3. 2030 NO BUILD TRAFFIC OPERATIONS

This section addresses the operations of the transportation system and details how it would be expected to function under year 2030 No Build conditions with the projected traffic volumes if no transportation system changes are made other than those improvements already scheduled and funded.

Planned Projects in the Analysis Area

Through discussions with ODOT and City of Roseburg staff, it was determined that the only planned project to be included in the No Build condition is the signalization of the intersection of Diamond Lake Boulevard at Rifle Range Street just east of the study area.

Future Traffic Volumes

In order to analyze future roadway conditions, future traffic volumes needed to be developed. The following section describes this process.

Future Volume Development

The ODOT TPAU has developed a travel demand forecasting model for the Roseburg area. The model was developed for a base year of 2000 and a future year of 2025. The model uses existing and forecast land use levels (housing and employment) to estimate PM peak hour trips, develop a matrix of trip origins and destinations, and assign them to a transportation network using factors such as capacity, congestion, and travel speed.

TPAU also has several procedures for processing the model volumes to develop forecasting future traffic volumes. The analysis for this project utilized the difference, or incremental method. In this method, the difference in directional link volumes between the base year and future year models is added to the existing DHV. Development of DHV is explained in detail in Section 2 of this report.

Regional transportation model runs were obtained from TPAU for the base year 2000 and future year 2025 regional models. These model runs show the directional link volumes and take into account existing and future housing and employment statistics. The difference in link volumes between the two model years estimates 25 years of traffic growth. Rather than using the straight-line annual growth between the two models and estimating 2006 and 2030 link volumes and the resulting 24 years of growth, the 25-year difference between the models was simply added to the link volumes associated with the DHV calculated for the existing conditions analysis. The results are very similar and reasonably approximate 2030 conditions given the base assumptions in the models.

Once these new volumes were found, the new turning movement volumes were determined by applying the methodology outlined in the National Cooperative Highway Research Program

Report 255. The resulting turning movement volumes were then balanced and used in the future conditions analysis. Future 2030 turning movement counts are shown in Figure 3-1.

Traffic Operations Standards and Procedures

Using the projected 2030 volumes, the future transportation system was analyzed using Synchro/SimTraffic software. The section summarizes the outcome of that analysis.

Operational Standards

ODOT applies two sets of operational standards (mobility standards) to different types of projects. For planning and project analysis of existing conditions and no build conditions the applicable mobility standards are found in Table 6 of the *1999 Oregon Highway Plan*. For planning and project analysis of build alternatives, the applicable mobility standards are specified in Table 10-1 of the *2003 Highway Design Manual*. Mobility standards are dependent on the roadway classification and area type and apply during peak operating conditions through the planning horizon year, which is year 2030. For this No Build analysis, only the OHP standards are shown in Table 3-1.

While ODOT utilizes v/c ratios for its operational standards, the City of Roseburg uses both v/c ratios and LOS. These are also shown in Table 3-1. Both are evaluated in the analyses that follow.

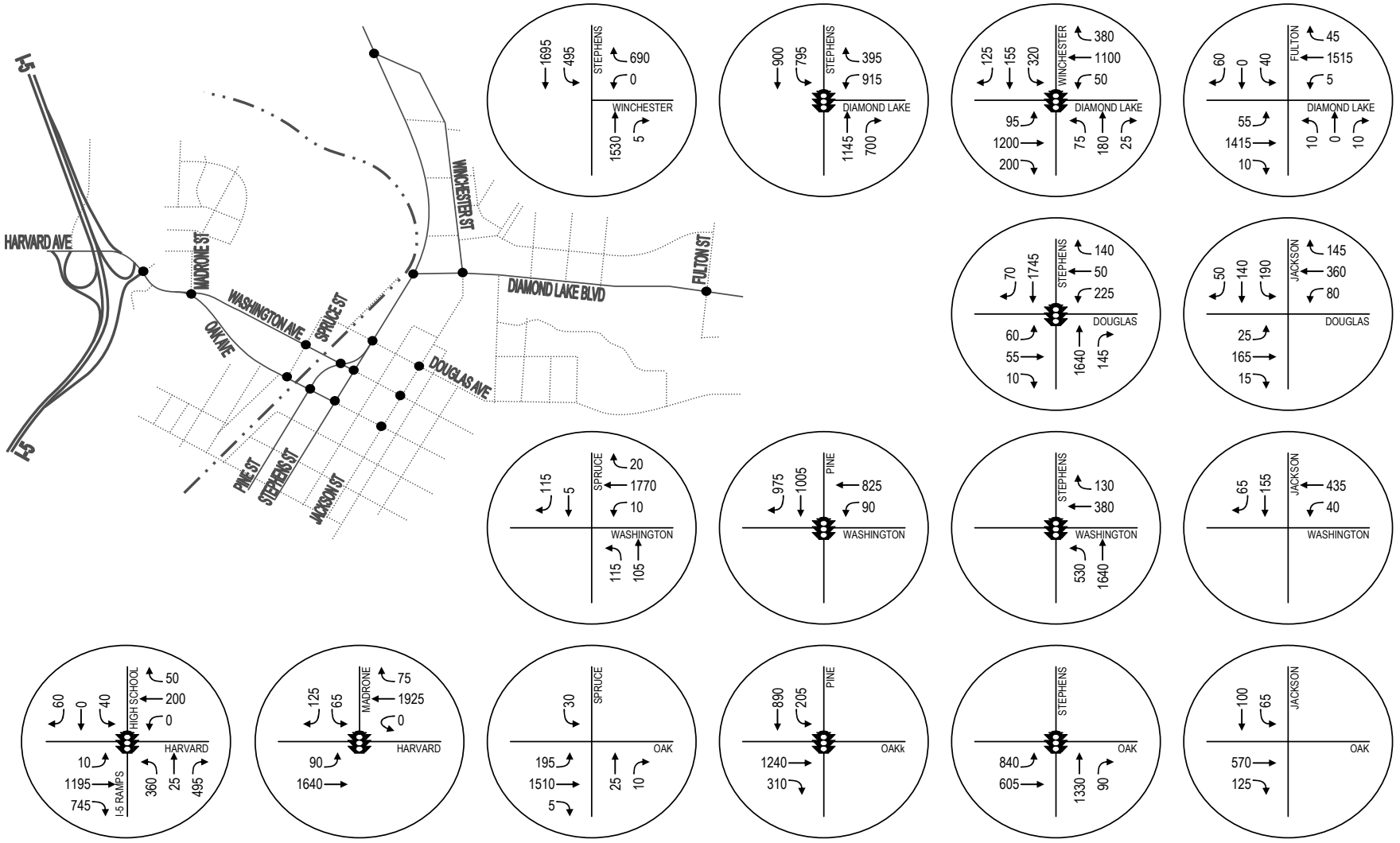
Traffic Operations Analysis Procedures

All of the intersection operations were evaluated using the methodology outlined in the *2000 Highway Capacity Manual.* Synchro analysis software was used to generate the HCM reports from which the v/c ratios were derived. This report also presents delay results that have been generated by SimTraffic simulation software. The SimTraffic results were derived from the average of five randomly seeded simulation model runs. LOS results were then calculated based on the delay from SimTraffic simulation. While Synchro provides HCM LOS results, SimTraffic simulation can more accurately represent the impact of nearby intersections to delay and queuing. Synchro (HCM) looks at each intersection in isolation.

Future No-Build Traffic Operations

This section summarizes the traffic operations analysis that was conducted for the study area intersections under 2030 traffic volume conditions.

Table 3-1 summarizes the results for all analysis area intersections and also presents agency operational standards to enable comparison with intersection results. Critical movements at unsignalized intersections are typically the minor street left turns or, in the case of single-lane approaches, the minor street approaches. These movements are required to yield to all other movements at the intersection and thus are subject to the longest delays and have least capacity. Left turns from the major street are also subject to delays since motorists making these



Legend

← Turning Movement

00 Turning Movement Volume

Traffic Signal

Figure 3-1

2030 Forecast Design Hourly Volumes

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maneuvers must also yield to on-coming major street traffic. Bold numbers in the tables represent v/c ratios and LOS that exceed the mobility standards.

Table 3-1. Future (Year 2030) Design Hour Traffic Operations Analysis Results

Intersection	Critical Movement	V/C Ratio	LOS	OHP Std.(1)	City V/C. Std.(2)	City LOS Std.(2)
Stephens @ Winchester	EB Left	**>2.0**	**F**	-	0.85	≤ E
Stephens St @ Diamond Lake Blvd	n/a[3]	**1.28**	**F**	0.85	.85	≤ D
Diamond Lake Blvd @ Winchester St	n/a[3]	**0.88**	**F**	0.85	.85	≤ D
Diamond Lake Blvd @ Fulton St	SB Approach	**>2.0**	**F**	0.85	.85	≤ E
Douglas Ave @ Stephens St	n/a[3]	0.81	D	0.85	.85	≤ D
Douglas Ave @ Jackson St	n/a[3]	0.51	**F**	-	0.95	≤ E
Washington Ave @ Spruce St	NB Approach	**>2.0**	**F**	0.85	.85	≤ E
Washington Ave @ Pine St	n/a[3]	0.93	B	0.85	.85	≤ D
Washington Ave @ Stephens St	n/a[3]	0.77	D	0.85	.85	≤ D
Washington Ave @ Jackson St	n/a[3]	0.27	A	-	0.95	≤ E
I-5 NB ramps/High School @ Harvard Ave	n/a[3]	**1.08**	D	0.85	.85	≤ D
Harvard Ave @ Madrone St	n/a[3]	0.83	C	0.85	.85	≤ D
Oak Ave @ Spruce St	SB Approach	0.54	**F**	0.85	.85	≤ E
Oak Ave @ Pine St	n/a[3]	0.74	D	0.85	.85	≤ D
Oak Ave @ Stephens St	n/a[3]	0.76	**F**	0.85	.85	≤ D
Oak Ave @ Jackson St	n/a[3]	0.32	A	-	0.95	≤ E

Notes: (1) 1999 Oregon Highway Plan Mobility Standards (Table 6)
(2) V/C and LOS standards for Roseburg (Source: Roseburg Transportation System Plan)
(3) Signalized or All-way stop control intersection. LOS and v/c are for overall intersection.

Source: David Evans and Associates, Inc.

As shown in Table 3-1, the simulation model indicates that nine of the sixteen study area intersections would fail to meet the applicable mobility standards. The increase between the 2006 and 2030 traffic volumes overwhelms many of these intersections. The following intersections don't meet mobility standard and are expected to have one or more movements that exceed capacity:

- Stephens Street at Winchester Street
- Stephens Street at Diamond Lake Boulevard
- Diamond Lake Boulevard at Fulton Street
- Washington Avenue at Spruce
- Harvard Avenue at the High School/I-5 Northbound off ramps

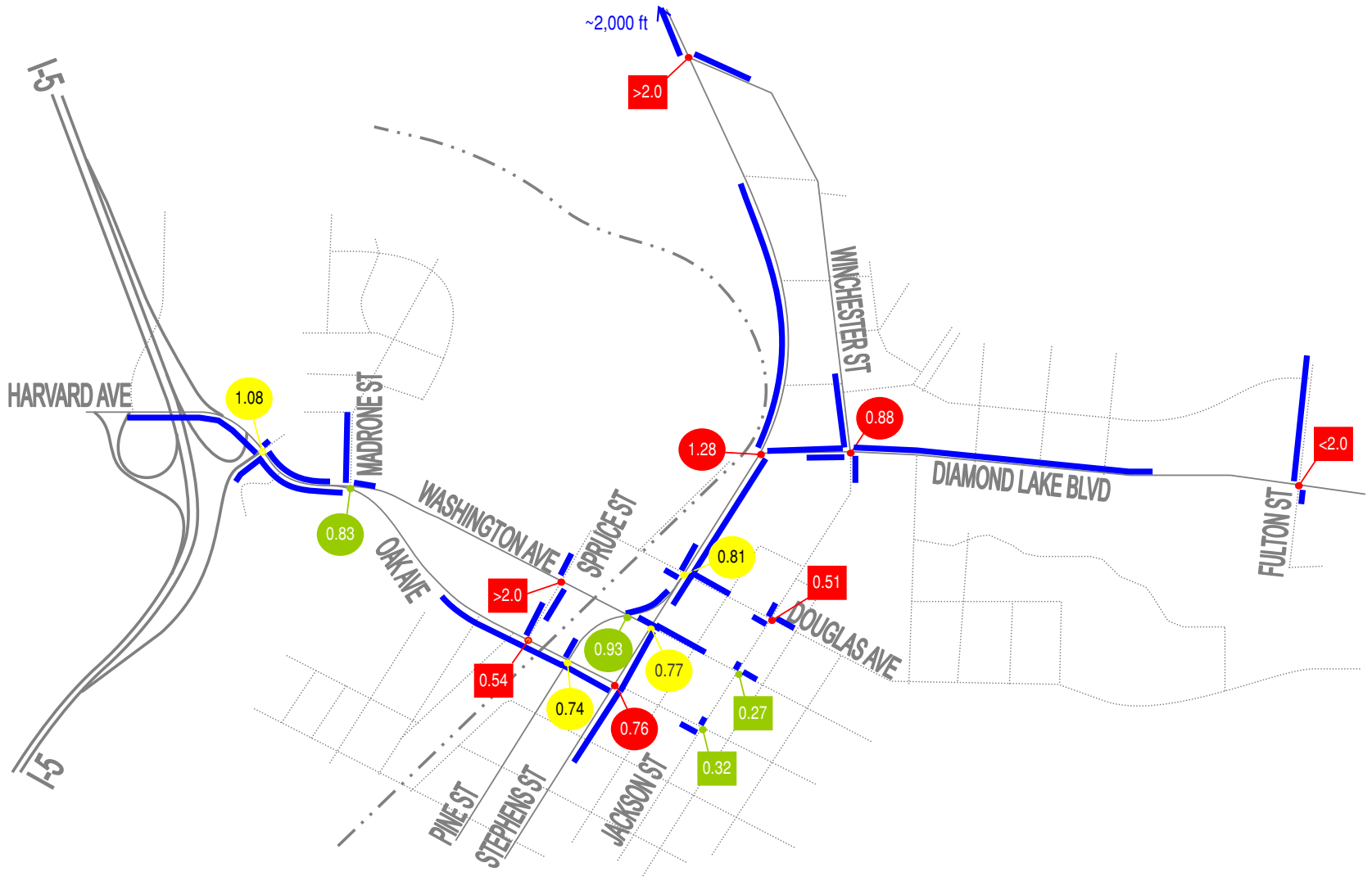
In some cases, the v/c ratio indicates that the intersection demand would exceed capacity but the delay indicates conditions where adequate capacity might still be available. The difference in the results is a function of the macrosimulation function of Synchro, which examines individual intersections and compares demand against an estimate of capacity versus the microsimulation function of SimTraffic, which examines all of the intersections as a system. The latter program

can better evaluate the interaction between signalized intersections as well as between signalized and unsignalized intersections.

Figure 3-2 summarizes the operations and also illustrates the 95th percentile queuing for the stopped movements of the study area intersections. Queuing would be substantial along westbound Diamond Lake Boulevard, starting at Stephens Street and extending through the intersections with Winchester Street, almost to Fulton Street. Likewise, northbound Stephens Street would experience queuing, which would start at the intersection with Diamond Lake Boulevard and extend through Douglas, Washington, and Oak Avenues. This queuing would also contribute to the large queues along eastbound Oak Avenue. These predominant queue patterns would cause delay along the Highway 138 route.

In situations with extreme queue length, like those indicated in the simulation model, drivers will begin to look for alternate routes. This often means intrusion into the neighborhoods adjacent to the congested roadways as traffic cuts through to bypass congested areas. The increased traffic on these streets may result in busier neighborhood roads, reduced traffic operations, and a decrease in safety.

Long queues may also give rise to more aggressive behaviors as drivers become impatient with long delays. The result can exacerbate existing safety problems and create new ones such as red light running, queue spillback into intersections (gridlock), and unexpected lane changes.



Legend

- 0.00 Signalized V/C Ratio
- 0.00 Unsignalized V/C Ratio
- Level of Service A, B, C
- Level of Service D
- Level of Service E
- Level of Service F
- 95th Percentile Queue

Figure 3-2

2030 No Build Traffic Operations Summary

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