14	0	0	1	0	0	2	68	0	0	7	27	0	0	119	1358
5:20 PM	2	0	13	0	1	0	0	0	1	55	1	0	13	18	0	0	104	1346
5:25 PM	0	0	5	0	0	0	0	0	1	68	2	0	9	16	0	0	101	1334
5:30 PM	0	0	7	0	0	2	1	0	1	85	2	0	13	21	2	0	134	1360
5:35 PM	0	0	8	0	0	0	1	0	0	66	2	0	14	24	1	0	116	1376
5:40 PM	0	1	10	0	1	1	0	0	0	64	4	0	16	15	0	0	112	1397
5:45 PM	0	0	8	0	1	0	0	0	0	56	2	0	24	17	2	0	110	1400
5:50 PM	0	0	10	0	0	0	0	0	2	61	3	0	13	16	1	0	106	1400
5:55 PM	1	0	7	0	1	0	1	0	1	64	4	0	19	12	1	0	111	1379

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	4	136	0	12	4	8	0	16	852	28	0	104	296	12	0	1480
Heavy Trucks	0	0	4		0	0	0		0	12	0		8	4	0		28
Pedestrians		4				12				12				0			28
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad Stopped Buses																	

Comments:

Report generated on 9/14/2012 1:38 PM

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

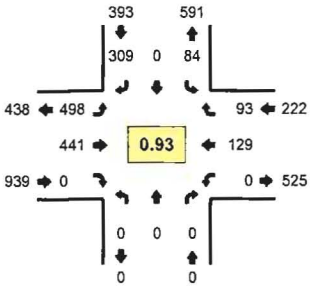
Type of peak hour being reported: System Peak

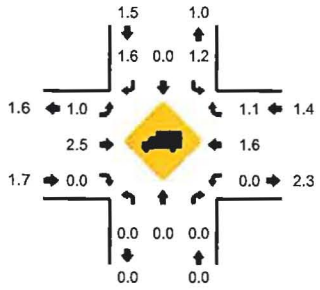
Method for determining peak hour: Total Entering Volume

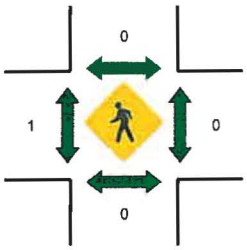
LOCATION: 10th St -- Willamette Falls Dr
CITY/STATE: West Linn, OR

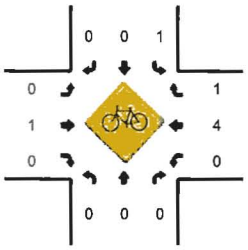
QC JOB #: 10805310
DATE: Tue, Sep 11 2012

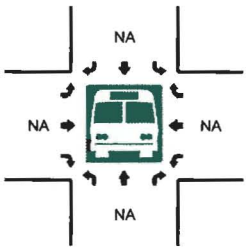
Peak-Hour: 4:50 PM -- 5:50 PM
Peak 15-Min: 5:05 PM -- 5:20 PM











5-Min Count Period Beginning At	10th St (Northbound)				10th St (Southbound)				Willamette Falls Dr (Eastbound)				Willamette Falls Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	6	0	27	0	33	36	0	0	0	7	7	0	116	
4:05 PM	0	0	0	0	11	0	17	0	28	21	0	0	0	5	5	0	87	
4:10 PM	0	0	0	0	3	0	15	0	29	26	0	0	0	5	11	0	89	
4:15 PM	0	0	0	0	10	0	14	0	28	28	0	0	0	7	5	0	92	
4:20 PM	0	0	0	0	12	0	19	0	38	50	0	0	0	4	6	0	129	
4:25 PM	0	0	0	0	4	0	16	0	40	52	0	0	0	9	11	0	132	
4:30 PM	0	0	0	0	8	0	19	0	33	46	0	0	0	5	4	0	115	
4:35 PM	0	0	0	0	8	0	16	0	45	34	0	0	0	10	8	0	121	
4:40 PM	0	0	0	0	12	0	13	0	27	32	0	0	0	7	7	0	98	
4:45 PM	0	0	0	0	6	0	23	0	32	37	0	0	0	7	6	0	111	
4:50 PM	0	0	0	0	8	0	31	0	37	34	0	0	0	11	7	0	128	
4:55 PM	0	0	0	0	8	0	35	0	29	33	0	0	0	10	10	0	125	1343
5:00 PM	0	0	0	0	4	0	20	0	50	26	0	0	0	9	9	0	118	1345
5:05 PM	0	0	0	0	9	0	26	0	49	39	0	0	0	7	10	0	140	1398
5:10 PM	0	0	0	0	8	0	22	0	50	40	0	0	0	13	6	0	139	1448
5:15 PM	0	0	0	0	8	0	31	0	50	35	0	0	0	7	7	0	138	1494
5:20 PM	0	0	0	0	11	0	22	0	36	42	0	0	0	8	6	0	125	1490
5:25 PM	0	0	0	0	6	0	22	0	35	37	0	0	0	8	8	0	116	1474
5:30 PM	0	0	0	0	5	0	26	0	46	43	0	0	0	12	6	0	138	1497
5:35 PM	0	0	0	0	5	0	23	0	40	41	0	0	0	14	8	0	131	1507
5:40 PM	0	0	0	0	3	0	24	0	43	34	0	0	0	15	5	0	124	1533
5:45 PM	0	0	0	0	9	0	27	0	33	37	0	0	0	15	11	0	132	1554
5:50 PM	0	0	0	0	12	0	21	0	28	35	0	0	0	10	2	0	108	1534
5:55 PM	0	0	0	0	8	0	29	0	31	38	0	0	0	8	4	0	118	1527

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	100	0	316	0	596	456	0	0	0	108	92	0	1668
Heavy Trucks	0	0	0		0	0	12		8	8	0		0	4	0		32
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		1	0	0		0	0	0		0	1	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/14/2012 1:38 PM

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


Wa Vete-ans Memo.ial Fwy
205
Timothy Ln
Christy Ct
13th St
8th Ave
8th Ct
1
Knapps Alley
5th Ave
Google earth


War Veterans Memorial Fwy
205
Timothy Ln
Christy Ct
13th St
12th St
Knapps Alley
8th Ct
5th Ave
10th St
2
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Google earth

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

16285 SW 85th Ave, Ste 302
Tigard, OR 97224
503-620-4242
www.qualitycounts.net

West Linn Travel Times

Route 1	Start	End	Travel Time
1	5:00:00 PM	5:03:04 PM	0:03:04
2	5:09:33 PM	5:11:35 PM	0:02:02
3	5:22:30 PM	5:23:56 PM	0:01:26

Route 2	Start	End	Travel Time
1	5:05:30 PM	5:06:13 PM	0:00:43
2	5:15:50 PM	5:17:20 PM	0:01:30
3	5:27:00 PM	5:27:53 PM	0:00:53

APPENDIX C
Intersection
Crash Data

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

8th Avenue @ 13th Street
January 1, 2007 through December 31, 2011

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimer: A higher number of crashes are reported for the 2011 data file compared to previous years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

8th Avenue @ 12th Street
January 1, 2007 through December 31, 2011

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimer: A higher number of crashes are reported for the 2011 data file compared to previous years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

8th Avenue from 10th Street to 13th Street excluding ending intersections
January 1, 2007 through December 31, 2011

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2011														
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	0	0	1
2011 TOTAL	0	0	1	1	0	0	0	1	0	1	0	0	0	1
YEAR: 2008														
REAR-END	0	1	0	1	0	1	0	0	1	1	0	0	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	1	0	0	0	0
2008 TOTAL	0	1	1	2	0	1	0	0	2	2	0	0	0	0
FINAL TOTAL	0	1	2	3	0	1	0	1	2	3	0	0	0	1

Disclaimer: A higher number of crashes are reported for the 2011 data file compared to previous years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF WEST LINN, CLACKAMAS COUNTY

8th Avenue from 10th Street to 13th Street excluding ending intersections
January 1, 2007 through December 31, 2011

SER# / INVEST	SPEC	ALC	DRUG	SCHL	WORK	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS REG	PEI LOC	ERROR	ACTN	EVENT	CAUSE
04950	N	N	N			12/16/2008	19	8TH AVE	STRGHT		N	N	SLT	ANGL-OTH	01	NONE 0	TURN-P											05
NONE						Tue	50	10TH ST	SW	(NONE)	UNKNOWN	N	ICE	TURN		PRVTE	NW SW									000		00
						10A			06			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		007	000		05
										(02)													OR<25					
															02	NONE 0	STOP											
																PRVTE	SW NE									011		04
																PSNGR CAR		01	DRVR	NONE	36	M	OR-Y		000	000		00
																							OR<25					
04940	N	N	N			12/16/2008	19	8TH AVE	STRGHT		N	N	SNOW	S-1STOP	01	NONE 0	STRGHT										124	07
D RPT						Tue	200	10TH ST	SW	(NONE)	NONE	N	ICE	REAR		PRVTE	SW NE									000	124	04
						3P			08			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	46	M	OR-Y		020,043	000		07
										(02)													OR<25					
															02	NONE 0	STRGHT											
																PRVTE	SW NE									011	124	00
																PSNGR CAR		01	DRVR	INJA	45	M	OR-Y		000	000		00
																							OR<25					
02229	N	N	N	N	N	06/23/2011	19	9TH AVE	STRGHT		N	Y	CLR	PRKD MV	01	NONE 0	STRGHT										002	10
CITY						Thu	100	12TH ST	SW	(NONE)	NONE	N	DRY	SS-O		PRVTE	NE SW									000		00
						9A			07			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y		080	048		10
										(02)													OR<25					
															02	NONE 0	PRKD-P											
																PRVTE	NE SW									00F		99
																PSNGR CAR												

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

8th Avenue/8th Court @ 10th Street
January 1, 2007 through December 31, 2011

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2011														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2011 TOTAL	0	1	0	1	0	1	0	1	0	1	0	1	0	0
YEAR: 2010														
ANGLE	0	0	1	1	0	0	0	0	1	0	1	1	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	1	1	1	1	2	0	0
2010 TOTAL	0	0	3	3	0	0	0	1	2	1	2	3	0	0
YEAR: 2009														
TURNING MOVEMENTS	0	0	2	2	0	0	0	2	0	1	1	2	0	0
2009 TOTAL	0	0	2	2	0	0	0	2	0	1	1	2	0	0
YEAR: 2008														
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2008 TOTAL	0	1	0	1	0	1	0	1	0	1	0	1	0	0
YEAR: 2007														
ANGLE	0	1	1	2	0	1	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2007 TOTAL	0	1	2	3	0	1	0	3	0	3	0	3	0	0
FINAL TOTAL	0	3	7	10	0	3	0	8	2	7	3	10	0	0

Disclaimer: A higher number of crashes are reported for the 2011 data file compared to previous years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

064 EAST PORTLAND FREEWAY

8th Avenue/8th Court @ 10th Street
January 1, 2007 through December 31, 2011

SER# / INVEST	SPEC CHAR	DRUG ALC	SCHL	WORK	DATE / DAY / TIME	COUNTY / CITY / URBAN AREA	RP# / MLG TYP / MILEPNT	FC / CONNT / CONN # / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / LNWAY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	VE#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PPTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
03612	N	N	N		09/01/2007	CLACKAMAS	1	17	2						01	NONE	0	STRGHT									03
CITY					Sat	WEST LINN	6	0	8TH AVE	INTER	CROSS	N	N	CLR	ANGL-OTH		PRVTE	N S									000	00
					11A	PORTLAND UA	6.40		10TH ST	01	0		N	DAY	PDO		PSNGR CAR		01	DPVR	NONE	51	M	OR-Y OR<25		000	000	00
															02	NONE	0	STRGHT									00
																PRVTE		E W								000	00
																PSNGR CAR			01	DPVR	NONE	73	F	OR-Y OR<25	028	000	02
00782	N	N	N		02/28/2009	CLACKAMAS	1	17	2						01	NONE	0	TURN-L									02
NONE					Sat	WEST LINN	6	0	8TH AVE	INTER	CROSS	N	N	CLR	ANGL-OTH		PRVTE	E S									000	00
					11P	PORTLAND UA	6.40		10TH CT	01	0		N	DARK	PDO		PSNGR CAR		01	DPVR	NONE	17	F	OR-Y OR<25	028	000	02
															02	NONE	0	STRGHT									00
																PRVTE		N S								000	00
																PSNGR CAR			01	DPVR	NONE	62	F	OR-Y OR<25	000	000	00
00798	N	N	N		02/20/2007	CLACKAMAS	1	17	2						01	NONE	0	TURN-L									02
CITY					Tue	WEST LINN	6	0	8TH CT	INTER	CROSS	N	N	CLR	ANGL-OTH		PRVTE	NW NE									000	00
					11A	PORTLAND UA	6.40		10TH ST	02	0		N	DAY	PDO		PSNGR CAR		01	DPVR	NONE	50	M	OR-Y OR<25	028	000	02
															02	NONE	0	STRGHT									00
																PRVTE		SW NE								000	00
																PSNGR CAR			01	DPVR	NONE	60	F	OR-Y OR<25	000	000	00
02624	N	N	N	N	N	06/22/2007	CLACKAMAS	1	17	2						01	NONE	0	STRGHT									02
CITY						Fri	WEST LINN	6	0	8TH CT	INTER	CROSS	N	N	CLR	ANGL-OTH		PRVTE	S N									000	00
						2P	PORTLAND UA	6.40		10TH ST	02	0		N	DAY	INJ		PSNGR CAR		01	DPVR	INJC	63	F	OR-Y OR<25	000	000	00
															02	NONE	0	STRGHT									00
																PRVTE		E W								000	00
																PSNGR CAR			01	DPVR	NONE	42	F	OR-Y OR<25	028	000	02
01005	N	N	N	N	N	03/17/2009	CLACKAMAS	1	17	2						01	NONE	0	TURN-L									02
CITY						Tue	WEST LINN	6	0	8TH CT	INTER	CROSS	N	N	CLR	ANGL-OTH		PRVTE	E S									000	00
						3P	PORTLAND UA	6.40		10TH CT	02	0		N	DAY	PDO		PSNGR CAR		01	DPVR	NONE	47	M	OR-Y OR>25	028	000	02
															02	NONE	0	STRGHT									00
																PRVTE		S N								000	00
																PSNGR CAR			01	DPVR	NONE	34	M	OR-Y OR<25	000	000	00
02649	N	N	N		07/29/2010	CLACKAMAS	1	19	2						01	NONE	0	TURN-L									02
NONE					Thu	WEST LINN	6	0	8TH CT	INTER	CROSS	N	N	CLR	ANGL-OTH		PRVTE	NE SE									000	00
					4P	PORTLAND UA	6.40		10TH ST	03	0		N	DAY	PDO		PSNGR CAR		01	DPVR	NONE	00	F	UNK OR<25	028	000	01

064 EAST PORTLAND FREEWAY

8th Avenue/8th Court @ 10th Street
January 1, 2007 through December 31, 2011

SER# / INVEST	S P E L	D R A F	S C H	W C O N	DATE / DAY / TIME	COUNTY / CITY / URBAN AREA	RI# FC / COMPNT / MLG TYP / MILEPNT	CONN # / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	V#	VEH TYPE	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN EVENT		CAUSE
															02 NONE 0	STRGHT												
															PRVTE	NW SE											000		00
															PSNGR CAR				01	DRVR	NONE	55	M	OR-Y OR<25		000	000		00
02171	N	N	N	N	N 06/09/2008	CLACKAMAS	1 17	2	INTER	CROSS	N		N CLR	ANGL-OTH	01 NONE 0	STRGHT														04
CITY					Mon	WEST LINN	6 0	8TH CT	CN		STOP SIGN		N DRY	TURN	PRVTE	NE SW											000		00
					12P	PORTLAND UA	6.40	10TH ST	04	0			N DAY	INJ	PSNGR CAR				01	DRVR	NONE	64	F	OTH-Y M-RES	021,028		000		04
															02 NONE 0	STRGHT														
															PRVTE	SE NW											000		00
															PSNGR CAR				01	DRVR	INJC	43	F	OR-Y OR<25	000		000		00
03641	N	N	N		10/09/2010	CLACKAMAS	1 17	2	INTER	CROSS	N		N CLD	ANGL-OTH	01 NONE 0	STRGHT														01
CITY					Sat	WEST LINN	6 0	8TH CT	CN		TRF SIGNAL		N WET	TURN	PRVTE	S N											000		00
					9P	PORTLAND UA	6.40	10TH ST	04	0			N DLIT	PDO	PSNGR CAR				01	DRVR	NONE	40	M	OR-Y OR<25	000		000		00
															02 NONE 0	TURN-L														
															PRVTE	E S											015		00
															PSNGR CAR				01	DRVR	NONE	20	F	OR-Y OR>25	028		000		01
04522	N	N	N	N	N 11/29/2010	CLACKAMAS	1 17	2	INTER	CROSS	N		N RAIN	ANGL-OTH	01 NONE	STRGHT														02
CITY					Mon	WEST LINN	6 0	8TH AVE	CN		STOP SIGN		N WET	ANGL	PRVTE	W E											015		00
					5P	PORTLAND UA	6.40	10TH ST	04	0			N DLIT	PDO	PSNGR CAR				01	DRVR	NONE	60	F	OR-Y OR<25	028		000		02
															02 NONE	STRGHT														
															PRVTE	S N											000		00
															PSNGR CAR				01	DRVR	NONE	43	F	OR-Y OR<25	000		000		00
03280	N	N	N	N	N 09/06/2011	CLACKAMAS	1 19	2	INTER	CROSS	N		N CLR	ANGL-OTH	01 NONE 0	STRGHT													01	02
CITY					Tue	WEST LINN	6 0	8TH CT	CN		STOP SIGN		N DRY	ANGL	PRVTE	NW SE											015		00
					3P	PORTLAND UA	6.10	10TH ST	04	0			N DAY	INJ	PSNGR CAR				01	DRVR	NONE	78	M	OR-Y OR<25	028		000		01
															02 NONE 0	STRGHT														
															PRVTE	SW NE											000	013	00
															PSNGR CAR				01	DRVR	NONE	19	M	OR-Y OR<25	000		000		00
															03 NONE 0	STOP														
															PRVTE	SE NW											011	015	00
															PSNGR CAR				01	DRVR	INJC	30	M	OR-Y OR<25	000		000		00
															04 NONE 0	STOP														
															PRVTE	SE NW											02_		00
															PSNGR CAR				01	DRVR	NONE	43	M	OR-Y OR>25	000		000		00

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

10th Street from Willamette Falls Drive to 8th Avenue excluding ending intersections
January 1, 2007 through December 31, 2011

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimer: A higher number of crashes are reported for the 2011 data file compared to previous years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Willamette Falls Drive @ 12th Street
January 1, 2007 through December 31, 2011

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2011														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2011 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2010														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2010 TOTAL	0	1	0	1	0	1	0	1	0	1	0	1	0	0
FINAL TOTAL	0	1	1	2	0	1	0	2	0	2	0	2	0	0

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CITY OF WEST LINN, CLACKAMAS COUNTY

Willamette Falls Drive @ 12th Street

January 1, 2007 through December 31, 2011

SER# / INVEST	SPEC	ALC	DRUG	SCHL	WORK	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRITY	AGE	SEX	LICNS REG	PED LOC	ERROR	ACTN EVENT	CAUSE
03816	N	N	N			10/19/2010	16	WILLAMETTE FALLS DR	INTER	CROSS	N	N	CLR	BIKE	01	NONE 0	TURN-L										02
CITY						Tue	0	12TH ST	NE		STOP SIGN	N	DRY	ANGL		PRVTE	SE SW									015	00
						3P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	38	F	OR-Y OR<25		027	000	02
																	STRGHT SW NE	01	BIKE	INJC	43	M		01	000	035	00
03006	N	N	N			05/18/2011	16	WILLAMETTE FALLS DR	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										02
NONE						Thu	0	12TH ST	CN		STOP SIGN	N	DRY	TURN		PRVTE	SW NE									000	00
						10A			04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	60	F	OR-Y OR<25		000	000	00
															02	NONE 0	TURN-L										00
																PRVTE	SE SW									015	00
																PSNGR CAR		01	DRVR	NONE	00	F	UNK UNK		026	000	02

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Willamette Falls Drive @ 10th Street
January 1, 2007 through December 31, 2011

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2011														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2011 TOTAL	0	0	2	2	0	0	0	2	0	2	0	2	0	0
YEAR: 2010														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2010 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2009														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2009 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2007														
ANGLE	0	0	1	1	0	0	0	1	0	0	1	1	0	0
2007 TOTAL	0	0	1	1	0	0	0	1	0	0	1	1	0	0
FINAL TOTAL	0	0	5	5	0	0	0	5	0	4	1	5	0	0

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CITY OF WEST LINN, CLACKAMAS COUNTY

Willamette Falls Drive @ 10th Street

January 1, 2007 through December 31, 2011

SER# / INVEST	SPEC	ALC	DUI	SCHL	WORK	DAY / TIME	CLASS / DIST FROM	CITY STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / JVRTY	VE	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	PE	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
04581	N	N	N			11/30/2011	16	WILLAMETTE FALLS DR	INTER	3-LEG	N	N	CLR	2-1STOP	01	NONE 0	STRGHT										
NONE						Wed	0	10TH ST	SW		STOP SIGN	N	DRY	REAR		PRVTE	SW NE										
						4P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK				
																							UNK				
															02	NONE 0	STOP										
																PRVTE	SW NE										
																PSNGR CAR		01	DRVR	NONE	46	M	OR-Y				
																							OR<25				
02637	N	N	N			07/23/2011	16	WILLAMETTE FALLS DR	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-R										
NONE						Sat	0	10TH ST	CN		STOP SIGN	N	DRY	TURN		PRVTE	N SW										
						7P			01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y				
																							OR<25				
															02	NONE 0	STRGHT										
																PRVTE	NE SW										
																PSNGR CAR		01	DRVR	NONE	18	F	OR-Y				
																							OR<25				
03931	N	N	N			09/10/2007	19	WILLAMETTE FALLS DR	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										
NONE						Mon	0	10TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	S N										
						10P			02	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	59	M	OR-Y				
																							OR<25				
															02	NONE 9	STRGHT										
																UNKN	NE SW										
																UNKNOWN		01	DRVR	NONE	00	M	UNK				
																							UNK				
02189	N	N	N			06/28/2010	16	WILLAMETTE FALLS DR	INTER	3-LEG	N	N	CLR	S-1TURN	01	NONE 0	STRGHT									004	
NONE						Mon	0	10TH ST	CN		STOP SIGN	N	DRY	REAR		PRVTE	NE SW										
						12P			02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	38	F	OR-Y				
																							OR<25				
															02	NONE 0	STOP										
																PRVTE	NE N										
																PSNGR CAR		01	DRVR	NONE	65	F	OR-Y				
																							OR<25				
																		02	PSNG	NONE	04	M					
02038	N	N	N			06/09/2009	16	WILLAMETTE FALLS DR	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										
NONE						Tue	0	10TH ST	CN		UNKNOWN	N	DRY	TURN		PRVTE	W E										
						4P			03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	21	F	OR-Y				
																							OR<25				
															02	NONE 0	TURN-L										
																PRVTE	E S										
																PSNGR CAR		01	DRVR	NONE	43	F	OR-Y				
																							OR<25				

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Willamette Falls Drive from 12th Street to 10th Street excluding ending intersections
January 1, 2007 through December 31, 2011

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2011														
REAR-END	0	1	0	1	0	1	0	0	1	0	1	0	0	0
2011 TOTAL	0	1	0	1	0	1	0	0	1	0	1	0	0	0
FINAL TOTAL	0	1	0	1	0	1	0	0	1	0	1	0	0	0

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CITY OF WEST LINN, CLACKAMAS COUNTY

Willamette Falls Drive from 12th Street to 10th Street excluding ending intersections

January 1, 2007 through December 31, 2011

SER# / INVEST	SPEC	ALC	DRUG	SCHL	WORK	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS REG	PED LOC	PED ERROR	ACTN	EVENT	CAUSE
01108	N	Y	N	N	N	04/01/2011	16	WILLAMETTE FALLS DR	GRADE		N	N	RAIN	PRKD MV	01	NONE 0	STRGHT						OR-Y				013	10
CITY						Fri	150	12TH ST	NE	(NONE)	NONE	N	WET	REAR		PRVTE	SW NE									000		00
						10P			07			N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	43	M	OR&25		080	000		50
										(02)																		
															02	NONE 0	PARKED											
																PRVTE	SW NE									008	013	00
																PSNGR CAR												
															03	NONE 0	PARKED											
																PRVTE	SW NE									008		00
																PSNGR CAR												

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP ANOTHER VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF-ROAD
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS--RAG	DISREGARDED R-A-G TRAFFIC SIGNAL.
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST CLOTHING NOT VISIBLE
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1TURN	FROM OPPOSITE DIRECTION - ONE TURN, ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	FAILED TO DIM LIGHTS (UNTIL 4/1/97) / INATTENTION (AFTER 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY (DELIBERATELY TRAVELING ON WRONG SIDE)
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAYON RD	STANDING OR LYING IN ROADWAY
073	ELUDING	ELUDING
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVERCORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	PED INV	PEDESTRIAN INVOLVED (NON-PEDESTRIAN ACCIDENT)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	BIKE INV	TRICYCLE-BICYCLE INVOLVED
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE (OCCUPANTS ONLY)
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BARS OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING (ON BRIDGE AND APPROACH)
047	BR ABUT	BRIDGE ABUTMENT (APPROACH ENDS)
048	BR COLMN	BRIDGE PILLAR OR COLUMN (EVEN THOUGH STRUCK PROTECTIVE GUARD RAIL FIRST)
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, ROCKS OFF OR ON ROAD, FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	SPEED BUMP, OTHER BUMP, POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	HOLE	CHUCKHOLE IN ROAD, LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ F MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY OTHER MOVING OR FLYING OBJECT
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTH ACDT	ACCIDENT RELATED TO ANOTHER SEPARATE ACCIDENT
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE (ON PAR OR REPORT)
093	CELL-POL	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL-WTN	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	UNKNOWN TYPE OF FIXED OBJECT
101	OTHER OBJ	OTHER OR UNKNOWN OBJECT, NOT FIXED
104	OUTSIDE V	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS AND/OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS AND/OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR/TROLLEY RIGHT-OF-WAY
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE
125	SHLDR	SHOULDER GAVE WAY

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY
2	INJA	INCAPACITATING INJURY - BLEEDING, BROKEN BONES
3	INJB	NON-INCAPACITATING INJURY
4	INJC	POSSIBLE INJURY - COMPLAINT OF PAIN
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	UNK	UNKNOWN TYPE OF NON-MOTORIST

PEDESTRIAN LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

095 BUS STPSGN BUS STOP SIGN AND RED LIGHTS
099 UNKNOWN UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
01	PSNGR CAR	PASSENGER CAR, PICKUP, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, MOTOR SCOOTER, OR MOTOR BICYCLE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

APPENDIX D
Historical Traffic
Growth

Traffic Growth Estimate

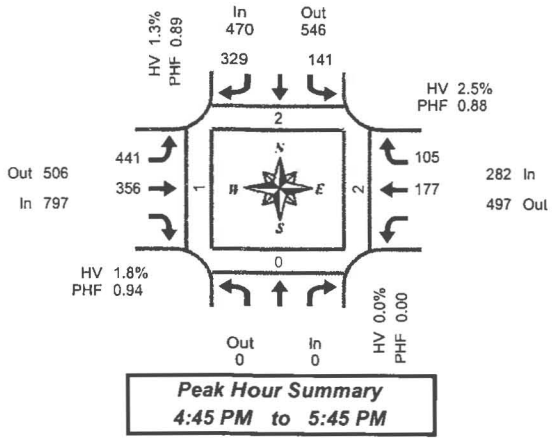
Historical Trend*

Year	Entering PM Peak Volume	Linear Annual Growth Rate
2006*	1549	
2012	1554	0.1%
	6-Year Average Change	**0.1%**

*- Volumes taken from West Linn TSP

Total Vehicle Summary

All Traffic Data Services Inc
Clay Carney
(503) 833-2740



10th St & Willamette Falls Dr

Wednesday, October 25, 2006
3:30 PM to 6:30 PM

15-Minute Interval Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound 10th St				Southbound 10th St				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
3:30 PM				0	26		66	0	87	50		0		38	32	0	299	1	0	0	1
3:45 PM				0	34		56	0	98	65		0		30	23	0	306	0	0	0	0
4:00 PM				0	40		78	0	101	56		0		48	34	0	357	0	0	0	0
4:15 PM				0	28		54	0	96	88		0		28	23	0	317	0	0	1	0
4:30 PM				0	38		58	0	108	98		0		38	26	0	366	2	0	0	0
4:45 PM				0	49		83	0	82	103		0		44	27	0	388	0	0	0	0
5:00 PM				0	32		84	0	103	90		0		44	25	0	378	0	0	0	0
5:15 PM				0	30		72	0	123	84		0		51	29	0	389	1	0	1	1
5:30 PM				0	30		90	1	133	79		0		38	24	0	394	1	0	1	0
5:45 PM				0	23		63	0	119	94		0		44	33	0	376	1	0	2	0
6:00 PM				0	27		53	0	88	55		0		76	56	0	355	1	0	0	0
6:15 PM				0	14		63	0	87	42		0		79	59	0	344	0	0	0	0
Total Survey				0	371		820	1	1,225	904		0		558	391	0	4,269	7	0	5	2

Peak Hour Summary
4:45 PM to 5:45 PM

By Approach	Northbound 10th St				Southbound 10th St				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	0	0	0	0	470	546	1,016	1	797	506	1,303	0	282	497	779	0	1,549	2	0	2	1
%HV	0.0%				1.3%				1.8%				2.5%				1.7%				
PHF	0.00				0.89				0.94				0.88				0.98				

By Movement	Northbound 10th St				Southbound 10th St				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total
				Total	L		R	Total	L	T		Total		T	R	Total	
Volume				0	141		329	470	441	356		797		177	105	282	1,549
%HV	NA	NA	NA	0.0%	2.1%	NA	0.9%	1.3%	2.0%	1.4%	NA	1.8%	NA	0.6%	5.7%	2.5%	1.7%
PHF				0.00	0.72		0.91	0.89	0.83	0.86		0.94		0.87	0.91	0.88	0.98

Rolling Hour Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound 10th St				Southbound 10th St				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
3:30 PM				0	128		254	0	382	259		0		144	112	0	1,279	1	0	1	1
3:45 PM				0	140		246	0	403	307		0		144	106	0	1,346	2	0	1	0
4:00 PM				0	155		273	0	387	345		0		158	110	0	1,428	2	0	1	0
4:15 PM				0	147		279	0	389	379		0		154	101	0	1,449	2	0	1	0
4:30 PM				0	149		297	0	416	375		0		177	107	0	1,521	3	0	1	1
4:45 PM				0	141		329	1	441	356		0		177	105	0	1,549	2	0	2	1
5:00 PM				0	115		309	1	478	347		0		177	111	0	1,537	3	0	4	1
5:15 PM				0	110		278	1	463	312		0		209	142	0	1,514	4	0	4	1
5:30 PM				0	94		269	1	427	270		0		237	172	0	1,469	3	0	3	0

APPENDIX E
Intersection Capacity
Calculations

1: 8th Avenue & 13th Street Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.1
Total Del/Veh (s)	0.1	0.1	3.8	1.2

2: 12th Street & 8th Avenue Performance by lane

Lane	EB	WB	NB	All
Movements Served	TR	LT	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	0.4	0.4	2.3	0.6

3: 10th Street & 8th Avenue Performance by lane

Lane	EB	EB	WB	WB	NB	NB	SB	SB	All
Movements Served	L	TR	LT	R	L	TR	L	TR	
Denied Del/Veh (s)									0.2
Total Del/Veh (s)	18.4	9.6	18.8	9.7	1.9	1.3	4.4	1.3	4.2

4: 12th Street & Willamette Falls Drive Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	0.7	2.8	7.3	4.6	2.8

5: Willamette Falls Drive & 10th Street Performance by lane

Lane	EB	EB	WB	SB	SB	All
Movements Served	L	T	TR	L	R	
Denied Del/Veh (s)						0.2
Total Del/Veh (s)	7.9	8.5	9.3	5.5	6.2	7.8

90: 10th Street Performance by lane

Lane	EB	EB	NB	NB	SB	SB	All
Movements Served	LT	R	T	R	L	T	
Denied Del/Veh (s)							0.2
Total Del/Veh (s)	30.4	7.2	11.6	4.1	37.4	3.6	14.3

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	18.7

1: 8th Avenue & 13th Street Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.1
Total Del/Veh (s)	0.1	0.1	3.8	1.2

2: 12th Street & 8th Avenue Performance by lane

Lane	EB	WB	NB	All
Movements Served	TR	LT	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	0.4	0.4	2.9	0.7

3: 10th Street & 8th Avenue Performance by lane

Lane	EB	EB	WB	WB	NB	NB	SB	SB	All
Movements Served	L	TR	LT	R	L	TR	L	TR	
Denied Del/Veh (s)									0.2
Total Del/Veh (s)	17.6	9.1	23.2	12.0	2.9	1.5	5.3	1.3	5.0

4: 12th Street & Willamette Falls Drive Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	0.8	2.8	7.3	4.7	2.9

5: Willamette Falls Drive & 10th Street Performance by lane

Lane	EB	EB	WB	SB	SB	All
Movements Served	L	T	TR	L	R	
Denied Del/Veh (s)						0.2
Total Del/Veh (s)	9.3	8.9	12.1	5.3	6.2	9.1

90: 10th Street Performance by lane

Lane	EB	EB	NB	NB	SB	SB	All
Movements Served	LT	R	T	R	L	T	
Denied Del/Veh (s)							0.2
Total Del/Veh (s)	30.3	7.3	12.3	4.5	35.3	3.9	14.1

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	19.9

1: 8th Avenue & 13th Street Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.1
Total Del/Veh (s)	0.1	0.1	3.8	1.1

2: 12th Street & 8th Avenue Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	0.4	0.4	3.5	4.5	1.3

3: 10th Street & 8th Avenue Performance by lane

Lane	EB	EB	WB	WB	NB	NB	SB	SB	All
Movements Served	L	TR	LT	R	L	TR	L	TR	
Denied Del/Veh (s)									0.2
Total Del/Veh (s)	20.5	9.3	24.6	10.5	2.8	1.5	4.6	1.3	4.8

4: 12th Street & Willamette Falls Drive Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	0.8	2.7	7.1	5.5	2.9

5: Willamette Falls Drive & 10th Street Performance by lane

Lane	EB	EB	WB	SB	SB	All
Movements Served	L	T	TR	L	R	
Denied Del/Veh (s)						0.3
Total Del/Veh (s)	9.1	8.8	12.0	5.4	6.9	9.1

90: 10th Street Performance by lane

Lane	EB	EB	NB	NB	SB	SB	All
Movements Served	LT	R	T	R	L	T	
Denied Del/Veh (s)							0.2
Total Del/Veh (s)	30.7	7.7	12.8	4.6	36.0	4.1	14.4

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	20.0

1: 8th Avenue & 13th Street Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.1
Total Del/Veh (s)	0.2	0.1	4.2	0.5

2: 12th Street & 8th Avenue Performance by lane

Lane	EB	WB	NB	All
Movements Served	TR	LT	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	0.1	0.5	4.4	1.3

3: 10th Street & 8th Avenue Performance by lane

Lane	EB	EB	WB	WB	NB	NB	SB	SB	All
Movements Served	L	TR	LT	R	L	TR	L	TR	
Denied Del/Veh (s)									0.2
Total Del/Veh (s)	70.7	10.8	30.7	19.5	3.5	1.7	5.6	1.1	9.8

4: 12th Street & Willamette Falls Drive Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.5
Total Del/Veh (s)	2.8	8.8	26.4	24.9	7.0

5: Willamette Falls Drive & 10th Street Performance by lane

Lane	EB	EB	WB	SB	SB	All
Movements Served	L	T	TR	L	R	
Denied Del/Veh (s)						0.1
Total Del/Veh (s)	12.9	12.2	9.0	6.3	7.4	10.7

90: 10th Street Performance by lane

Lane	EB	EB	NB	NB	SB	SB	All
Movements Served	LT	R	T	R	L	T	
Denied Del/Veh (s)							0.3
Total Del/Veh (s)	32.2	7.6	14.4	6.0	36.6	3.1	14.5

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	27.3

1: 8th Avenue & 13th Street Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.1
Total Del/Veh (s)	0.1	0.1	3.4	0.4

2: 12th Street & 8th Avenue Performance by lane

Lane	EB	WB	NB	All
Movements Served	TR	LT	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	0.1	0.6	4.3	1.3

3: 10th Street & 8th Avenue Performance by lane

Lane	EB	EB	WB	WB	NB	NB	SB	SB	All
Movements Served	L	TR	LT	R	L	TR	L	TR	
Denied Del/Veh (s)									1.1
Total Del/Veh (s)	153.1	9.5	35.9	33.3	3.3	1.7	6.5	1.1	18.5

4: 12th Street & Willamette Falls Drive Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.5
Total Del/Veh (s)	2.8	10.2	46.7	40.5	10.0

5: Willamette Falls Drive & 10th Street Performance by lane

Lane	EB	EB	WB	SB	SB	All
Movements Served	L	T	TR	L	R	
Denied Del/Veh (s)						0.3
Total Del/Veh (s)	17.2	14.6	9.8	6.8	7.5	12.9

90: 10th Street Performance by lane

Lane	EB	EB	NB	NB	SB	SB	All
Movements Served	LT	R	T	R	L	T	
Denied Del/Veh (s)							0.3
Total Del/Veh (s)	33.6	7.1	13.8	5.6	36.3	3.4	13.8

Total Network Performance

Denied Del/Veh (s)	1.3
Total Del/Veh (s)	35.2

1: 8th Avenue & 13th Street Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.1
Total Del/Veh (s)	0.2	0.2	4.1	0.4

2: 12th Street & 8th Avenue Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	0.1	0.7	4.5	5.2	1.7

3: 10th Street & 8th Avenue Performance by lane

Lane	EB	EB	WB	WB	NB	NB	SB	SB	All
Movements Served	L	TR	LT	R	L	TR	L	TR	
Denied Del/Veh (s)									2.2
Total Del/Veh (s)	215.9	12.8	45.3	35.6	4.4	1.7	6.5	1.1	23.9

4: 12th Street & Willamette Falls Drive Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.5
Total Del/Veh (s)	2.8	11.9	66.8	39.5	12.5

5: Willamette Falls Drive & 10th Street Performance by lane

Lane	EB	EB	WB	SB	SB	All
Movements Served	L	T	TR	L	R	
Denied Del/Veh (s)						0.1
Total Del/Veh (s)	17.8	14.5	10.0	7.2	8.1	13.2

90: 10th Street Performance by lane

Lane	EB	EB	NB	NB	SB	SB	All
Movements Served	LT	R	T	R	L	T	
Denied Del/Veh (s)							0.3
Total Del/Veh (s)	33.8	7.8	15.0	5.6	34.9	3.1	13.9

Total Network Performance

Denied Del/Veh (s)	1.9
Total Del/Veh (s)	39.5

3: 10th Street & 8th Avenue Performance by lane

Lane	EB	EB	WB	WB	NB	SB	SB	All
Movements Served	L	TR	LT	R	TR	L	TR	
Denied Del/Veh (s)								0.6
Total Del/Veh (s)	116.6	10.0	34.4	30.0	1.7	6.7	1.1	15.1

4: 12th Street & Willamette Falls Drive Performance by lane

Lane	EB	EB	WB	WB	NB	SB	All
Movements Served	L	TR	L	TR	LTR	LTR	
Denied Del/Veh (s)							0.6
Total Del/Veh (s)	2.0	3.0	10.1	3.1	29.9	27.9	6.9

4: 12th Street & Willamette Falls Drive Performance by lane

Lane	EB	EB	WB	WB	NB	SB	All
Movements Served	L	TR	L	TR	LTR	LTR	
Denied Del/Veh (s)							139.1
Total Del/Veh (s)	5.3	136.9	5.8	8.1	7.4	5.4	76.7

NOT TO SCALE

MITIGATION: CONSTRUCT PEDESTRIAN REFUGE IN PLACE OF NORTHBOUND LEFT-TURN LANE.
INSTALL "NO LEFT TURN" SIGNAGE.
EXTEND SOUTHBOUND LEFT-TURN LANE AT WILLAMETTE FALLS DRIVE.

1

R3–2

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

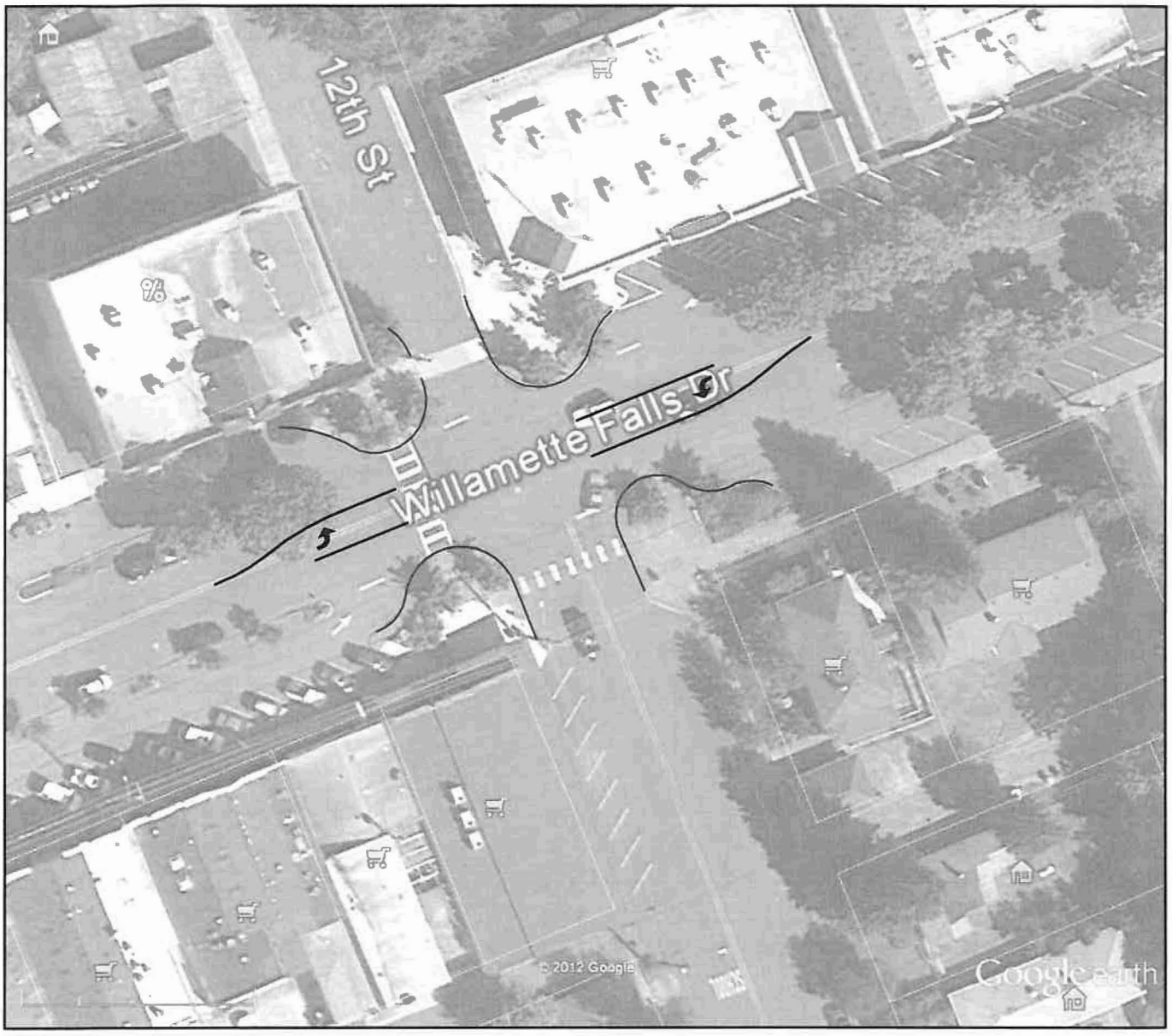
DATE: 12.04.12
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

PROPOSED MITIGATION AT 10th STREET/8th AVENUE

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 1

NOT TO SCALE



MITIGATION OPTION 1: STRIPE EAST/WESTBOUND LEFT-TURN LANE POCKETS.

GROUP MACKENZIE
Portland OR 503.224.9560
Vancouver WA 360.695.7879
Seattle WA 206.749.9993

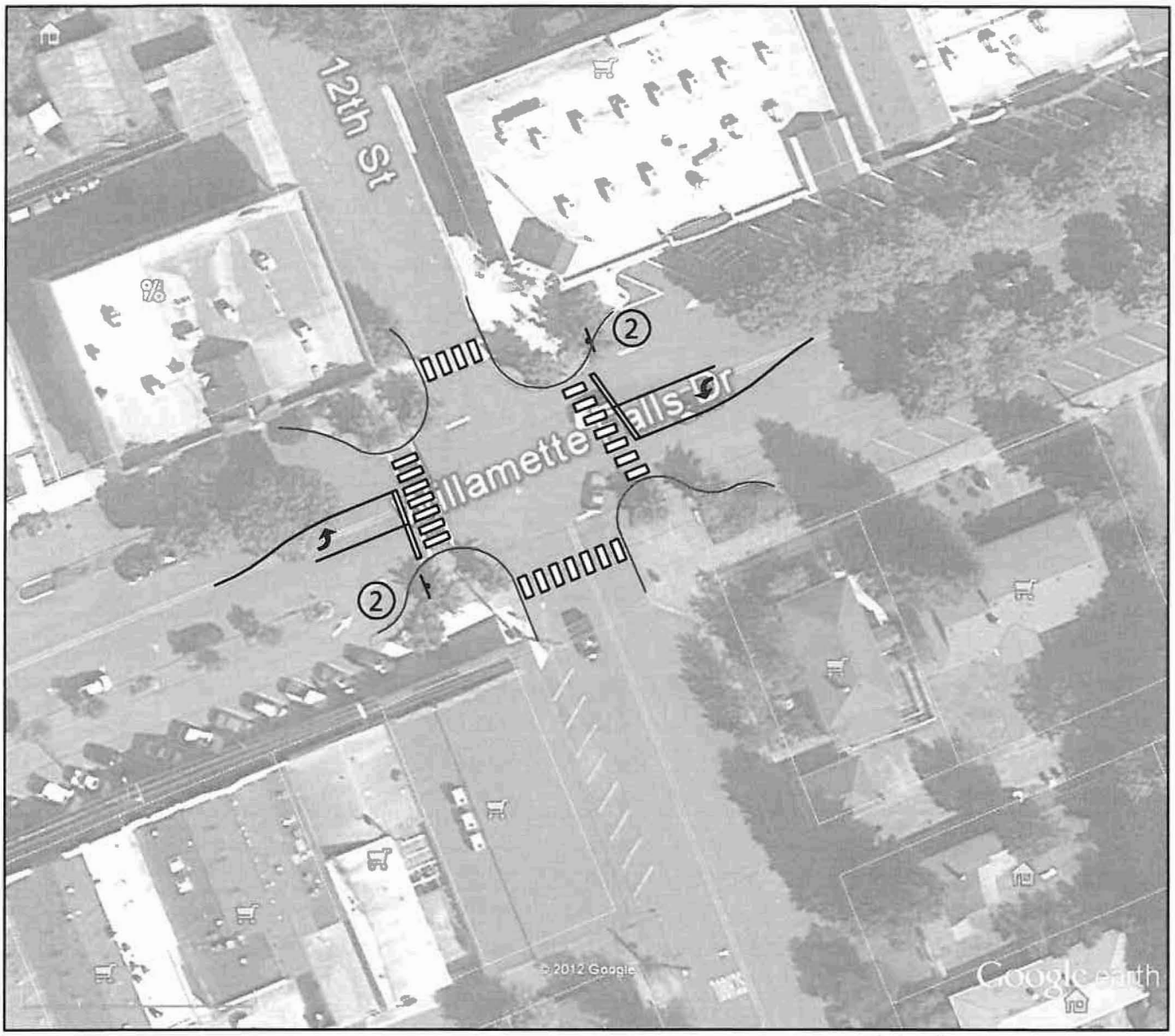
DATE: 12.04.12
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

OPTION 1 MITIGATION AT WILLAMETTE FALLS DR./12th

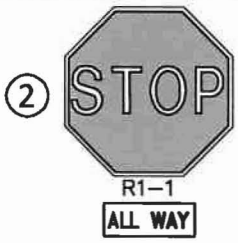
WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 2

NOT TO SCALE



MITIGATION OPTION 2: STRIPE EAST/WESTBOUND LEFT-TURN LANE POCKETS.
ADD EAST/WESTBOUND STOP SIGNS TO PROVIDE ALL-WAY STOP-CONTROL.



GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

DATE: 12.04.12
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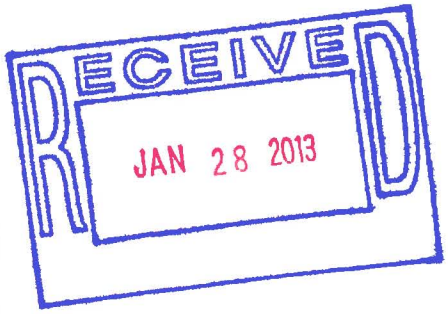
OPTION 2 MITIGATION AT WILLAMETTE FALLS DR./12th

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 3

GROUP MACKENZIE



January 28, 2013

Tom Soppe, Associate Planner
City of West Linn
22500 Salamo Road
West Linn, OR 97068

Re: **Supplemental Findings of Transportation Impact Analysis**
City of West Linn Police Station
Project Number 2120180.00

Dear Mr. Soppe:

This letter was prepared as a supplement to the November 9, 2012 Transportation Impact Analysis (TIA) prepared by Group Mackenzie for the proposed West Linn Police Station development. The purpose of this letter is to identify final recommended improvement measures for mitigating the traffic impacts of the police station at the 10th Street/8th Avenue and the 12th Street/Willamette Falls Drive intersections. In addition, this letter identifies how the final recommended mitigation measures comply with the City's transportation approval criteria outlined in Section 85.170B(e)(1) of the Community Development Code (CDC).

CDC Transportation Approval Criteria

Section 85.170B(e)(1) of the CDC identifies the City's transportation approval criteria for development proposals that require a TIA. Subsection (A) of the approval criteria requires that the TIA be prepared by a qualified professional traffic engineer and Subsection (B) addresses the City's Level-of-Service criteria. Additional transportation approval criteria is provided in Subsection (C), which states the following:

> *"The proposed site design and traffic and circulation design and facilities, for all transportation modes, including any mitigation measures, are designed to:*
>
> 1. *Have the least negative impact on all applicable transportation facilities; and*
> 2. *Accommodate and encourage non-motor vehicular modes of transportation to the extent practicable; and*
> 3. *Make the most efficient use of land and public facilities as practicable; and*
> 4. *Provide the most direct, safe, and convenient routes practicable between on-site destinations, and between on-site and off-site destinations; and*
> 5. *Otherwise comply with applicable requirements of the City of West Linn Community Development Code."*

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The approval criteria specified in Subsection (C) was not specifically addressed in the original TIA, but is addressed here in this letter to reinforce the final recommended improvement measures.

Traffic Mitigation Measures for 10th Street/8th Avenue Intersection

Background

The original TIA identified and recommended a single solution to mitigate the traffic impacts of the proposed West Linn Police Station at this intersection. This included eliminating the northbound left-turn lane on the 10th Street approach by constructing a raised pedestrian refuge, and restricting any potential left-turns from the through lane by installing "NO LEFT TURN" signage. The merits of this solution, as identified in the TIA, were as follows:

- A northbound left-turn restriction decreases conflicts between vehicular traffic movements, thereby decreasing traffic delay (improving LOS) for the stop-controlled movements, particularly for the more critical eastbound left-turn movement.
- Eliminating northbound left-turns moves in the direction of meeting the planned improvements for this intersection, as identified in the City's TSP.
- Providing a pedestrian refuge across 10th Street improves pedestrian/transit user safety by allowing pedestrians to cross the street in two stages.
- The left-turn restriction is for a low-volume movement. Affected traffic will redirect easily to 12th Street on Willamette Falls Drive to access 8th Avenue.

Although the original mitigation measure was determined to comply the City's Level-of-Service standard and several criteria in Subsection (C), additional research was conducted to identify, evaluate, and recommend a final alternative solution that complies with all elements of the City's transportation approval criteria.

Alternatives Analysis

In researching an alternative solution, a "time-of-day" left-turn restriction was evaluated as a possible option in lieu of the previous solution to restrict left-turns at all times of the day. As identified in the TIA, the weekday PM peak hour is the most critical time period when intersection volumes reach their highest levels and when traffic delays for the critical stop-controlled left-turn movement on the eastbound approach of 8th Avenue becomes excessive. The TIA also showed that restricting left-turns on the northbound approach of 10th Avenue during the weekday PM peak hour would fully mitigate the increased traffic delay caused by the police station on the 8th Avenue approach, thus, satisfying the City's level-of-service criteria. Therefore, restricting left-turns only during the critical weekday PM peak period (4-6 PM) would continue to satisfy this standard. Also, as noted in the TIA (See Table 5), traffic operations are adequate during the weekday AM peak hour with no left-turn restriction in place.

A left-turn restriction enforced only on weekdays from 4-6 PM would satisfy other elements of the City's transportation approval criteria. First, by allowing drivers to make left-turns at all other times of the day and on weekends when traffic levels are lower, Criteria (C1) would be satisfied, as it would have the least negative impact on the street system. Also, Criteria (C4) would be satisfied as this solution will maintain the most direct and convenient route to the extent practicable for local drivers destined for the land uses along 8th Avenue, west of 10th Street.

To address the remaining transportation approval criteria of Subsection (C), the previous concept of installing a raised pedestrian refuge on 10th Avenue was revisited. Although this concept would have enhanced pedestrian safety and would have clearly satisfied Criteria (C2), the construction of the raised island refuge would not be located in its ultimate location, per the City's future corridor plan for 10th Avenue. Therefore, construction of the refuge and need for its subsequent removal would not make the most efficient use of public facilities, in violation of approval criteria (C3).

In identifying an alternative solution to the raised pedestrian refuge, the concept of physically maintaining the left-turn lane striping on the 10th Street approach was evaluated. However, such a concept was determined to be unsafe when combined with the "time-of-day" left-turn restriction evaluated above. With an open left-turn lane, drivers may enter the turn pocket when the left-turn restriction is in force, creating a hazardous condition whereby drivers will either choose to make the left-turn illegally or be forced to merge back into the through travel lane. In either case, an unsafe situation would be created, in violation of Criteria (C4).

A final concept was identified to eliminate the left-turn lane northbound on 10th Avenue through the use of striping alone. This final solution is depicted in the attached Figure 1. As shown, the left-turn lane is removed by striping out the median lane, thus forcing all left-turn maneuvers to occur from within the shared through lane. Under this condition, left-turn drivers will not be trapped when the left-turn restriction is in effect and can proceed straight through the intersection safely, thus satisfying the safety element of Criteria (C4). Also, by forcing left-turn movements to occur from the through lane, the left-turn restriction sign posted on the right-hand side of the street will be clearly visible to approaching drivers.

It should be emphasized that the final concept to remove the left-turn lane on 10th Street maintains the crosswalk on this approach. Therefore, pedestrians will continue to be accommodated, and with the added benefit of a striped refuge area, Criteria (C2) is satisfied.

Conclusions

Based on the findings above and in order to meet the City's transportation approval criteria, the following improvements are recommended for the 10th Street/8th Avenue intersection:

- Eliminate northbound left-turn lane striping on 10th Street approach and install cross-hatch striping.
- Allow left-turn movements to be made from the northbound through lane on 10th Street, but restrict left-turns during the weekday PM peak period by installing signage stating "NO LEFT TURN –WEEKDAYS 4 PM – 6 PM".

12th Street/Willamette Falls Drive

Background

Two options were identified in the original TIA to mitigate the traffic impacts of the proposed West Linn Police Station at this intersection. These options and their merits were described as follows:

- Option 1: Provide short 50-foot left-turn "pockets" on the eastbound and westbound approaches of Willamette Falls Drive.
  - Left-turn pockets remove left-turning traffic from the through traffic stream, preventing vehicle blockage, thus allowing all movements to function more efficiently.
  - Short 50-foot pockets do not significantly affect on-street parking along Willamette Falls Drive. More storage length can be provided at the expense of on-street parking if necessary.
  - Left-turn pockets can be provided without any intersection widening.
- Option 2: Change two-way stop-control to all way stop-control, install crosswalks and provide left-turn "pockets" on the eastbound and westbound approaches of Willamette Falls Drive.
  - Left-turn pockets remove left-turning traffic from the through traffic stream, preventing vehicle blockage, thus allowing all movements to function more efficiently.
  - Short 50-foot pockets do not significantly affect on-street parking along Willamette Falls Drive. More storage length can be provided at the expense of on-street parking if necessary.
  - Left-turn pockets can be provided without any intersection widening.
  - All way stop-control and striped crosswalks enhances pedestrian crossing safety.
  - Reduces delay to side-street drivers.
  - Added delay to eastbound users discourages cut-through travel on Willamette Falls Drive.

Although both options above were recommended as potential solutions, additional research was conducted to identify whether or not a more viable solution exists, and to recommend a final alternative that substantially complies with the City's transportation approval criteria.

Alternatives Analysis

Recent technical analysis supplied by the City and prepared by DKS Associates for the 10th Street corridor and surrounding area indicates a potential future need for a traffic signal installation at the 12th Street/Willamette Falls Drive intersection. However, the analysis findings emphasized that any signalization at this intersection should be preceded by a traffic signal installation at the 10th Street/Willamette Falls Drive intersection. Given the 10th/WFD intersection is currently all-way stop controlled and forecast to operate at levels which meet the City's Level-of-Service standards with the proposed police station in place, a traffic signal at 12th/WFD would be premature. Also, as

noted in the TIA, MUTCD traffic volume-based warrants for a traffic signal at 12th/WFD are not satisfied.

Furthermore, it should be emphasized that eastbound vehicle queues on Willamette Falls Drive commonly extend up to and through the 12th/WFD intersection during the critical weekday PM peak hour period. So drivers heading eastbound on WFD are already experiencing delays from the stop-and-go effect of queues. This queuing condition is caused by the metering effect of the all-way stop control present at 10th/WFD intersection further downstream, and until that intersection is converted to a traffic signal as planned, the eastbound vehicle queuing and back-up pattern will remain.

Further analysis was conducted for the all-way stop-control intersection solution (Option 2) to evaluate the impacts of all-way stop control on driver delay along Willamette Falls Drive during other peak and off-peak periods besides the critical PM peak hour. Based on additional analysis of the weekday AM peak hour traffic condition in the year 2014 post-development scenario, average driver delays on both Willamette Falls Drive approaches will be low, at less than 8.0 seconds, which equates to a LOS "A" condition. The operations analysis results are attached to this letter for reference.

Considering the findings of the TIA, and the technical findings above, a traffic signal installation is not warranted and would be premature for the 12th/WFD intersection. Instead, the all-way stop control measure previously described as Option #2 is the final recommended mitigation measure. Supportive reasons are as follows:

- As explained in the *Mitigated Analysis Results* section of the TIA, all-way stop control will assist other turning movements that need to occur at this intersection, resulting in acceptable levels of delay (LOS "B" or better) on 3 out of 4 intersection legs during the critical PM peak hour. Operations will be adequate on all approaches during the AM peak hour. Based on these findings, the City's Level-of-Service standards are substantially satisfied.
- As stated herein, delays associated with the eastbound PM vehicle queuing pattern on WFD will remain regardless of whether the eastbound approach to 12th/WFD is uncontrolled or stop-controlled. Therefore, the recommended solution will have the least negative impact on the street system, consistent with Criteria (C1).
- The all-way stop solution will allow pedestrians associated with the nearby grade-school and bus transit stops, as well as patrons of the local business district to cross the intersection more safely, thus satisfying Subsection (C2) of the transportation approval criteria.
- The installation of short left-turn pockets on WFD within the available street width and stop signs posted on all approaches makes the most efficient use of this public facility by maximizing capacity without substantial intersection enhancements, thus satisfying Subsection (C3).
- All-way stop control will provide the most direct, safe, and convenient routes between on- and off-site destinations, by allowing all users of 12th Street to access WFD more easily, thus satisfying Subsection (C4).

Conclusions

Based on the findings above and in order to meet the City's transportation approval criteria, the following improvements are recommended for the 12th Street/WFD intersection:

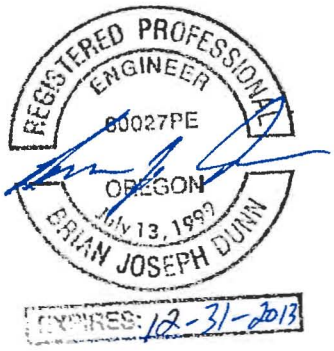
- Implement all way stop-control with STOP signs posted on all approaches.
- Install crosswalks on all approaches.
- Stripe in left-turn "pockets" on the eastbound and westbound approaches of Willamette Falls Drive.

We hope this supplemental letter adequately addresses final mitigation measures necessary to support the West Linn Police Station development. If City staff has any further questions or comments regarding this letter and the transportation impact analysis prepared for the proposed land use action, please feel free to call.

Sincerely,

Brian J. Dunn, P.E.
Traffic Engineer

c: Bob Galante – City of West Linn



NOT TO SCALE

MITIGATION: STRIPE PEDESTRIAN REFUGE IN PLACE OF NORTHBOUND LEFT-TURN LANE. INSTALL "NO LEFT TURN" SIGNAGE. EXTEND SOUTHBOUND LEFT-TURN LANE AT WILLAMETTE FALLS DRIVE.

(1) R3-2 WITH R10-20A PLAQUE

GROUP MACKENZIE
Portland OR 503.224.9560
Vancouver WA 360.695.7879
Seattle WA 206.749.9993

DATE: 1.23.13
DRAWN BY: JRB
CHECKED BY: BJD
JOB NO: 2120180.00

RECOMMENDED MITIGATION
10th STREET/8th AVENUE

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 1

NOT TO SCALE

MITIGATION: STRIPE EAST/WESTBOUND LEFT-TURN LANE POCKETS.
ADD EAST/WESTBOUND STOP SIGNS TO PROVIDE ALL-WAY STOP-CONTROL.

GROUP MACKENZIE

Portland OR 503.224.9560 | Vancouver WA 360.695.7879 | Seattle WA 206.749.9993

DATE: 1.23.13
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RECOMMENDED MITIGATION
WILLAMETTE FALLS DR./12th

WEST LINN POLICE STATION
WEST LINN, OREGON

FIGURE 2

4: 12th Street & Willamette Falls Drive Performance by lane

Lane	EB	EB	WB	WB	NB	SB	All
Movements Served	L	TR	L	TR	LTR	LTR	
Denied Del/Veh (s)							0.2
Total Del/Veh (s)	3.7	7.3	4.4	6.9	5.8	4.5	6.5