

**I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans**

**Technical Memorandum #5
Future Baseline Traffic Conditions**

Prepared for

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5. FUTURE BASELINE TRAFFIC CONDITIONS

This technical memorandum presents the future baseline traffic conditions at the I-5 Exits 40 and 43 interchange management study areas (IMSAs) for the Year 2038. The analysis examines conditions where the transportation system has been improved by projects with programmed funding sources and where traffic volumes continue to grow based on current trends and land use assumptions in Jackson County and the nearby city of Gold Hill community. The analysis identifies anticipated operational deficiencies and serves as the basis for later evaluation to compare project alternatives that address deficiencies.

5.1. Future Land Use

The long-range population forecasts presented in the Jackson County Comprehensive Plan are based on the 2005 estimates of population prepared by Portland State University (PSU) for Jackson County. Future land use is not anticipated to be significantly different from the existing land use. The population projections associated with the current land use is presented in Table 5-1. The population growth forecasts assume an annual growth rate of 1.63 percent within the city of Gold Hill and 1.31 percent outside the city.

Table 5-1. Population and % Population Change, 2005-2040

Geography	2005 Population	2026 Population	2040 Pop.	2005-2026 % Change (AAGR)	2005-2040 % Change (AAGR)
Jackson County	194,515	264,419	306,421	36% (1.47%)	58% (1.31%)
Gold Hill	1,080	1,476	1,901	37% (1.50%)	76% (1.63%)

Source: David Evans and Associates, Inc. Excerpt from Jackson County Comprehensive Plan, Table 6. (Amended on 7-18-2007)

There are no approved and/or pending developments within the study areas at this time; however, recurring discussions regarding the potential development of a truck stop at one of the two study interchanges has prompted the evaluation of an alternative land use scenario (ALUS). Development assumptions and volume development methods for this land use alternative are discussed further in Section 5.2.2 Alternative Land Use Scenario (ALUS). Not considered as a part of this analysis was the proposed resort on Highway 234 near the Lower Table Rock (project shelved), the existing golf course on Old Stage Road, as well as the Senior Living developments.

5.2. Future Traffic Volume Development

Two future traffic volume scenarios were developed for each interchange. The baseline scenario is derived from current growth trends on the existing transportation system. The ALUS is a land use alternative that considers how a truck stop developed at one of the two interchanges would affect future traffic conditions.

5.2.1. Baseline Traffic Forecasts

Future baseline traffic volume forecasts for the year 2038 were developed using historical traffic trends. The trend-based forecasting process is generally used for small urban areas that

are growing at a fairly uniform rate or for areas where only minor changes are expected to take place.

Traffic forecasts for the 2038 future baseline scenario at the study area intersections were developed from growth rates calculated from the 2031 Future Volume Tables for I-5 and OR 99 and OR 234 as well as Jackson County historic traffic volumes (along Blackwell Road). These growth rates were applied to the 2012 existing traffic data. The process followed the procedures from ODOT's Analysis Procedures Manual (APM)¹. There are no approved and/or pending developments within the study areas at this time; therefore, no additional development traffic was included in the baseline forecasts.

Traffic volumes for the year 2038 future baseline scenario are presented in Figure 5-1a and Figure 5-1b. The detailed volume development worksheets are presented in Appendix A.

5.2.2. Alternative Land Use Scenario (ALUS)

Traffic forecasts for the ALUS are based on volumes developed for the future baseline scenario as well as trip generation for a potential truck stop development. Although forecasts were developed for a truck stop at each interchange, it is unlikely that development of such closely situated truck stops would occur in these relatively rural areas.

From data collected about nearby truck stops, it was assumed that the potential truck stop would include 8 auto fuel pumps, 8 truck fueling stations, a 6,000 square foot high turnover sit-down restaurant, 100 truck parking spaces, and a minimum lot size of 8 acres. With these assumptions, trip generation methods based on ITE Trip Generation Manual, 9th Edition Land Use Categories were applied to determine the additional traffic volumes to be applied to the future baseline network. As part of the proposed truck stop, one unsignalized driveway is assumed along Old Stage Road for Exit 40 and along Rogue River Highway east of Main Street for Exit 43.

The ALUS volumes are shown in Figure 5-2a and Figure 5-2b. For further information regarding the methodology used for development of the land use alternative see Appendix A.

5.3. Future Transportation Network

The future network used in the forecasts for Exits 40 and 43 should include roadway projects that are expected to occur by year 2038. In the next 25 years, there are no new projects with known funding or with a reasonable expectation of being funded within either of the IMSAs. Other planned projects that do not have identified funding sources are addressed in the alternatives analysis portion of this project.

¹ Analysis Procedures Manual, Oregon Department of Transportation, Transportation Development Division Planning Section, Transportation Planning and Analysis Unit, Salem, Oregon, April, 2006, Section 4.3.

5.4. Future Baseline Traffic Operations

Traffic analysis for the 2038 future baseline scenario was performed for all of the study area intersections and for the merge-diverge sections of the freeway.

5.4.1. Intersection Analysis

Table 5-2 summarizes the results of the traffic operations analysis for I-5 Exits 40 and 43 with respect to the 2038 future baseline scenario. Figure 5-3a and Figure 5-3b presents the v/c ratios and LOS performance by lane group for the area intersections and compares them to the Oregon Highway Plan (OHP) mobility targets. While all lane groups are shown in the figures, only the controlling movement² is shown in the table. All Synchro and SimTraffic output worksheets are provided in Appendix B.

Table 5-2. Future (2038) Baseline Intersection Operations

Intersection	Controlling Movement ¹	V/C Ratio ²	LOS ²	Operational Targets ³
I-5 Exit 40				
Access Rd at Blackwell Rd (OR 99)	NB L/R	0.76	D	V/C <= 0.95
Access Rd at Lampman Rd	EB L/R	0.06	B	V/C <= 0.95
Access Rd at I-5 NB Ramps	WB L/T/R	0.41	B	V/C <= 0.85
Access Rd at I-5 SB Ramps	EB L/T/R	0.24	C	V/C <= 0.85
Access Rd at Old Stage Rd	EB L/R	0.07	B	V/C <= 0.95
I-5 Exit 43				
OR 99/OR 234 at N. River Rd ⁴	EB T/R	0.06	A	V/C <= 0.95
OR 99/OR 234 at Lampman Rd	SB L/R	0.03	A	V/C <= 0.95
OR 99/OR 234 at Main St ^{4,5}	NB L/R	0.09	A	V/C <= 0.95
Main St at I-5 NB Ramps	WB L/T/R	0.04	A	V/C <= 0.85
Main St at I-5 SB Ramps	EB L/T/R	0.07	A	V/C <= 0.85
Main St at Profetta Ln	EB L/T	0.01	A	V/C <= 0.95

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.

Notes:

1. At unsignalized intersections the results are reported for the movement with the worst v/c ratio.
2. The v/c ratios and LOS are based on the results of the macrosimulation analysis using Synchro, which cannot account for the influence of adjacent intersection operations.
3. The Jackson County Transportation System Plan (TSP) designates the traffic operations standard as the more restrictive of County and ODOT targets for intersections with one or more approaches maintained by ODOT. 1999 Oregon Highway Plan (OHP), Policy 1F applies to existing and no-build conditions through the planning horizon.
4. Intersection operations analyzed with alternative geometric configurations to meet HCM methodology.
5. Intersection operations based on HCM 2000 methodology.

Source: David Evans and Associates, Inc.

² Controlling movements at unsignalized intersections are typically the minor-street left turns or, in the case of single-lane approaches, the minor street approaches.

I-5 Exit 40

The analysis results show that under the 2038 future baseline conditions, all five of the IMSA intersections would meet operational targets during the PM peak period. The intersection with the worst operations is Access Road at Blackwell Road (OR 99), though the controlling movement still meets operational targets with a v/c ratio of 0.76.

Based on the SimTraffic simulation, none of the 95th percentile queues for the future baseline condition are expected to exceed available storage or extend beyond the nearest public access. The lane group with the longest queue is the northbound left-right movement on Access Road at Blackwell Road. The queues for this lane are approximately 175 feet compared with 300 feet to the public access point. The existing storage on the northbound and southbound ramps provides adequate stopping sight distance for the forecast queues.

I-5 Exit 43

Similar to the Exit 40 results under the 2038 future baseline conditions; all study area intersections (6) would meet operational targets during the PM peak period. The intersection with the worst operations is OR 99/OR 234 at Main Street, though the controlling movement (v/c ratio of 0.09) still operates well below operational targets.

Based on the SimTraffic simulation, none of the 95th percentile queues for the future baseline condition are expected to exceed available storage or extend beyond the nearest public access. The lane group with the most severe queuing is the eastbound through movement at the intersection of OR 99/OR 234 and North River Road. The 95th percentile queue for this lane is approximately 50 feet compared with 250 feet to the next public access point. The existing storage on the northbound and southbound ramps provides adequate stopping sight distance for the forecast 95th percentile queues.

Queuing

Table 5-3 summarizes queuing results for intersection movements that must stop or yield the right of travel to other traffic flows. The study intersections appear to have adequate capacity and storage for the anticipated demand, except for the northbound left-turn at Access Road at Old Stage Road, although there is potential for vehicles to utilize the two-way left-turn lane storage.

Preliminary Signal Warrants

None of the unsignalized intersections at would meet ODOT's preliminary signal warrants. Preliminary signal warrants are based on traffic volumes and were only investigated at Exit 40 where traffic volumes are highest. Therefore, intersections were assumed to remain STOP-controlled through the study planning horizon. See Appendix C for details.

Table 5-3. Future (2038) Baseline 95th Percentile Queues

Intersection	Approach & Movement	95 th Percentile Queue (ft.)	Available Storage (ft.) ¹
I-5 Exit 40			
Access Rd at Blackwell Rd (OR 99)	WB L/T	75	600
	NB L/R	175	300
Access Rd at Lampman Rd	EB L/R	50	350
	NB L/T	50	150
Access Rd at I-5 NB Ramps	WB L/T/R	100	850 ²
	NB L/T	50	540
Access Rd at I-5 SB Ramps	EB L/T/R	75	800 ²
	SB L/T	75	540
Access Rd at Old Stage Rd	EB L/R	75	425
	NB L	25	40 ²
I-5 Exit 43			
OR 99/OR 234 at N. River Rd	EB T	50	250
	EB R	50	50 ²
	NB L	50	25 ²
OR 99/OR 234 at Lampman Rd	EB L/T	25	650
	SB L/R	50	>1200
OR 99/OR 234 at Main St	EB T/R	50	380
	NB L/R	50	330
Main St at I-5 NB Ramps	WB L/T/R	50	1000 ²
	NB L/T	25	600
Main St at I-5 SB Ramps	EB L/T/R	50	1100 ²
	NB T/R	50	75
Main St at Profetta Ln	EB L/T	25	>1200
	SB L/T	25	75

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.

Notes:

1. Storage distance reflects spacing to the next public access point.
2. Storage distance reflects length of travel lane or turn bay.

Source: David Evans and Associates, Inc.

5.4.2. Freeway Analysis

The 2038 operations of the interchange ramp merge and diverge interactions with the mainline highway traffic were also evaluated. These analyses were conducted in accordance with the methodology prescribed in ODOT’s APM to determine v/c ratio performance for the design hour between 3:30 to 4:30 PM. The results of the future freeway operations analysis are summarized in Table 5-4.

The merge and diverge analyses for the future baseline show that the freeway and the merge and diverge points for both freeway exits are expected to continue operating well below the mobility target of 0.85 through the planning horizon.

Table 5-4. Future (Year 2038) Baseline Freeway Operations

I-5 Northbound		I-5 Southbound	
Direction/Location	V/C Ratio ^{1,2}	Direction/Location	V/C Ratio ^{1,2}
I-5 Exit 40			
Mainline: South of Exit 40	0.49	Mainline: North of Exit 40	0.40
Diverge: Exit 40 Northbound Off Ramp	0.14	Diverge: Exit 40 Southbound Off Ramp	0.05
Mainline: Between Exit 40 Ramps	0.43	Mainline: Between Exit 40 Ramps	0.38
Merge: Exit 40 Northbound On Ramp	0.47	Merge: Exit 40 Southbound On Ramp	0.44
Mainline : North of Exit 40	0.46	Mainline: South of Exit 40	0.43
I-5 Exit 43			
Mainline : South of Exit 43	0.46	Mainline: North of Exit 43	0.41
Diverge: Exit 43 Northbound Off Ramp	0.02	Diverge: Exit 43 Southbound Off Ramp	0.03
Mainline: Between Exit 43 Ramps	0.45	Mainline: Between Exit 43 Ramps	0.39
Merge: Exit 40 Northbound On Ramp	0.47	Merge: Exit 43 Southbound On Ramp	0.41
Mainline: North of Exit 43	0.46	Mainline: South of Exit 43	0.40

Notes:

1. The v/c ratios for the merge/diverge analysis are calculated based on the methodologies outlined in ODOT’s Analysis Procedures Manual.
2. The design hour is the hour between 3:30 and 4:30 PM, which coincides with non-freeway system peaking.

Source: David Evans and Associates, Inc.

5.5. Future Baseline ALUS Traffic Operations

Traffic analysis for the 2038 future baseline ALUS was performed for all of the study area intersections and for the merge-diverge sections of the freeway.

5.5.1. Intersection Analysis

Table 5-5 summarizes the results of the traffic operations analysis for I-5 Exit 40 and Exit 43 with respect to the 2038 future baseline ALUS. Figure 5-4a and Figure 5-4b present the v/c ratios and LOS performance by lane group for the area intersections and compares them to the Oregon Highway Plan (OHP) mobility targets. While all lane groups are shown in the figures, only the controlling movement³ is shown in the table. All Synchro and SimTraffic output worksheets are provided in Appendix B.

³ Controlling movements at unsignalized intersections are typically the minor-street left turns or, in the case of single-lane approaches, the minor street approaches.

I-5 Exit 40

The truck stop in the ALUS would have the greatest impact on the unsignalized freeway ramp intersections but all IMSA intersections would meet operational targets during the PM peak period. The driveway to the potential truck stop would also be well below the v/c ratio threshold. The intersection with the worst operations would still be the Access Road at Blackwell Road (OR 99), though the controlling movement still meets operational targets with a V/C of 0.78.

The SimTraffic simulations with the truck stop show minimal impacts on future baseline queuing, most likely because of the relatively low v/c ratios in the IMSA. No queuing issues are anticipated on the freeway ramps or at any of the other IMSA intersections.

Table 5-5. Future (2038) Baseline ALUS Intersection Operations

Intersection	Controlling Movement ¹	V/C Ratio ²	LOS ²	Operational Targets ³
I-5 Exit 40				
Access Rd at Blackwell Rd (OR 99)	NB L/R	0.78	D	V/C <= 0.95
Access Rd at Lampman Rd	EB L/R	0.06	B	V/C <= 0.95
Access Rd at I-5 NB Ramps	WB L/T/R	0.60	C	V/C <= 0.85
Access Rd at I-5 SB Ramps	EB L/T/R	0.47	C	V/C <= 0.85
Access Rd at Old Stage Rd	EB L/R	0.12	B	V/C <= 0.95
Access Rd at Potential Truck Stop	EB L	0.36	B	V/C <= 0.95
I-5 Exit 43				
OR 99/OR 234 at N. River Rd ⁴	EB T/R	0.06	A	V/C <= 0.95
OR 99/OR 234 at Lampman Rd	SB L/R	0.03	A	V/C <= 0.95
OR 99/OR 234 at Main St ^{4,5}	NB L/R	0.30	B	V/C <= 0.95
Main St at I-5 NB Ramps	WB L/T/R	0.09	A	V/C <= 0.85
Main St at I-5 SB Ramps	EB L/T/R	0.26	B	V/C <= 0.85
Main St at Profetta Ln	EB L/T	0.01	A	V/C <= 0.95
Potential Truck Stop at Rogue River Hwy	NB R	0.18	A	V/C <= 0.95

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.

Notes:

1. At unsignalized intersections the results are reported for the movement with the worst v/c ratio.
2. The v/c ratios and LOS are based on the results of the macrosimulation analysis using Synchro, which cannot account for the influence of adjacent intersection operations.
3. The Jackson County Transportation System Plan (TSP) designates the traffic operations standard as the more restrictive of County and ODOT targets for intersections with one or more approaches maintained by ODOT. 1999 Oregon Highway Plan (OHP), Policy 1F applies to existing and no-build conditions through the planning horizon.
4. Intersection operations analyzed with alternative geometric configurations to meet HCM methodology.
5. Intersection operations based on HCM 2000 methodology.

Source: David Evans and Associates, Inc.

I-5 Exit 43

Similar to the Exit 40 results under the 2038 future baseline ALUS, all study area intersections and the driveway to the potential truck stop would meet operational targets during the PM peak period. The truck stop in the ALUS would have the greatest impact on Main Street at the intersections with OR 99/OR 234 and with the freeway. The driveway to the potential truck stop would also be well below the v/c ratio threshold. The intersection with the worst operations is Main Street at OR 99/OR 234, though the controlling movement (v/c ratio of 0.30) still operates well below operational targets.

The SimTraffic simulations with the truck stop show minimal impacts on future baseline queuing, most likely because of the relatively low v/c ratios in the IMSA. No queuing issues are anticipated on the freeway ramps or at any of the other IMSA intersections.

Queuing

Table 5-3 summarizes queuing results for intersection movements that must stop or yield the right of travel to other traffic flows. The study intersections appear to have adequate capacity and storage for the anticipated demand, except for the northbound left-turn at Access Road at Old Stage Road, although there is potential for vehicles to utilize the two-way left-turn lane storage.

Preliminary Signal Warrants

None of the unsignalized intersections at would meet ODOT's preliminary signal warrants with the ALUS traffic volume forecasts. See Appendix C for details.

Table 5-6. Future (2038) Baseline ALUS 95th Percentile Queues

Intersection	Approach & Movement	95 th Percentile Queue (ft.)	Available Storage (ft.) ¹
I-5 Exit 40			
Access Rd at Blackwell Rd (OR 99)	WB L/T	75	600
	NB L/R	175	300
Access Rd at Lampman Rd	EB L/R	50	350
	NB L/T	50	150
Access Rd at I-5 NB Ramps	WB L/T/R	150	850 ²
	NB L/T	75	540
Access Rd at I-5 SB Ramps	EB L/T/R	125	800 ²
	SB L/T	75	540
Access Rd at Old Stage Rd	EB L/R	75	425
	NB L	50	40 ²
Access Rd at Potential Truck Stop	EB L	100	150
	EB R	25	150
	NB L/T	25	>1200
I-5 Exit 43			
OR 99/OR 234 at N. River Rd	EB T	75	250
	EB R	50	50 ²
	NB L	50	50 ²
OR 99/OR 234 at Lampman Rd	EB L/T	25	650
	SB L/R	50	>1200
OR 99/OR 234 at Main St	EB T/R	75	380
	NB L/R	50	330
Main St at I-5 NB Ramps	WB L/T/R	50	1000 ²
	NB L/T	25	600
Main St at I-5 SB Ramps	EB L/T/R	75	1100 ²
	NB T/R	50	75
Main St at Profetta Ln	EB L/T	--	>1200
	SB L/T	25	75
Potential Truck Stop at Rogue River Hwy	WB L/T	50	>1200
	NB L	50	150
	NB R	75	150

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.

Notes:

1. Storage distance reflects spacing to the next public access point.
2. Storage distance reflects length of travel lane or turn bay.

Source: David Evans and Associates, Inc.

5.5.2. Freeway Analysis

The 2038 operations of the interchange ramp merge and diverge interactions with the mainline highway traffic were also evaluated for the land use alternative scenario. These analyses were conducted in accordance with the methodology prescribed in ODOT’s APM to determine v/c ratio performance for the design hour between 3:30 to 4:30 PM. The results of the future freeway operations analysis are summarized in Table 5-7.

Table 5-7. Future (2038) Baseline ALUS Freeway Operations

I-5 Northbound		I-5 Southbound	
Direction/Location	V/C Ratio ^{1,2}	Direction/Location	V/C Ratio ^{1,2}
I-5 Exit 40			
Mainline: South of Exit 40	0.49	Mainline: North of Exit 40	0.40
Diverge: Exit 40 Northbound Off Ramp	0.16	Diverge: Exit 40 Southbound Off Ramp	0.10
Mainline: Between Exit 40 Ramps	0.42	Mainline: Between Exit 40 Ramps	0.36
Merge: Exit 40 Northbound On Ramp	0.47	Merge: Exit 40 Southbound On Ramp	0.44
Mainline : North of Exit 40	0.46	Mainline: South of Exit 40	0.43
I-5 Exit 43			
Mainline : South of Exit 43	0.46	Mainline: North of Exit 43	0.41
Diverge: Exit 43 Northbound Off Ramp	0.04	Diverge: Exit 43 Southbound Off Ramp	0.07
Mainline: Between Exit 43 Ramps	0.44	Mainline: Between Exit 43 Ramps	0.38
Merge: Exit 40 Northbound On Ramp	0.48	Merge: Exit 43 Southbound On Ramp	0.41
Mainline: North of Exit 43	0.47	Mainline: South of Exit 43	0.40

Notes:

1. The v/c ratios for the merge/diverge analysis are calculated based on the methodologies outlined in ODOT’s Analysis Procedures Manual.
2. The design hour is the hour between 3:30 and 4:30 PM, which coincides with non-freeway system peaking.

Source: David Evans and Associates, Inc.

The merge and diverge analyses for the future baseline show that the freeway and the merge and diverge points for both freeway exits are expected to continue operating well below the mobility target of 0.85 under future baseline with the ALUS. Although the truck stops would add some traffic to the freeway ramps, the mainline traffic volumes are not expected to change significantly as most traffic destined to use one of the potential truck stops would already be on the freeway.

5.6. Summary of Future Deficiencies

No significant operational deficiencies are anticipated under future (year 2038) baseline conditions, even with the potential trucks stops considered with the ALUS. None of the intersections within either of the IMSAs would exceed current mobility targets. Only one intersection is expected to approach the operational threshold of a v/c of 0.95, and that is Access Road at Blackwell Road (OR 99) with an anticipated LOS D and v/c of 0.76 for the future baseline scenario, and LOS D and v/c of 0.78 with the alternative land use.

An increase in truck use on the existing ramps will affect storage in the off ramps in particular. The speed reduction between decelerating truck traffic to use the ramps has potential to affect overall speed on the freeway. Although volumes may not change the expected service levels during peak, traffic may cause speeds to reduce increasing delays on the system.

5.7. Conclusions

All of the study area intersections are expected to operate within operational targets and with minimal queues for future baseline conditions. If a truck stop is constructed, additional improvements may be warranted to accommodate the additional truck traffic. Future conditions are summarized below:

I-5 Exit 40

- Access Road at Blackwell Road (OR 99) is expected to meet operational targets for future baseline conditions. Although volumes approach the threshold for 70% volumes for signal warrant analysis, preliminary signal warrants are not met.
- Although the I-5 northbound ramp terminal approach to Access Road has volumes that approach 70% signal warrant levels, preliminary signal warrants are not met for future baseline conditions, and the intersection is expected to operate well below mobility targets with the current STOP control.
- 95th percentile queues are not expected to exceed available storage or block public access points for any intersection approaches.

I-5 Exit 43

- Operations at all study area intersections are expected to operate well below mobility targets.
- Future baseline volumes would not meet preliminary signal warrants for any of the unsignalized intersections. Study area intersections are expected to operate below mobility targets with existing STOP control.
- 95th percentile queues are not expected to exceed available storage or block public access points for any intersection approaches.

Attachments:

Figure 5-1 (a&b). Future Baseline (2038) Conditions – PM Hour Traffic Volumes

Figure 5-2 (a&b). Future Baseline (2038) ALUS Conditions – PM Hour Traffic Volumes

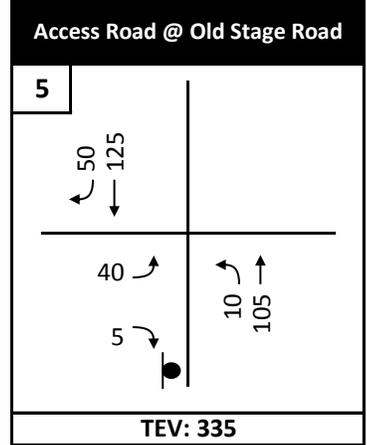
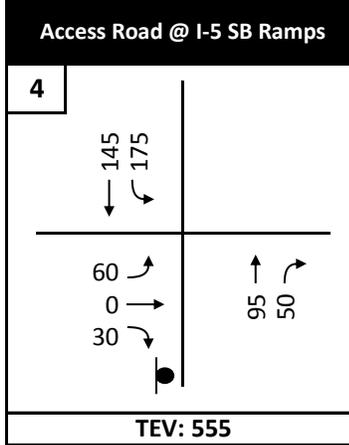
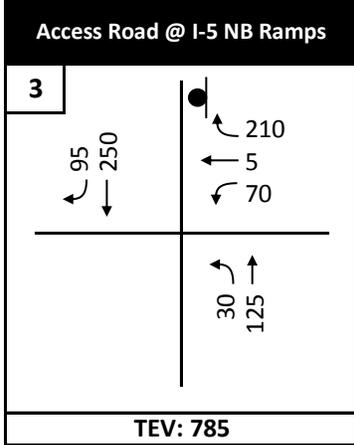
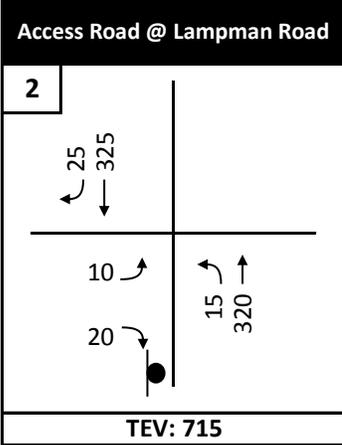
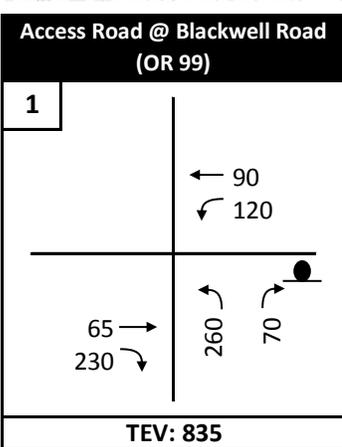
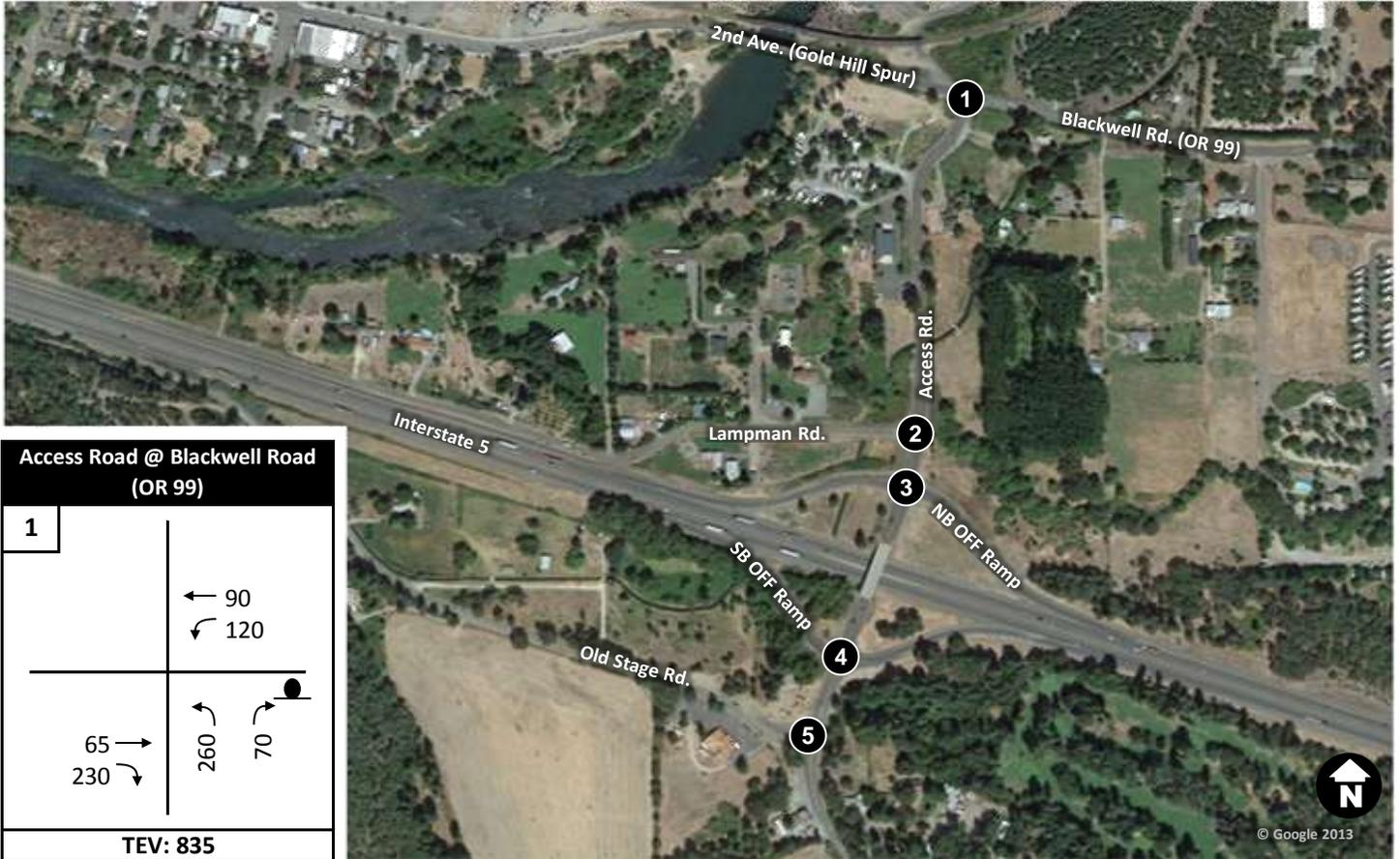
Figure 5-3 (a&b). Future Baseline (2038) Conditions – PM Peak Hour Operations

Figure 5-4 (a&b). Future Baseline (2038) ALUS Conditions – PM Peak Hour Operations

Appendix A. Future Traffic Volume Development

Appendix B. Synchro Output Worksheets

Appendix C. ODOT's Preliminary Traffic Signal Warrants



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

↘ Allowable Movement

● STOP Controlled Approach

TEV: Total Entering Volume

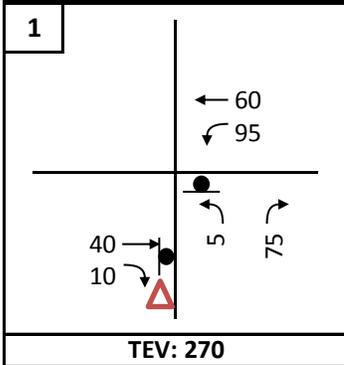
△ Yield Controlled Movement

PM Peak Hour Turning Movement Volume

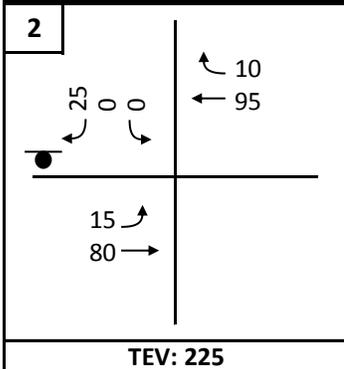
DRAFT Figure 5-1a
Future (2038) Baseline
PM Peak Hour Volumes
I-5 Exit 40



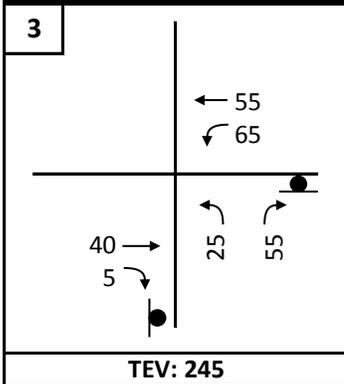
OR 99/OR 234 @ N. River Road



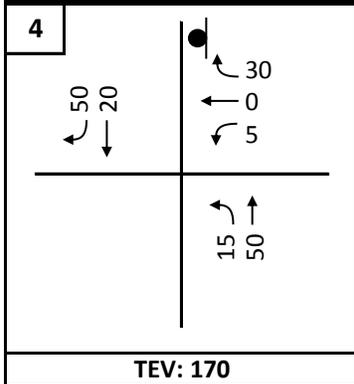
OR 99/OR 234 @ Lampman Road



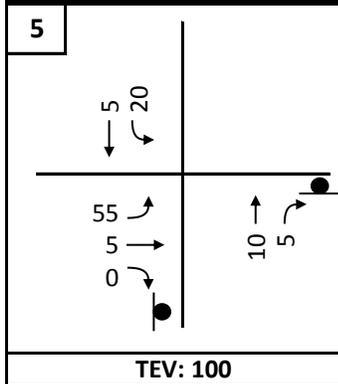
Main Street @ OR 99/OR 234



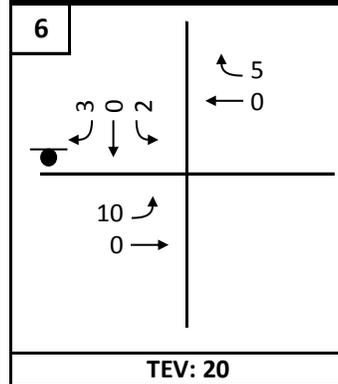
Main Street @ I-5 NB Ramps



Main Street @ I-5 SB Ramps



Main Street @ Profetta Lane



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

→ Allowable Movement

● STOP Controlled Approach

TEV: Total Entering Volume

▲ Yield Controlled Movement

PM Peak Hour Turning Movement Volume

DRAFT Figure 5-1b
Future (2038) Baseline
PM Peak Hour Volumes
I-5 Exit 43



Access Road @ Blackwell Road (OR 99)

1		
	← 90 ↘ 125	
→ 65 ↘ 230	↘ 260 ↘ 75	●
TEV: 845		

Access Road @ Lampman Road

2		
	↘ 25 ← 330	
↘ 10 ↘ 20	↘ 15 → 325	●
TEV: 725		



Access Road @ I-5 NB Ramps

3		
	↘ 95 ← 255	↘ 210 ↑ 5 ↘ 115
	↘ 90 → 130	●
TEV: 900		

Access Road @ I-5 SB Ramps

4		
	↘ 195 ↘ 175	
↘ 60 ↘ 140	↘ 160 ↘ 150	●
TEV: 880		

Access Road @ Old Stage Road

5		
	↘ 50 ← 285	
↘ 35 ↘ 15	↘ 15 → 275	●
TEV: 675		

Potential Truck Stop @ Access Road

6		
	↘ 170 ← 130	
↘ 180 ↘ 2	↘ 10 → 110	●
TEV: 602		

I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

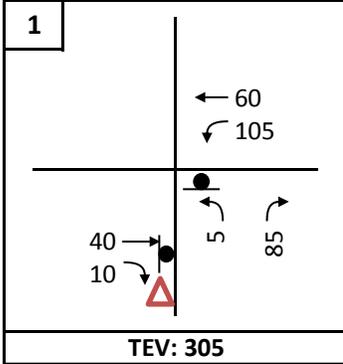
- ↘ Allowable Movement
- ↘ STOP Controlled Approach
- TEV: Total Entering Volume
- ### PM Peak Hour Turning Movement Volume

- STOP Controlled Approach
- △ Yield Controlled Movement

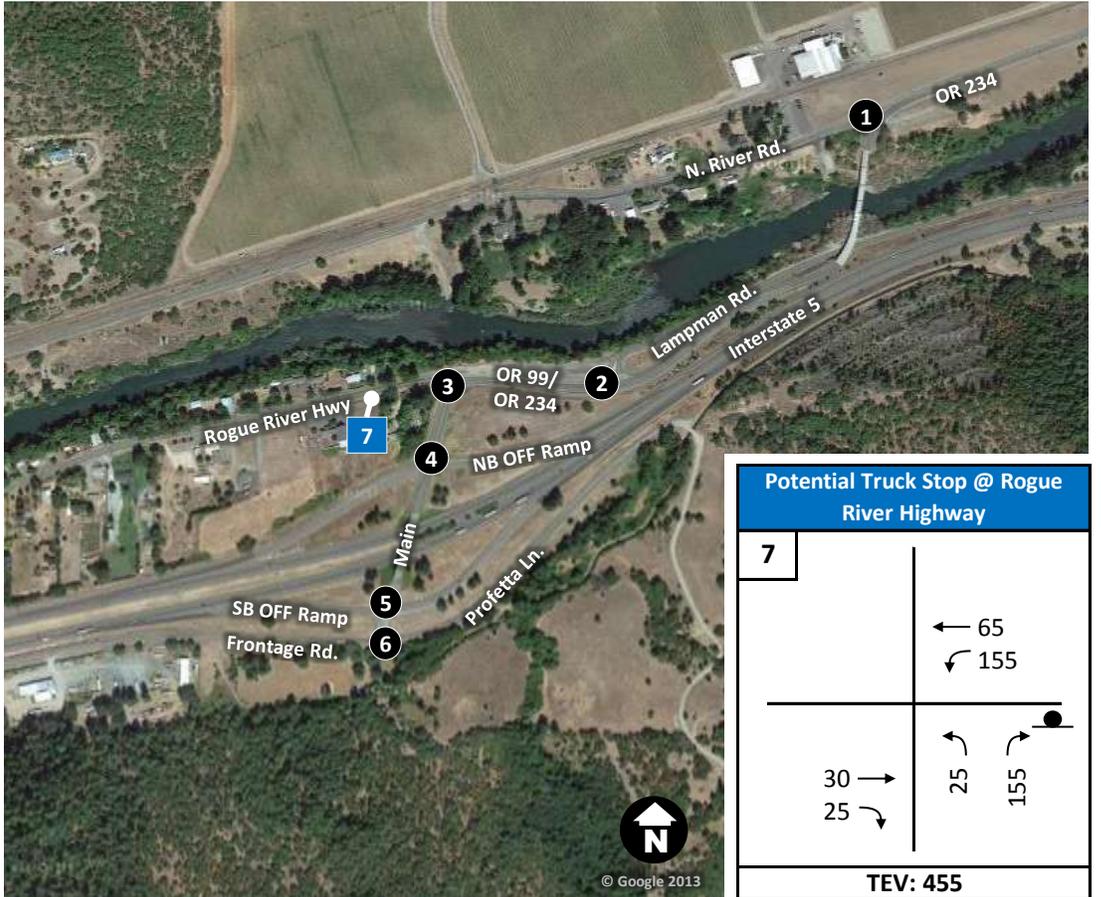
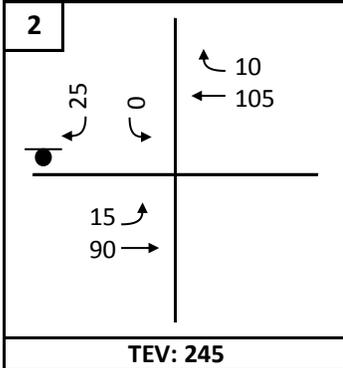
DRAFT Figure 5-2a
Future (2038) Baseline ALUS
PM Peak Hour Volumes
I-5 Exit 40



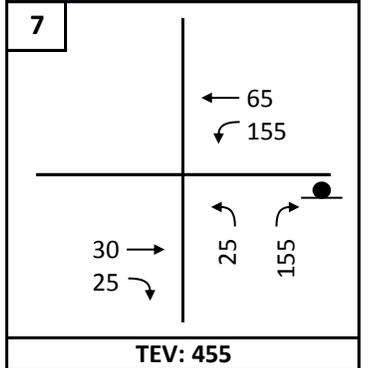
OR 99/OR 234 @ N. River Road



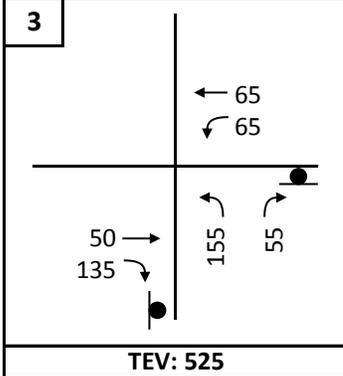
OR 99/OR 234 @ Lampman Road



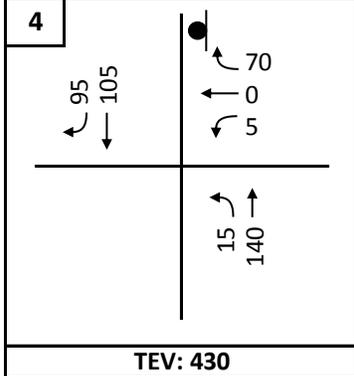
Potential Truck Stop @ Rogue River Highway



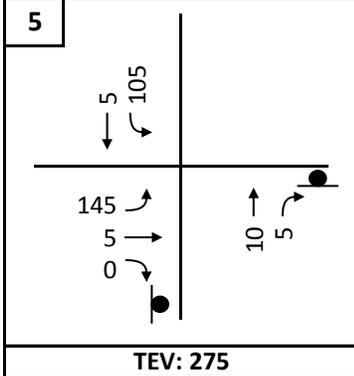
Main Street @ OR 99/OR 234



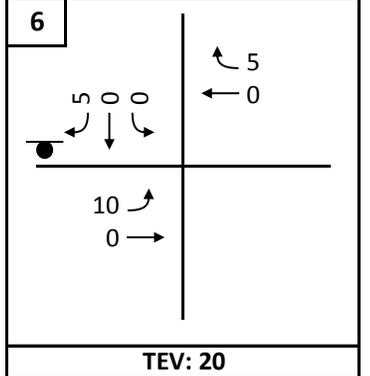
Main Street @ I-5 NB Ramps



Main Street @ I-5 SB Ramps



Main Street @ Profetta Lane



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

→ Allowable Movement

● STOP Controlled Approach

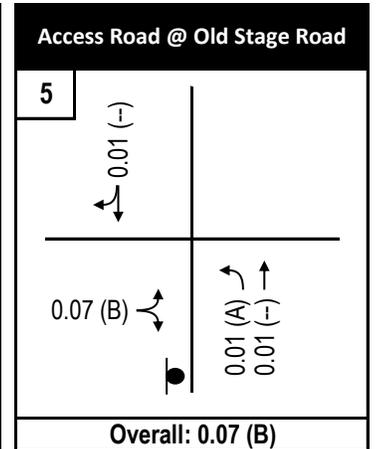
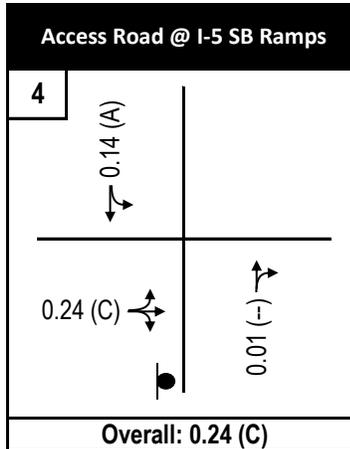
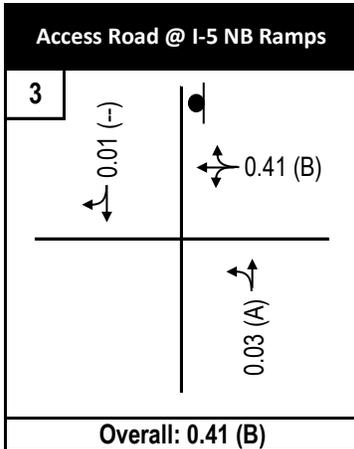
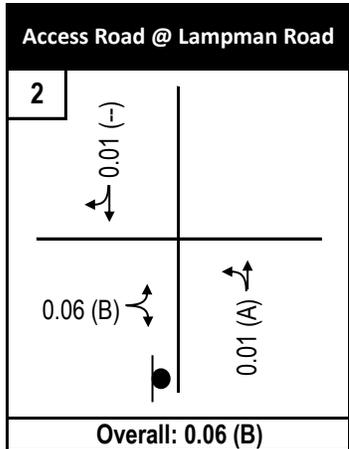
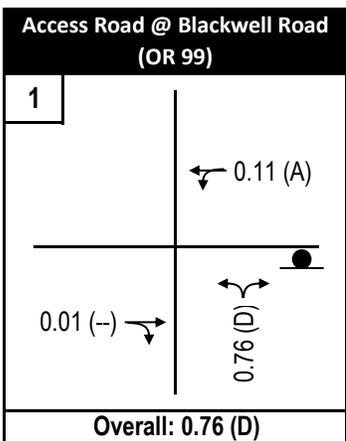
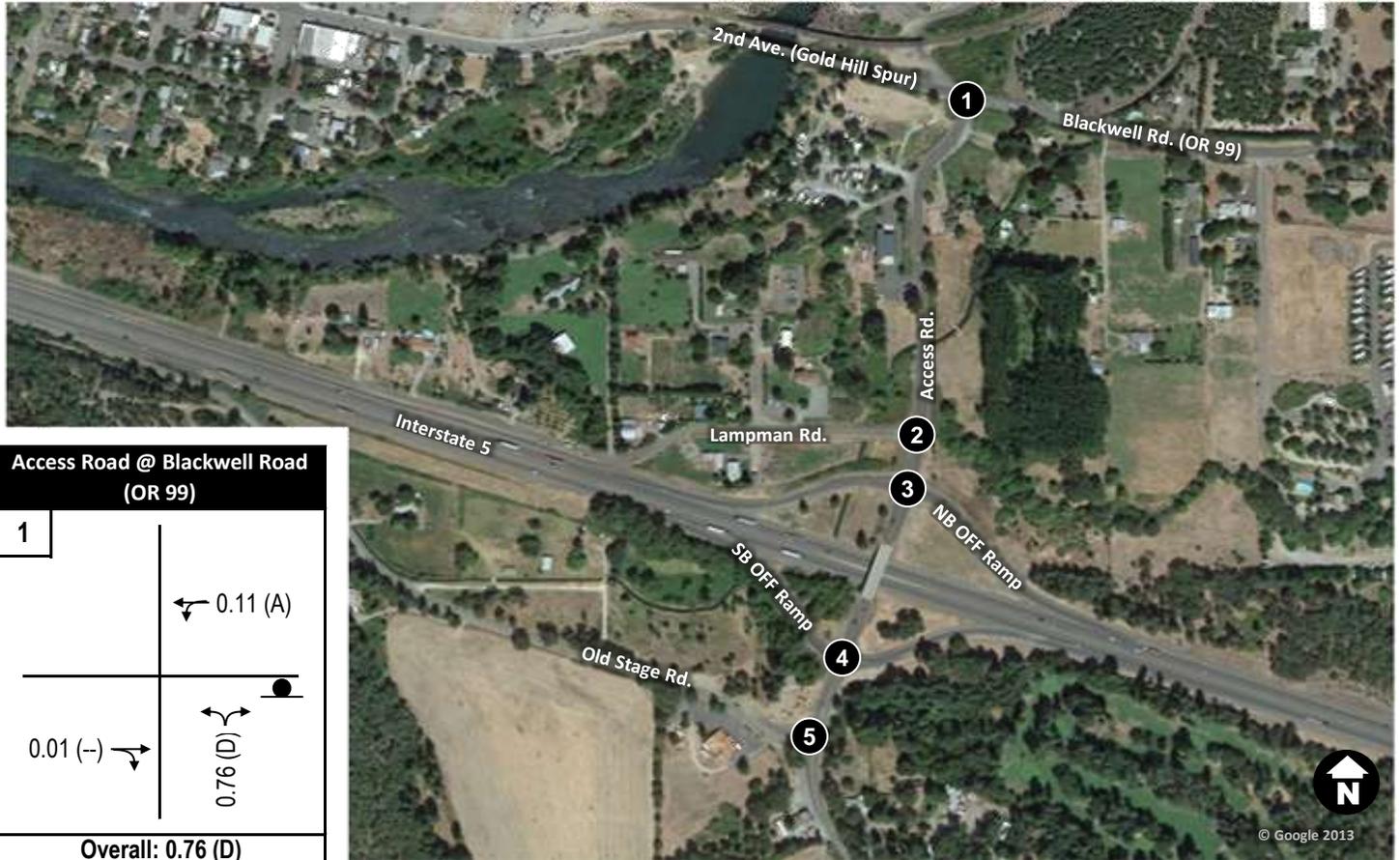
TEV: Total Entering Volume

▲ Yield Controlled Movement

PM Peak Hour Turning Movement Volume

DRAFT Figure 5-2b
 Future (2038) Baseline ALUS
 PM Peak Hour Volumes
 I-5 Exit 43





I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

↔ Lane Configuration

● STOP Controlled Approach

0.01 (A) Lane Group V/C (LOS)
Volume-to-Capacity Ratio (Level of Service)

△ Yield Controlled Movement

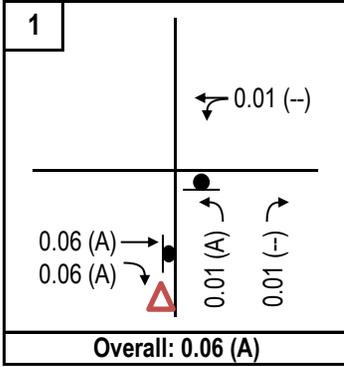
(--) LOS only reported for stopped or yielding movement

*Intersection operations based on HCM 2000 Methodology

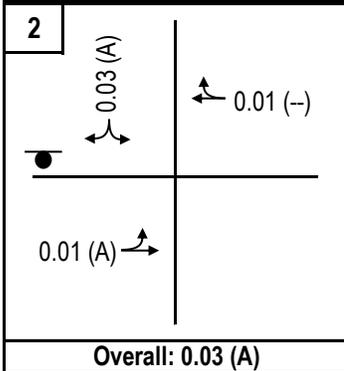
DRAFT Figure 5-3a
Future (2038) Baseline
PM Peak Hour Operations
I-5 Exit 40



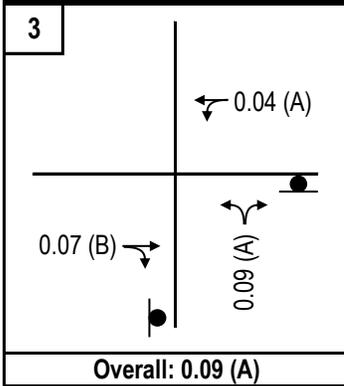
OR 99 /OR 234 @ N. River Road ¹



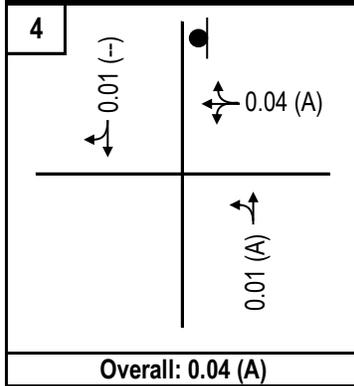
OR 99/OR 234 @ Lampman Road



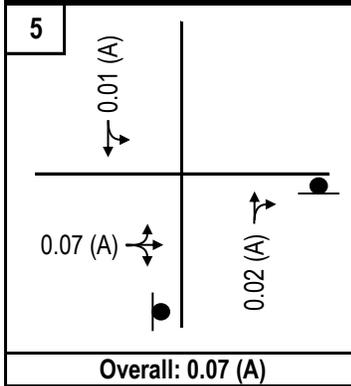
Main Street @ OR 99/OR 234 ^{1,2}



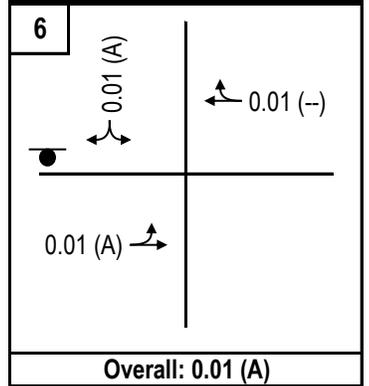
Main Street @ I-5 NB Ramps



Main Street @ I-5 SB Ramps ¹



Main Street @ Profetta Lane



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

↔ Lane Configuration

● STOP Controlled Approach

△ Yield Controlled Movement

0.01 (A) Lane Group V/C (LOS)

Volume-to-Capacity Ratio (Level of Service)

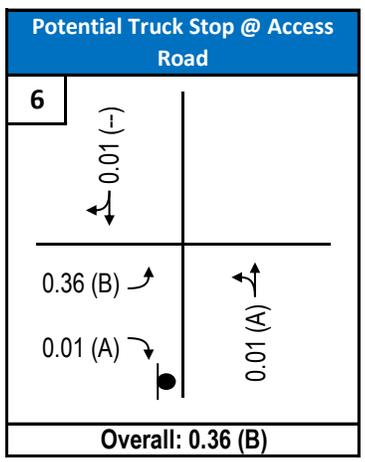
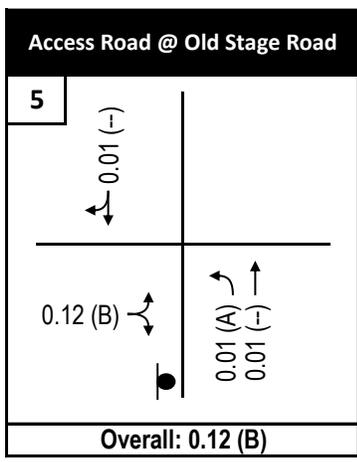
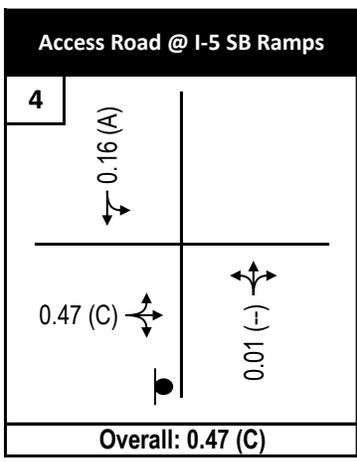
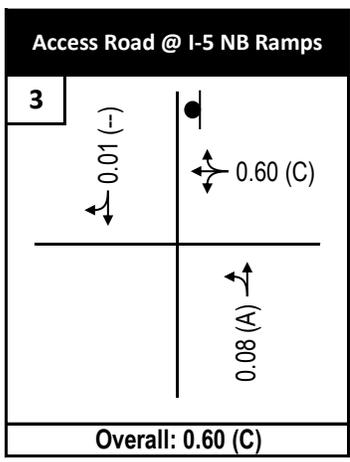
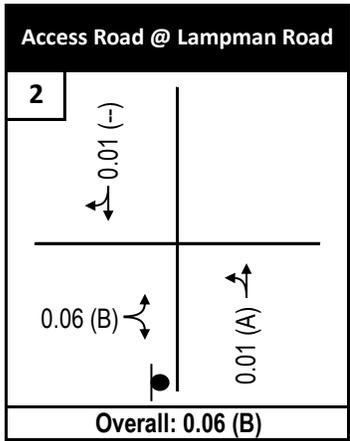
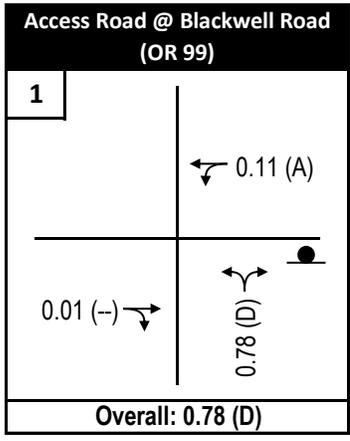
(--) LOS only reported for stopped or yielding movement

¹ Intersection operations analyzed with alternative geometry

² Intersection operations based on HCM 2000 Methodology

DRAFT Figure 5-3b
 Future (2038) Baseline
 PM Peak Hour Operations
 I-5 Exit 43





I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

↔ Lane Configuration

● STOP Controlled Approach

△ Yield Controlled Movement

0.01 (A) Lane Group V/C (LOS)

Volume-to-Capacity Ratio (Level of Service)

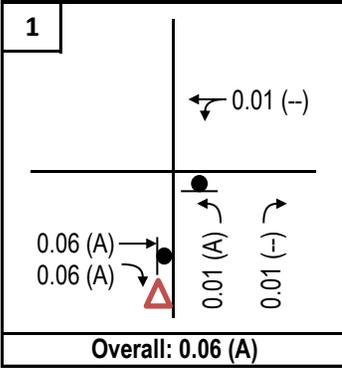
(-) LOS only reported for stopped or yielding movement

*Intersection operations based on HCM 2000 Methodology

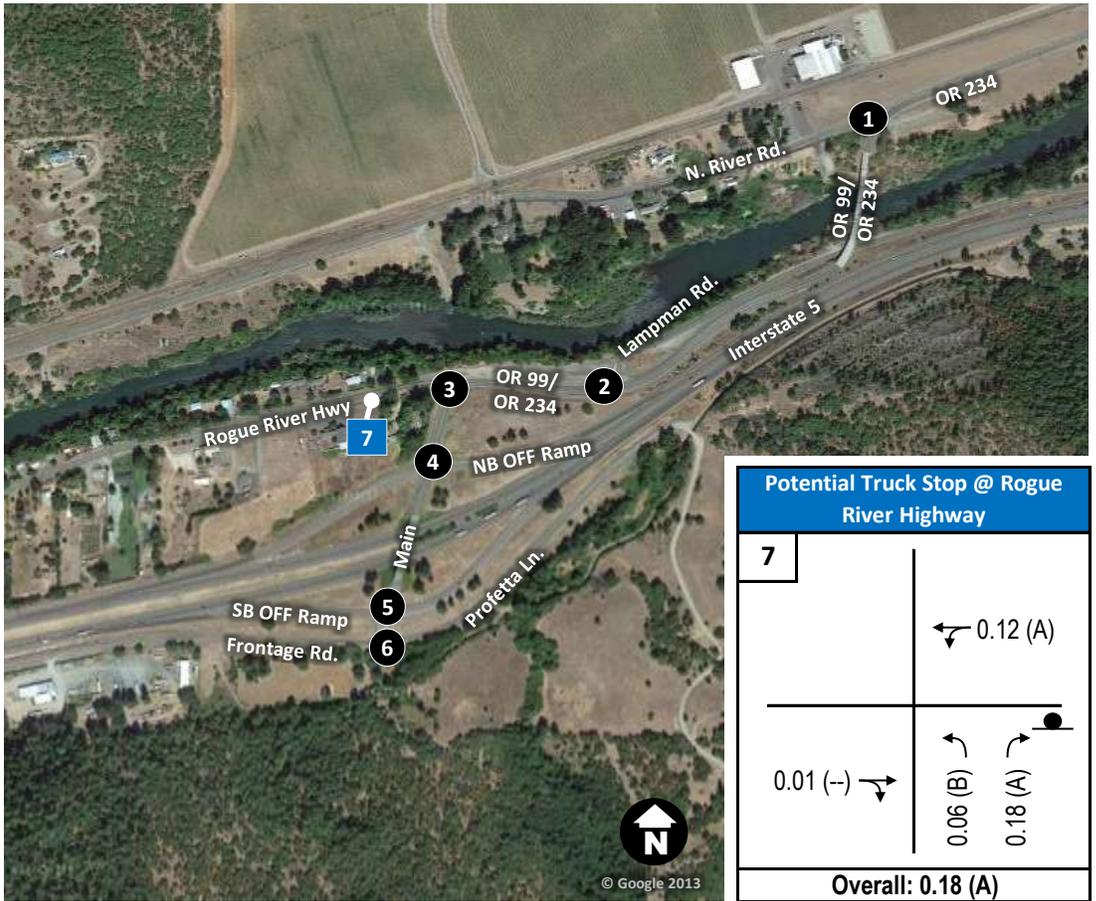
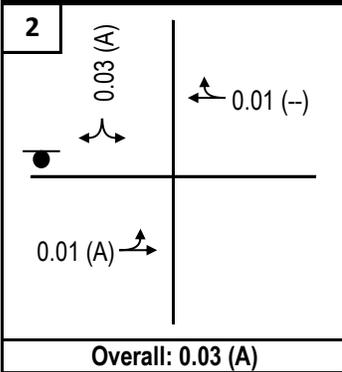
DRAFT Figure 5-4a
 Future (2038) Baseline ALUS
 PM Peak Hour Operations
 I-5 Exit 40



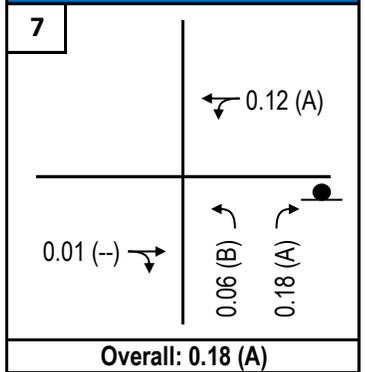
OR 99/OR 234 @ N. River Road ¹



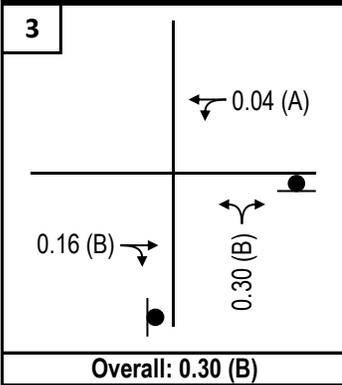
OR 99/OR 234 @ Lampman Road



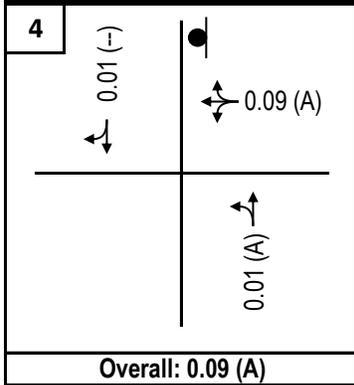
Potential Truck Stop @ Rogue River Highway



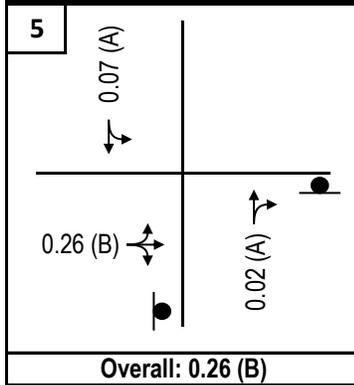
Main Street @ OR 99/OR 234 ^{1,2}



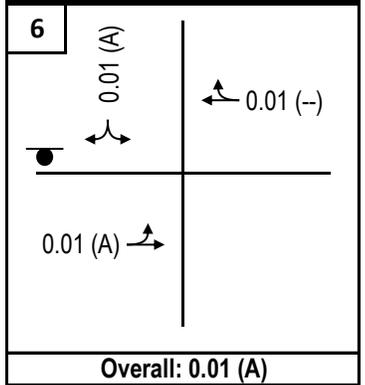
Main Street @ I-5 NB Ramps



Main Street @ I-5 SB Ramps ¹



Main Street @ Profetia Lane



I-5 Exits 40 and 43 Interchange Area Management Plans

Legend

↔ Lane Configuration

● STOP Controlled Approach

△ Yield Controlled Movement

0.01 (A) Lane Group V/C (LOS)

Volume-to-Capacity Ratio (Level of Service)

(--) LOS only reported for stopped or yielding movement

¹ Intersection operations analyzed with alternative geometry

² Intersection operations based on HCM 2000 Methodology

DRAFT Figure 5-4b
 Future (2038) Baseline ALUS
 PM Peak Hour Operations
 I-5 Exit 43



**I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans**

**DRAFT Technical Memorandum #5
Appendix A: Future Traffic Volume Development**

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

June 2013

			UPDATED								
N-S ID	Synchro ID	Intersection	Movement	Existing Counts		Existing		Seasonal Adjustment Factor	Existing Seasonally Adj. 1-Hr Volume Peak	Volume Balancing Adjustments	2012 Balanced Volumes Peak
				1-Hr Volume PM Peak	Heavy Vehicle Count	Heavy Vehicle Percentage	Heavy Vehicle Percentage				
1	10	Access Road @ OR 99 (Blackwell Road/Upper River Road)	EBL	0		0%		1.06	0	0	0
			EBT	53		0%		1.06	55	0	55
			EBR	165		0%		1.06	175	30	205
			WBL	55	1	2%		1.06	60	15	75
			WBT	74	2	3%		1.06	80	0	80
			WBR	0		0%		1.06	0	0	0
			NBL	207	2	1%		1.06	220	15	235
			NBT	0		0%		1.06	0	0	0
			NBR	32	0	0%		1.06	35	0	35
			SBL	0		0%		1.06	0	0	0
			SBT	0		0%		1.06	0	0	0
			SBR	0		0%		1.06	0	0	0
			TEV			586	5				625
2	20	Access Road @ Lampan Road	EBL	8		0%		1.06	10	0	10
			EBT	0		0%		1.06	0	0	0
			EBR	12		0%		1.06	15	0	15
			WBL	0		0%		1.06	0	0	0
			WBT	0		0%		1.06	0	0	0
			WBR	0		0%		1.06	0	0	0
			NBL	6		0%		1.06	5	5	10
			NBT	234	2	1%		1.06	250	10	260
			NBR	0		0%		1.06	0	0	0
			SBL	0		0%		1.06	0	0	0
			SBT	205	1	0%		1.06	215	45	260
			SBR	17		0%		1.06	20	0	20
			TEV			482	3				515
3	30	Access Road @ I-5 IC 40 NB Ramps	EBL	0		0%			0	0	0
			EBT	0		0%			0	0	0
			EBR	0		0%			0	0	0
			WBL	42		0%		1.15	50	5	55
			WBT	2	1	50%		1.15	2	0	2
			WBR	148	1	1%		1.15	170	0	170
			NBL	25		0%		1.15	30	-5	25
			NBT	89	1	1%		1.15	100	0	100
			NBR	0		0%			0	0	0
			SBL	0		0%			0	0	0
			SBT	165	2	1%		1.15	190	10	200
			SBR	67	2	3%		1.15	75	0	75
			TEV			538	7				617
4	40	Access Road @ I-5 IC 40 SB Ramps	EBL	47		0%		1.09	50	0	50
			EBT	0		0%		1.09	0	0	0
			EBR	20		0%		1.09	20	5	25
			WBL	0		0%			0	0	0
			WBT	0		0%			0	0	0
			WBR	0		0%			0	0	0
			NBL	0		0%			0	0	0
			NBT	73		0%		1.06	75	0	75
			NBR	37		0%		1.09	40	0	40
			SBL	132		0%		1.09	145	-5	140
			SBT	109		0%		1.06	115	0	115
			SBR	0		0%			0	0	0
			TEV			418	0				445
5	50	Access Road @ Old Stage Road	EBL	31		0%		1.06	35	0	35
			EBT	0		0%		1.06	0	0	0
			EBR	4		0%		1.06	5	0	5
			WBL	0		0%		1.06	0	0	0
			WBT	0		0%		1.06	0	0	0
			WBR	0		0%		1.06	0	0	0
			NBL	10		0%		1.06	10	0	10
			NBT	76		0%		1.06	80	0	80
			NBR	0		0%		1.06	0	0	0
			SBL	0		0%		1.06	0	0	0
			SBT	99		0%		1.06	105	-5	100
			SBR	36	1	3%		1.06	40	0	40
			TEV			256	1				275
20	200	Truck Stop Driveway @ Old Stage Rd (N-S)	EBL								
			EBT								
			EBR								
			WBL								
			WBT								
			WBR								
			NBL								
			NBT								90
200	200	Volume Difference: 0	SBL								
			SBT								105
			SBR								
TEV				0	0			0	0	195	
1	60	OR 99 (Rogue River Highway) @ OR 234 (2nd Avenue) N. River Road	EBL		0	0%		1.06	0	0	0
			EBT	32	0	0%		1.06	35	0	35
			EBR	0	0	0%		1.06	0	0	0
			WBL	77	1	1%		1.06	80	0	80
			WBT	53	1	2%		1.06	55	0	55
			WBR	0	0	0%		1.06	0	0	0
			NBL		0	0%		1.06	0	0	0
			NBT		0	0%		1.06	0	0	0
			NBR	56	2	4%		1.06	60	0	60
			SBL		0	0%		1.06	0	0	0
			SBT		0	0%		1.06	0	0	0
			SBR		0	0%		1.06	0	0	0
			TEV			218	4				230

		UPDATED											
N-S ID	Synchro ID	Intersection	Movement	Existing Counts	Existing	Existing	Seasonal	Existing	Volume Balancing	2012			
				1-Hr Volume PM Peak	Heavy Vehicle Count	Heavy Vehicle Percentage	Adjustment Factor	Seasonally Adj. 1-Hr Volume Peak			Adjustments	Balanced Volumes Peak	
62	OR 99 (Rogue River Highway) @ N. River Road Connection		EBL		0	0%	1.06	0	0	0			
			EBT		0	0%	1.06	0	0	0			
			EBR	11	0	0%	1.06	10	0	10			
			Count Date: 10/23/2012			WBL	77	1	1%	1.06	80	0	80
			WBT	0	0	0%	1.06	0	0	0	0		
			WBR	0	0	0%	1.06	0	0	0	0		
			PM Peak Hour: 3:15 PM-4:15 PM			NBL	6	0	0%	1.06	5	0	5
			PM Peak Hour Used: 3:30 PM-4:30 PM			NBT		0	0%	1.06	0	0	0
			NBR	56	2	4%	1.06	60	0	60			
			SBL		0	0%	1.06	0	0	0			
			SBT		0	0%	1.06	0	0	0			
			SBR		0	0%	1.06	0	0	0			
PHF: 0.88			TEV	150	3			155	0	155			
65	N. River Road @ N. River Road Connection		EBL		0	0%	1.06	0	0	0			
			EBT	32	0	0%	1.06	35	0	35			
			EBR	11	0	0%	1.06	10	0	10			
			Count Date: 10/23/2012			WBL		0	0%	1.06	0	0	
			WBT	53	1	2%	1.06	55	0	55			
			WBR	0	0	0%	1.06	0	0	0			
			PM Peak Hour: 3:15 PM-4:15 PM			NBL	6	0	0%	1.06	5	0	5
			PM Peak Hour Used: 3:30 PM-4:30 PM			NBT	0	0	0%	1.06	0	0	0
			NBR	0	0	0%	1.06	0	0	0			
			SBL		0	0%	1.06	0	0	0			
			SBT		0	0%	1.06	0	0	0			
			SBR		0	0%	1.06	0	0	0			
PHF: 0.88			TEV	102	1			105	0	105			
2	OR 99 (Rogue River Highway) @ Lampman Road		EBL	12		0%	1.22	15	0	15			
			EBT	141		0%	1.22	170	-105	65			
			EBR	0		0%	1.22	0	0	0			
			Count Date: 1/8/13			WBL	0		0%	1.22	0	0	
			WBT	60		0%	1.22	75	5	80			
			WBR	7		0%	1.22	10	0	10			
			PM Peak Hour: 3:30 PM-4:30 PM			NBL	0		0%	1.22	0	0	
			PM Peak Hour Used: 3:30 PM-4:30 PM			NBT	0		0%	1.22	0	0	
			NBR	0		0%	1.22	0	0	0			
			SBL	2		0%	1.22	0	0	0			
			SBT	0		0%	1.22	0	0	0			
			SBR	19		0%	1.22	25	-5	20			
PHF: 0.88			TEV	241	0			295	-105	190			
3	Main Street @ OR 99 (Rogue River Highway)		EBL	0		0%	1.06	0	0	0			
			EBT	28		0%	1.06	30	5	35			
			EBR	3		0%	1.06	5	0	5			
			Count Date: 10/22/2012			WBL	48		0%	1.06	50	0	50
			WBT	44		0%	1.06	45	5	50			
			WBR	0		0%	1.06	0	0	0			
			PM Peak Hour: 1:15 AM-2:15 AM			NBL	22		0%	1.06	25	0	25
			PM Peak Hour Used: 3:30 PM-4:30 PM			NBT	0		0%	1.06	0	0	0
			NBR	43	1	2%	1.06	45	0	45			
			SBL	0		0%	1.06	0	0	0			
			SBT	0		0%	1.06	0	0	0			
			SBR	0		0%	1.06	0	0	0			
PHF: 0.90			TEV	188	1			200	10	210			
4	Main Street @ I-5 IC 43 NB Ramps		EBL	0		0%		0	0	0			
			EBT	0		0%		0	0	0			
			EBR	0		0%		0	0	0			
			Count Date: 10/22/2012			WBL	2		0%	1.09	2	3	5
			WBT	0		0%	1.09	0	0	0			
			WBR	25		0%	1.09	25	0	25			
			PM Peak Hour: 4:00 PM-5:00 PM			NBL	4		0%	1.09	5	5	10
			PM Peak Hour Used: 3:30 PM-4:30 PM			NBT	40	1	3%	1.06	40	5	45
			NBR	0		0%	1.06	0	0	0			
			SBL	0		0%	1.06	0	0	0			
			SBT	9		0%	1.06	10	5	15			
			SBR	34		0%	1.09	35	5	40			
PHF: 0.95			TEV	114	1			117	23	140			
5	Main Street @ I-5 IC 43 SB Ramps		EBL	41	1	2%	1.09	45	0	45			
			EBT	3	2	67%	1.09	5	0	5			
			EBR	1		0%	1.09	0	0	0			
			Count Date: 10/22/2012			WBL	0		0%		0	0	0
			WBT	0		0%		0	0	0			
			WBR	0		0%		0	0	0			
			PM Peak Hour: 4:30 PM-5:30 PM			NBL	0		0%		0	0	0
			PM Peak Hour Used: 3:30 PM-4:30 PM			NBT	6		0%	1.06	5	5	10
			NBR	3		0%	1.09	5	0	5			
			SBL	8		0%	1.09	10	5	15			
			SBT	2		0%	1.06	2	3	5			
			SBR	0		0%		0	0	0			
PHF: 0.76			TEV	64	3			72	13	85			
6	Main Street @ Profetta Lane		EBL	8		0%	1.06	10	0	10			
			EBT	0		0%	1.06	0	0	0			
			EBR	0		0%	1.06	0	0	0			
			Count Date: 10/22/2012			WBL	0		0%	1.06	0	0	0
			WBT	0		0%	1.06	0	0	0			
			WBR	1		0%	1.06	2	3	5			
			PM Peak Hour: 3:15 PM-4:15 PM			NBL	0		0%	1.06	0	0	0
			PM Peak Hour Used: 3:30 PM-4:30 PM			NBT	0		0%	1.06	0	0	0
			NBR	0		0%	1.06	0	0	0			
			SBL	1		0%	1.06	2	0	2			
			SBT	0		0%	1.06	0	0	0			
			SBR	2		0%	1.06	2	1	3			
PHF: 0.38			TEV	12	0			16	4	20			

				UPDATED							
				Existing Counts	Existing	Existing	Seasonal Adjustment Factor	Existing Seasonally Adj. 1-Hr Volume Peak	Volume Balancing Adjustments	2012 Balanced Volumes Peak	
N-S ID	Synchro ID	Intersection	Movement	1-Hr Volume PM Peak	Heavy Vehicle Count	Heavy Vehicle Percentage					
21	210	Truck Stop Driveway @ Hwy 99/234	EBL								
			EBT							40	
			EBR								
			WBL								
			WBT							75	
			WBR								
			NBL								
			NBT								
			NBR								
			SBL								
SBT											
SBR											
			TEV	0	0			0	0	115	
7	70	I-5 PM Merge/Diverge EXIT 40	Main S	1597		0%	1.00	1595		1595	
			NB Off	192		0%	1.00	190		190	
			Through	1405		0%	1.00	1405		1405	
			NB On	94		0%	1.00	95		95	
			Main N	1499	0	0%	1.00	1500		1500	
			Main N	1315	0	0%	1.00	1315		1315	
			SB Off	67		0%	1.00	65		65	
			Through	1248		0%	1.00	1250		1250	
			SB On	169		0%	1.00	170		170	
			Main S	1417		0%	1.00	1415		1415	
			TEV	9003	0				9000		
7	70	I-5 PM Merge/Diverge EXIT 43	Main S	1499		0%	1.00	1500		1500	
			NB Off	27		0%	1.00	25		25	
			Through	1472		0%	1.00	1470		1470	
			NB On	38		0%	1.00	40		40	
			Main N	1510	0	0%	1.00	1510		1510	
			Main N	1346	0	0%	1.00	1345		1345	
			SB Off	45		0%	1.00	45		45	
			Through	1301		0%	1.00	1300		1300	
			SB On	14		0%	1.00	15		15	
			Main S	1315		0%	1.00	1315		1315	
			TEV	8567	0						

From 2012 ATR Traffic Data

Northbound 1499
 Southbound 1315

Seasonal Factor from October/July ATR data = 1.09

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N-S ID	Synchro ID	Intersection	Movement	UPDATED		UPDATED		9	10	10		
				2012	6	7	8				2038	2038
				Balanced Volumes	Future Baseline	Future Baseline	Future Baseline	Volume Balancing	Future Baseline	Future-Existing		
				Peak	Background Growth	Background Growth	Rounded Volumes	Adjustments	Volumes	Balanced Volumes		
1	10	Access Road @ OR 99 (Blackwell Road/Upper River Road)	EBL	0		0	0		0	0		
			EBT	55	0.59%	63	65			10		
			EBR	205	0.30%	221	220			230		
			Count Date: 10/24/12									
			2012									
			WBL	75	0.59%	86	85	35		120	45	
			WBT	80	0.59%	92	90			90	10	
			WBR	0		0	0			0	0	
			PM Peak Hour: 4:00 PM-5:00 PM									
			NBL	235	0.30%	253	255	5		260	25	
			NBT	0		0	0			0	0	
			NBR	35	0.59%	40	40	30		70	35	
			PHF: 0.88									
			SBT	0		0	0			0	0	
SBR	0		0	0			0	0				
TEV			685		757	755		835				
2	20	Access Road @ Lampman Road	EBL	10	0.59%	12	10		10	0		
			EBT	0	0.59%	0	0			0	0	
			EBR	15	0.59%	17	15	5		20	5	
			Count Date: 10/24/12									
			2012									
			WBL	0		0	0			0	0	
			WBT	0		0	0			0	0	
			WBR	0		0	0			0	0	
			PM Peak Hour: 4:00 PM-5:00 PM									
			NBL	10	0.59%	12	10	5		15	5	
			NBT	260	0.59%	300	300	20		320	60	
			NBR	0	0.59%	0	0			0	0	
			PHF: 0.80									
			SBT	260	0.59%	300	300	25		325	65	
SBR	20	0.59%	23	25			25	5				
TEV			575		662	660		715				
3	30	Access Road @ I-5 IC 40 NB Ramps	EBL	0		0	0		0	0		
			EBT	0		0	0			0	0	
			EBR	0		0	0			0	0	
			Count Date: 11/14/2012									
			2012									
			WBL	55	0.99%	69	70			70	15	
			WBT	2	1.68%	3	5			5	3	
			WBR	170	0.95%	212	210			210	40	
			PM Peak Hour: 4:45 PM-5:45 PM									
			NBL	25	0.99%	31	30			30	5	
			NBT	100	0.95%	125	125			125	25	
			NBR	0		0	0			0	0	
			PHF: 0.94									
			SBT	200	0.87%	245	245	5		250	50	
SBR	75	0.95%	94	95			95	20				
TEV			627		779	780		785				
4	40	Access Road @ I-5 IC 40 SB Ramps	EBL	50	0.95%	62	60		60	10		
			EBT	0	1.68%	0	0			0	0	
			EBR	25	0.99%	31	30			30	5	
			Count Date: 10/24/2012									
			2012									
			WBL	0		0	0			0	0	
			WBT	0		0	0			0	0	
			WBR	0		0	0			0	0	
			PM Peak Hour: 3:00 PM-4:00 PM									
			NBL	0		0	0			0	0	
			NBT	75	0.30%	81	80	15		95	20	
			NBR	40	0.99%	50	50			50	10	
			PHF: 0.79									
			SBT	140	0.95%	175	175			175	35	
SBR	115	0.99%	145	145			145	30				
TEV			445		544	540		555				
5	50	Access Road @ Old Stage Road	EBL	35	0.30%	38	40		40	5		
			EBT	0	0.30%	0	0			0	0	
			EBR	5	0.30%	5	5			5	0	
			Count Date: 10/24/2012									
			2012									
			WBL	0		0	0			0	0	
			WBT	0		0	0			0	0	
			WBR	0		0	0			0	0	
			PM Peak Hour: 4:00 PM-5:00 PM									
			NBL	10	0.30%	11	10			10	0	
			NBT	80	0.30%	86	85	20		105	25	
			NBR	0		0	0			0	0	
			PHF: 0.80									
			SBT	100	0.99%	126	125			125	25	
SBR	40	0.99%	50	50			50	10				
TEV			270		316	315		335				
20	200	Truck Stop Driveway @ Old Stage Rd (N-S)	EBL						0	0		
			EBT						0	0		
			EBR						0	0		
			Count Date: 10/24/2012									
			2012									
			WBL							0	0	
			WBT							0	0	
			WBR							0	0	
			PM Peak Hour: 3:30 PM-4:30 PM									
			NBL							0	0	
			NBT	90						115	25	
			NBR							0	0	
			PHF: 0.00									
			SBT	105						130	25	
SBR							0	0				
TEV			195		0	0		245				
1	60	OR 99 (Rogue River Highway) @ OR 234 (2nd Avenue) / N. River Road	EBL	0	0.30%	0	0		0	0		
			EBT	35	0.30%	38	40			40	5	
			EBR	0	0.30%	0	0			0	0	
			Count Date: 10/23/2012									
			2012									
			WBL	80	0.30%	86	85	10		95	15	
			WBT	55	0.30%	59	60			60	5	
			WBR	0	0.30%	0	0			0	0	
			PM Peak Hour: 3:15 PM-4:15 PM									
			NBL	0	0.30%	0	0			0	0	
			NBT	0	0.30%	0	0			0	0	
			NBR	60	0.30%	65	65	10		75	15	
			PHF: 0.88									
			SBT	0	0.30%	0	0			0	0	
SBR	0	0.30%	0	0			0	0				
TEV			230		248	250		270				

Possible mvmnts for balancing

N-S ID	Synchro ID	Intersection	Movement	UPDATED		UPDATED		9	10	10			
				2012	6	7	8						
				Balanced Volumes	Future Baseline	Future Baseline	Future Baseline	Volume Balancing	Future Baseline	Delta			
				Peak	Background Growth	Background Growth	Rounded Volumes	Adjustments	Volumes	Future-Existing			
										Balanced Volumes			
62	OR 99 (Rogue River Highway) @ N. River Road Connection		EBL	0	0.30%	0	0		0	0			
			EBT	0	0.30%	0	0		0	0			
			EBR	10	0.30%	11	10		10	0			
			VOLUMES SPLIT ACROSS 3 NODES										
			Count Date: 10/23/2012										
			WBL	80	0.30%	86	85	10	95	15			
			WBT	0	0.30%	0	0		0	0			
			WBR	0	0.30%	0	0		0	0			
			NBL	5	0.30%	5	5		5	0			
			NBT	0	0.30%	0	0		0	0			
			NBR	60	0.30%	65	65	10	75	15			
			SBL	0	0.30%	0	0		0	0			
			SBT	0	0.30%	0	0		0	0			
			SBR	0	0.30%	0	0		0	0			
TEV	155		167	165		185							
65	N. River Road @ N. River Road Connection		EBL	0	0.30%	0	0		0	0			
			EBT	35	0.30%	38	40		40	5			
			EBR	10	0.30%	11	10		10	0			
			VOLUMES SPLIT ACROSS 3 NODES										
			Count Date: 10/23/2012										
			WBL	0	0.30%	0	0		0	0			
			WBT	55	0.30%	59	60		60	5			
			WBR	0	0.30%	0	0		0	0			
			NBL	5	0.30%	5	5		5	0			
			NBT	0	0.30%	0	0		0	0			
			NBR	0	0.30%	0	0		0	0			
			SBL	0	0.30%	0	0		0	0			
			SBT	0	0.30%	0	0		0	0			
			SBR	0	0.30%	0	0		0	0			
TEV	105		113	115		115							
2	OR 99 (Rogue River Highway) @ Lampman Road		EBL	15	0.30%	16	15		15	0			
			EBT	65	0.30%	70	70	10	80	15			
			EBR	0	0.30%	0	0		0	0			
			Count Date: 1/8/13										
			WBL	0	0.30%	0	0		0	0			
			WBT	80	0.30%	86	85	10	95	15			
			WBR	10	0.30%	11	10		10	0			
			NBL	0	0.30%	0	0		0	0			
			NBT	0	0.30%	0	0		0	0			
			NBR	0	0.30%	0	0		0	0			
			SBL	0	0.30%	0	0		0	0			
			SBT	0	0.30%	0	0		0	0			
			SBR	20	0.30%	22	20	5	25	5			
			TEV	190		205	200		225				
3	Main Street @ OR 99 (Rogue River Highway)		EBL	0	0.30%	0	0		0	0			
			EBT	35	0.30%	38	40		40	5			
			EBR	5	0.30%	5	5		5	0			
			Count Date: 10/22/2012										
			WBL	50	0.30%	54	55	10	65	15			
			WBT	50	0.30%	54	55		55	5			
			WBR	0	0.30%	0	0		0	0			
			NBL	25	0.30%	27	25		25	0			
			NBT	0	0.30%	0	0		0	0			
			NBR	45	0.30%	49	50	5	55	10			
			SBL	0	0.30%	0	0		0	0			
			SBT	0	0.30%	0	0		0	0			
			SBR	0	0.30%	0	0		0	0			
			TEV	210		226	230		245				
4	Main Street @ I-5 IC 43 NB Ramps		EBL	0		0	0		0	0			
			EBT	0		0	0		0	0			
			EBR	0		0	0		0	0			
			Count Date: 10/22/2012										
			WBL	5	0.99%	6	5		5	0			
			WBT	0	1.68%	0	0		0	0			
			WBR	25	0.99%	31	30		30	5			
			NBL	10	0.99%	13	15		15	5			
			NBT	45	0.30%	49	50		50	5			
			NBR	0		0	0		0	0			
			SBL	0		0	0		0	0			
			SBT	15	0.30%	16	15	5	20	5			
			SBR	40	0.99%	50	50		50	10			
			TEV	140		165	165		170				
5	Main Street @ I-5 IC 43 SB Ramps		EBL	45	0.99%	57	55		55	10			
			EBT	5	1.68%	7	5		5	0			
			EBR	0	0.99%	0	0		0	0			
			Count Date: 10/22/2012										
			WBL	0		0	0		0	0			
			WBT	0		0	0		0	0			
			WBR	0		0	0		0	0			
			NBL	0		0	0		0	0			
			NBT	10	0.30%	11	10	0	10	0			
			NBR	5	0.99%	6	5		5	0			
			SBL	15	0.99%	19	20		20	5			
			SBT	5	0.30%	5	5		5	0			
			SBR	0		0	0		0	0			
			TEV	85		105	100		100				
6	Main Street @ Profetta Lane		EBL	10	0.30%	11	10	0	10	0			
			EBT	0	0.30%	0	0		0	0			
			EBR	0	0.30%	0	0		0	0			
			Count Date: 10/22/2012										
			WBL	0	0.30%	0	0		0	0			
			WBT	0	0.30%	0	0		0	0			
			WBR	5	0.30%	5	5		5	0			
			NBL	0		0	0		0	0			
			NBT	0		0	0		0	0			
			NBR	0		0	0		0	0			
			SBL	2	0.30%	2	0	2	2	0			
			SBT	0	0.30%	0	0		0	0			
			SBR	3	0.30%	3	5	-2	3	0			
			TEV	20		22	20		20				

Possible mvmnts for balancing

		UPDATED		UPDATED						
		6	7	8	9	10	10			
N-S ID	Synchro ID	Intersection	Movement	2012 Balanced Volumes Peak	Future Baseline Background Growth	Future Baseline Background Growth	Future Baseline Rounded Volumes	Volume Balancing Adjustments	Future Baseline Balanced Volumes	Delta Future-Existing Balanced Volumes
21	210	Truck Stop Driveway @ Hwy 99/234	EBL						0	0
	210		EBT	40					45	5
	210		EBR						0	0
	210		WBL						0	0
	210		WBT	75					80	5
	210		WBR						0	0
	210	12:00 AM	NBL						0	0
	210	12:00 AM	NBT						0	0
	210		NBR						0	0
	210		SBL						0	0
	210	PHF:	SBT						0	0
	210	0.00	SBR						0	0
			TEV	115		0	0		125	
7	70	I-5 PM Merge/Diverge	Main S	1595		2311	2310		2310	715
	70	EXIT 40	NB Off	190		284	285		285	95
	70		Through	1405		2027	2025		2025	620
	70		NB On	95		128	130		130	35
	70		Main N	1500	1.68%	2155	2155		2155	655
	70		Main N	1315	1.68%	1889	1890		1890	575
	70		SB Off	65		94	95		95	30
	70		Through	1250		1796	1795		1795	545
	70		SB On	170		225	225		225	55
	70		Main S	1415		2020	2020		2020	605
			TEV	9000		12930	12930		12930	
7	70	I-5 PM Merge/Diverge	Main S	1500	1.68%	2155	2155		2155	655
	70	EXIT 43	NB Off	25		38	40		40	15
	70		Through	1470		2117	2115		2115	645
	70		NB On	40		63	65		65	25
	70		Main N	1510		2180	2180		2180	670
	70		Main N	1345		1921	1920		1920	575
	70		SB Off	45		64	65		65	20
	70		Through	1300		1857	1855		1855	555
	70		SB On	15		32	30		30	15
	70		Main S	1315	1.68%	1889	1890		1890	575
			TEV				12315		12315	3750

N-S ID	Synchro ID	Intersection	Movement	IC 40		IC 43		IC 40/43		IC 40/43		Balancing Adjustments	IC 40/43	
				Truck Stop LU Diverted/Pass By Trip Distribution	Truck Stop LU Diverted/Pass By Trips	Truck Stop LU Diverted/Pass By Trips	Truck Stop LU Primary Trips	Truck Stop LU Alt. Scenario Volumes		Truck Stop LU Alt. Scenario Volumes	Truck Stop LU Alt. Scenario Volumes			
1	10	Access Road @ OR 99 (Blackwell Road/Upper River Road)	EBL		0				0	0			0	
			EBT		0				65	65			65	
			EBR		0				230	230			230	
			WBL		0		5		125	125			125	
			WBT		0				90	90			90	
			WBR		0				0	0			0	
			NBL		0				260	260			260	
			NBT		0				0	0			0	
			NBR		0		5		75	75			75	
			SBT		0				0	0			0	
			SBR		0				0	0			0	
TEV												845		
2	20	Access Road @ Lampman Road	EBL		0				10	10			10	
			EBT		0				0	0			0	
			EBR		0				20	20			20	
			WBL		0				0	0			0	
			WBT		0				0	0			0	
			WBR		0				0	0			0	
			NBL		0				15	15			15	
			NBT		0		5		325	325			325	
			NBR		0				0	0			0	
			SBT		0				0	0			0	
			SBR		0		5		330	330			330	
TEV						25	25			25		725		
3	30	Access Road @ I-5 IC 40 NB Ramps	EBL		0				0	0			0	
			EBT		0				0	0			0	
			EBR		0				0	0			0	
			WBL	27%	36		11		117	115			115	
			WBT		0				5	5			5	
			WBR		0				210	210			210	
			NBL	27%	36		25		91	90			90	
			NBT		0		5		130	130			130	
			NBR		0				0	0			0	
			SBT		0				0	0			0	
			SBR		0		5		255	255			255	
TEV						95	95			95		900		
4	40	Access Road @ I-5 IC 40 SB Ramps	EBL		0				60	60			60	
			EBT		0				0	0			0	
			EBR	63%	85		25		140	140			140	
			WBL		0				0	0			0	
			WBT		0				0	0			0	
			WBR		0				0	0			0	
			NBL		0				0	0			0	
			NBT	27%	36		30		161	160			160	
			NBR	63%	85		11		146	145	5		150	
			SBT	27%	36		16		175	175			175	
			SBR		0				197	195			195	
TEV						0	0			0		880		
5	50	Access Road @ Old Stage Road	EBL	-5%	-7				33	35			35	
			EBT		0				0	0			0	
			EBR	5%	7		2		14	15			15	
			WBL		0				0	0			0	
			WBT		0				0	0			0	
			WBR		0				0	0			0	
			NBL		0		2		12	10	5		15	
			NBT	95%	128		41		274	275			275	
			NBR		0				0	0			0	
			SBT	90%	122		41		288	290	-5		285	
			SBR		0				50	50			50	
TEV												675		
20	200	Truck Stop Driveway @ Old Stage Rd (N-S)	EBL	100%	135		43		178	180			180	
			EBT		0				0	0			0	
			EBR	0%	0		2		2	2			2	
			WBL		0				0	0			0	
			WBT		0				0	0			0	
			WBR		0				0	0			0	
			NBL	5%	7		2		9	10			10	
			NBT	-5%	-7				108	110			110	
			NBR		0				0	0			0	
			SBT		0				0	0			0	
			SBR	95%	128		43		130	130			130	
TEV						171	170			170		602		
1	60	OR 99 (Rogue River Highway) @ OR 234 (2nd Avenue) N. River Road	EBL					0	0				0	
			EBT						40	40			40	
			EBR						0	0			0	
			WBL				11		106	105			105	
			WBT						60	60			60	
			WBR						0	0			0	
			NBL						0	0			0	
			NBT						0	0			0	
			NBR				11		86	85			85	
			SBT						0	0			0	
			SBR						0	0			0	
TEV												290		

345

N-S ID	Synchro ID	Intersection	Movement	IC 40		IC 43		IC 40/43		IC 40/43		Balancing Adjustments	IC 40/43		
				Truck Stop LU Diverted/Pass By Trip Distribution	Truck Stop LU Diverted/Pass By Trips	Truck Stop LU Diverted/Pass By Trips	Truck Stop LU Primary Trips	Truck Stop LU Alt. Scenario Volumes							
62		OR 99 (Rogue River Highway) @ N. River Road Connection	EBL			0			0	0			0		
			EBT			0			0	0			0		
			EBR			0			10	10			10		
			Count Date: 10/23/2012												
			WBL			0		11		106	105			105	
			WBT			0				0	0			0	
			WBR			0				0	0			0	
			PM Peak Hour: 3:15 PM-4:15 PM							5	5			5	
			PM Peak Hour Used: 3:30 PM-4:30 PM							0	0			0	
			PHF: 0.88							0	0			0	
TEV												205			
65		N. River Road @ N. River Road Connection	EBL			0			0	0			0		
			EBT			0			40	40			40		
			EBR			0			10	10			10		
			Count Date: 10/23/2012												
			WBL			0			0	0			0		
			WBT			0			60	60			60		
			WBR			0			0	0			0		
			PM Peak Hour: 3:15 PM-4:15 PM							5	5			5	
			PM Peak Hour Used: 3:30 PM-4:30 PM							0	0			0	
			PHF: 0.88							0	0			0	
TEV												115			
2	70	OR 99 (Rogue River Highway) @ Lampman Road	EBL			0			15	15			15		
			EBT			0		11		91	90			90	
			EBR			0				0	0			0	
			Count Date: 1/8/13												
			WBL			0			0	0			0		
			WBT			0		11		106	105			105	
			WBR			0				10	10			10	
			PM Peak Hour: 3:30 PM-4:30 PM							0	0			0	
			PM Peak Hour Used: 3:30 PM-4:30 PM							0	0			0	
			PHF: 0.59 0.88							0	0			0	
TEV								25	25			245			
3	80	Main Street @ OR 99 (Rogue River Highway)	EBL			0			0	0			0		
			EBT			0		11		51	50			50	
			EBR	80%		108		23		136	135			135	
			Count Date: 10/22/2012												
			WBL			0				65	65			65	
			WBT			0		11		66	65			65	
			WBR			0				0	0			0	
			PM Peak Hour: 1:15 AM-2:15 AM							158	155			155	
			PM Peak Hour Used: 3:30 PM-4:30 PM							0	0			0	
			PHF: 0.90							55	55			55	
TEV								0	0			525			
4	90	Main Street @ I-5 IC 43 NB Ramps	EBL			0			0	0			0		
			EBT			0			0	0			0		
			EBR			0				0	0			0	
			Count Date: 10/22/2012												
			WBL			0				5	5			5	
			WBT			0				0	0			0	
			WBR	24%		32		7		69	70			70	
			PM Peak Hour: 4:00 PM-5:00 PM							15	15			15	
			PM Peak Hour Used: 3:30 PM-4:30 PM							142	140			140	
			PHF: 0.95							0	0			0	
TEV								103	105	-5		105			
TEV								98	100			95			
TEV												430			
5	100	Main Street @ I-5 IC 43 SB Ramps	EBL	56%		76		16		147	145			145	
			EBT			0			5	5			5		
			EBR			0				0	0			0	
			Count Date: 10/22/2012												
			WBL			0				0	0			0	
			WBT			0				0	0			0	
			WBR			0				0	0			0	
			PM Peak Hour: 4:30 PM-5:30 PM							0	0			0	
			PM Peak Hour Used: 3:30 PM-4:30 PM							10	10			10	
			PHF: 0.76							5	5			5	
TEV								103	105			105			
TEV								5	5			5			
TEV								0	0			0			
TEV												275			
6	110	Main Street @ Profetta Lane	EBL			0			10	10			10		
			EBT			0			0	0			0		
			EBR			0				0	0			0	
			Count Date: 10/22/2012												
			WBL			0				0	0			0	
			WBT			0				5	5			5	
			WBR			0				0	0			0	
			PM Peak Hour: 3:15 PM-4:15 PM							0	0			0	
			PM Peak Hour Used: 3:30 PM-4:30 PM							0	0			0	
			PHF: 0.38							2	0			0	
TEV								3	5			5			
TEV									0			20			

N-S ID	Synchro ID	Intersection	Movement	IC 40		IC 43		IC 40/43		IC 40/43		IC 40/43		
				Truck Stop LU Diverted/Pass By Trip Distribution	Truck Stop LU Diverted/Pass By Trips 135	Truck Stop LU Diverted/Pass By Trips 135	Truck Stop LU Primary Trips	Truck Stop LU Alt. Scenario Volumes	Truck Stop LU Alt. Scenario Volumes ROUNDED	Balancing Adjustments	Truck Stop LU Alt. Scenario Volumes BALANCED			
21	210	Truck Stop Driveway @ Hwy 99/234	EBL			0			0	0			0	
			EBT	-10%		-14			31	30			30	
			EBR	10%		14	11		25	25			25	
			WBL	90%		122	34		156	155			155	
			WBT	-10%		-14			66	65			65	
			WBR			0			0	0			0	
			NBL	10%		14	11		25	25			25	
			NBT			0			0	0			0	
			NBR	90%		122	34		156	155			155	
			SBL			0			0	0			0	
			SBT			0			0	0			0	
			SBR			0			0	0			0	
			TEV											455
7	70	I-5 PM Merge/Diverge EXIT 40	Main S										2295	
			NB Off											330
			Through											1965
			NB On											190
			Main N											2155
			Main N											1890
			SB Off											200
			Through											1690
			SB On											325
			Main S											2015
TEV														
7	70	I-5 PM Merge/Diverge EXIT 43	Main S										2155	
			NB Off											75
			Through											2080
			NB On											110
			Main N											2190
			Main N											1925
			SB Off											150
			Through											1775
			SB On											115
			Main S											1890
TEV														

**I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans**

**DRAFT Technical Memorandum #5
Appendix B: Traffic Operations Worksheets**

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

June 2013

Intersection

Intersection Delay (sec/veh): 14.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	65	230	120	90	260	70
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	2	3	1	0
Movement Flow Rate	72	256	133	100	289	78
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	0	0	328	0	566	200
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	366	-
Follow-up Headway	-	-	2.218	-	3.509	3.3
Pot Capacity-1 Maneuver	-	-	1232	-	487	846
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	704	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	1232	-	431	846
Mov Capacity-2 Maneuver	-	-	-	-	431	-
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	624	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	4.7	32.7
HCM LOS	A	A	D

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	481				
HCM Control Delay (s)	32.7	-	-	8.276	-
HCM Lane VC Ratio	0.762	-	-	0.108	-
HCM Lane LOS	D	-	-	A	-
HCM 95th Percentile Queue (veh)	6.586	-	-	0.363	-

HCM 2010 TWSC
20: Access Rd & Lampman Rd

5/21/2013

Intersection						
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Intersection Delay (sec/veh):	0.7
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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	10	20	15	320	325	25
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	0	0			0
Median Width	12			0	0	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	1	0	0
Movement Flow Rate	11	22	17	356	361	28
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1			Major 2	
Conflicting Flow Rate - All	765	375	389	0	0
Stage 1	375	-	-	-	-
Stage 2	390	-	-	-	-
Follow-up Headway	3.5	3.3	2.2	-	-
Pot Capacity-1 Maneuver	374	676	1181	-	-
Stage 1	699	-	-	-	-
Stage 2	689	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-
Mov Capacity-1 Maneuver	367	676	1181	-	-
Mov Capacity-2 Maneuver	367	-	-	-	-
Stage 1	699	-	-	-	-
Stage 2	677	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	12.3	0.4	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	SBT	SBR
Capacity (vph)			528		
HCM Control Delay (s)	8.092	-	12.3	-	-
HCM Lane VC Ratio	0.014	-	0.063	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th Percentile Queue (veh)	0.043	-	0.201	-	-

Intersection												
Intersection Delay (sec/veh):	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	70	5	210	30	125	0	0	250	95
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None											
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles(%)	0	0	0	0	50	1	0	1	0	0	1	3
Movement Flow Rate	0	0	0	74	5	221	32	132	0	0	263	100
Number of Lanes	0	0	0	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 1		Major 1		Major 2	
Conflicting Flow Rate - All	509	559	132	363	0	0
Stage 1	196	196	-	-	-	-
Stage 2	313	363	-	-	-	-
Follow-up Headway	3.5	4.45	3.309	2.2	-	2.2
Pot Capacity-1 Maneuver	478	378	920	1207	-	1466
Stage 1	810	657	-	-	-	-
Stage 2	702	548	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	0
Mov Capacity-1 Maneuver	467	367	920	1207	-	1466
Mov Capacity-2 Maneuver	467	367	-	-	-	-
Stage 1	787	638	-	-	-	-
Stage 2	702	548	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	13.4	1.6	0
HCM LOS	B	A	A

Lane	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (vph)				727			
HCM Control Delay (s)	8.063	-	-	13.4	0	-	-
HCM Lane VC Ratio	0.026	-	-	0.413	-	-	-
HCM Lane LOS	A	-	-	B	A	-	-
HCM 95th Percentile Queue (veh)	0.081	-	-	2.03	0	-	-

HCM 2010 TWSC
40: Access Rd & IC 40 SB OFF Ramp

5/21/2013

Intersection												
Intersection Delay (sec/veh):	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	60	0	30	0	0	0	0	95	50	175	145	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free								
Right Turn Channelized	None											
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	67	0	33	0	0	0	0	106	56	194	161	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Major/Minor	Minor 2			Major 1			Major 2		
Conflicting Flow Rate - All	683	711	161	161	0	0	162	0	0
Stage 1	549	549	-	-	-	-	-	-	-
Stage 2	134	162	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	366	361	889	1430	-	-	1429	-	-
Stage 1	524	520	-	-	-	-	-	-	-
Stage 2	874	768	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	324	307	889	1430	-	-	1429	-	-
Mov Capacity-2 Maneuver	324	307	-	-	-	-	-	-	-
Stage 1	524	443	-	-	-	-	-	-	-
Stage 2	874	768	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	16.6	0	4.3
HCM LOS	C	A	A

Lane	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (vph)				411			
HCM Control Delay (s)	0	-	-	16.6	7.916	-	-
HCM Lane VC Ratio	-	-	-	0.243	0.136	-	-
HCM Lane LOS	A	-	-	C	A	-	-
HCM 95th Percentile Queue (veh)	0	-	-	0.942	0.471	-	-

HCM 2010 TWSC
50: Old Stage Rd & Access Rd

5/21/2013

Intersection						
Intersection Delay (sec/veh):	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	40	5	10	105	125	50
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	0	40			0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	3
Movement Flow Rate	44	6	11	117	139	56
Number of Lanes	1	0	1	1	1	0

Major/Minor	Major 1			Major 2		
Conflicting Flow Rate - All	306	167	195	0	0	0
Stage 1	167	-	-	-	-	-
Stage 2	139	-	-	-	-	-
Follow-up Headway	3.5	3.3	2.2	-	-	-
Pot Capacity-1 Maneuver	690	882	1390	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-	-
Mov Capacity-1 Maneuver	685	882	1390	-	-	-
Mov Capacity-2 Maneuver	685	-	-	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	886	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	10.5	0.7	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	SBT	SBR
Capacity (vph)			702		
HCM Control Delay (s)	7.611	-	10.5	-	-
HCM Lane VC Ratio	0.008	-	0.071	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th Percentile Queue (veh)	0.024	-	0.229	-	-

Queuing and Blocking Report 2013

5/21/2013

Intersection: 10: Access Rd & 2nd Ave (OR 99 and OR 234)/Blackwell Rd (OR 99)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	21	86	179
Average Queue (ft)	1	26	89
95th Queue (ft)	8	63	151
Link Distance (ft)	923	1032	267
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 20: Access Rd & Lampman Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	33	55
Average Queue (ft)	17	7
95th Queue (ft)	41	33
Link Distance (ft)	627	129
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 30: Access Rd & IC 40 NB OFF Ramp

Movement	WB	NB	SB
Directions Served	LTR	LT	TR
Maximum Queue (ft)	106	48	4
Average Queue (ft)	58	8	0
95th Queue (ft)	93	35	3
Link Distance (ft)	868	566	129
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report 2013

5/21/2013

Intersection: 40: Access Rd & IC 40 SB OFF Ramp

Movement	EB	SB
Directions Served	LTR	LT
Maximum Queue (ft)	69	66
Average Queue (ft)	34	21
95th Queue (ft)	56	54
Link Distance (ft)	813	566
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 50: Old Stage Rd & Access Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	45	22
Average Queue (ft)	27	2
95th Queue (ft)	51	14
Link Distance (ft)	997	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		40
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Zone Summary

Zone wide Queuing Penalty: 0

Intersection realigned due to non-standard stop-control in order to produce HCM results.

Intersection

Intersection Delay (sec/veh): 1.7

EB approach represents existing NB approach. SB approach represents existing EB approach.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	5	75	95	60	40	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Yield	Yield
Storage Length	25			0	0	50
Median Width		12	12		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	4	0	0	0	0
Movement Flow Rate	6	83	106	67	44	11
Number of Lanes	1	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	173	0	0	0	235	140
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	95	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1416	-	-	-	758	913
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	934	-
Time blocked-Platoon(%)	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1416	-	-	-	755	913
Mov Capacity-2 Maneuver	-	-	-	-	755	-
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	930	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.5	0	9.1
HCM LOS	A	A	A

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					944
HCM Control Delay (s)	7.552	-	-	-	9.1
HCM Lane VC Ratio	0.004	-	-	-	0.059
HCM Lane LOS	A	-	-	-	A
HCM 95th Percentile Queue (veh)	0.012	-	-	-	0.187

Intersection

Intersection Delay (sec/veh): 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	15	80	95	10	0	25
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0
Movement Flow Rate	17	89	106	11	0	28
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	117	0	0	0	235	112
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	123	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1484	-	-	-	758	947
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	907	-
Time blocked-Platoon(%)	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1484	-	-	-	749	947
Mov Capacity-2 Maneuver	-	-	-	-	749	-
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	896	-

Approach	EB	WB	SB
HCM Control Delay (s)	1.2	0	8.9
HCM LOS	A	A	A

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					947
HCM Control Delay (s)	7.453	-	-	-	8.9
HCM Lane VC Ratio	0.011	-	-	-	0.029
HCM Lane LOS	A	-	-	-	A
HCM 95th Percentile Queue (veh)	0.034	-	-	-	0.091

HCM Unsignalized Intersection Capacity Analysis

81: Main St./OR 99 EB Realign & OR 99 WB

5/21/2013



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	65	55	25	55	40	5
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	68	58	26	58	42	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		195	0	237	166
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		195	0	237	166
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	96		96	95	93	99
cM capacity (veh/h)	1636		675	1085	642	700
Direction, Lane #						
	WB 1	NB 1	SB 1			
Volume Total	126	84	47			
Volume Left	68	0	42			
Volume Right	58	58	0			
cSH	1636	912	648			
Volume to Capacity	0.04	0.09	0.07			
Queue Length 95th (ft)	3	8	6			
Control Delay (s)	4.1	9.3	11.0			
Lane LOS	A	A	B			
Approach Delay (s)	4.1	9.3	11.0			
Approach LOS		A	B			
Intersection Summary						
Average Delay			7.1			
Intersection Capacity Utilization			23.6%		ICU Level of Service	A
Analysis Period (min)			15			

Intersection realigned due to non-standard stop-control in order to produce HCM results.

SB approach represents existing EB approach.

HCM 2010 TWSC
90: Main St & IC 43 NB OFF Ramp

5/21/2013

Intersection												
Intersection Delay (sec/veh):	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	5	0	30	15	50	0	0	20	50
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None											
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles(%)	0	0	0	0	0	0	0	3	0	0	0	0
Movement Flow Rate	0	0	0	5	0	32	16	53	0	0	21	53
Number of Lanes	0	0	0	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 1		Major 1		Major 2				
Conflicting Flow Rate - All	133	159	53	74	0	0	53	0	0
Stage 1	85	85	-	-	-	-	-	-	-
Stage 2	48	74	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	844	737	1020	1538	-	-	1566	-	-
Stage 1	928	828	-	-	-	-	-	-	-
Stage 2	971	837	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	837	729	1020	1538	-	-	1566	-	-
Mov Capacity-2 Maneuver	837	729	-	-	-	-	-	-	-
Stage 1	918	819	-	-	-	-	-	-	-
Stage 2	971	837	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	8.8	1.7	0
HCM LOS	A	A	A

Lane	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (vph)				989			
HCM Control Delay (s)	7.365	-	-	8.8	0	-	-
HCM Lane VC Ratio	0.01	-	-	0.037	-	-	-
HCM Lane LOS	A	-	-	A	A	-	-
HCM 95th Percentile Queue (veh)	0.031	-	-	0.116	0	-	-

Intersection realigned due to non-standard stop-control in order to produce HCM results.

Intersection												
Intersection Delay (sec/veh):	7		Two-way stop-control intersection used to produce operations for EB and SB approaches.									
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	55	5	0	0	0	0	0	10	5	20	5	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	2	67	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	61	6	0	0	0	0	0	11	6	22	6	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Major/Minor	Minor 2			Major 1			Major 2		
Conflicting Flow Rate - All	64	67	6	6	0	0	17	0	0
Stage 1	50	50	-	-	-	-	-	-	-
Stage 2	14	17	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.603	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	930	714	1083	1628	-	-	1613	-	-
Stage 1	963	741	-	-	-	-	-	-	-
Stage 2	1006	768	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	920	704	1083	1628	-	-	1613	-	-
Mov Capacity-2 Maneuver	920	704	-	-	-	-	-	-	-
Stage 1	963	731	-	-	-	-	-	-	-
Stage 2	1006	768	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	9.3	0	5.8
HCM LOS	A	A	A

Lane	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (vph)				897			
HCM Control Delay (s)	0	-	-	9.3	7.263	-	-
HCM Lane VC Ratio	-	-	-	0.074	0.014	-	-
HCM Lane LOS	A	-	-	A	A	-	-
HCM 95th Percentile Queue (veh)	0	-	-	0.24	0.042	-	-

Intersection realigned due to non-standard stop-control in order to produce HCM results.

Intersection												
Intersection Delay (sec/veh)	7.5	All-way stop-control intersection used to produce operations for NB approach.										
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	55	5	0	0	0	0	0	10	5	20	5	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	2	67	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	61	6	0	0	0	0	0	11	6	22	6	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.6	7	7.4
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Volume Left (%)	0%	92%	80%
Volume Thru (%)	67%	8%	20%
Volume Right (%)	33%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Volume by Lane	15	60	25
Left Turning Volume	10	5	5
Through Volume	5	0	0
Right Turning Volume	0	55	20
Lane Flow Rate	17	67	28
Geometry Group	1	1	1
Degree of Utilization, X	0.018	0.078	0.032
Departure Headway, Hd	3.838	4.195	4.189
Convergence(Y/N)	Yes	Yes	Yes
Capacity	928	855	851
Service Time	1.881	2.215	2.23
HCM Lane V/C Ratio	0.018	0.078	0.033
HCM Control Delay	7	7.6	7.4
HCM Lane LOS	A	A	A
HCM 95th Percentile Queue	0.1	0.3	0.1

HCM 2010 TWSC
110: Frontage Rd/Profetta Ln & Main St

5/21/2013

Intersection

Intersection Delay (sec/veh): 5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	10	0	0	5	2	3
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles(%)	0	0	0	0	0	0
Movement Flow Rate	12	0	0	6	2	4
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	6	0	0	0	27	3
Stage 1	-	-	-	-	3	-
Stage 2	-	-	-	-	24	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1628	-	-	-	993	1087
Stage 1	-	-	-	-	1025	-
Stage 2	-	-	-	-	1004	-
Time blocked-Platoon(%)	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1628	-	-	-	986	1087
Mov Capacity-2 Maneuver	-	-	-	-	986	-
Stage 1	-	-	-	-	1025	-
Stage 2	-	-	-	-	997	-

Approach	EB	WB	SB
HCM Control Delay (s)	7.2	0	8.5
HCM LOS	A	A	A

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					1044
HCM Control Delay (s)	7.227	-	-	-	8.5
HCM Lane VC Ratio	0.007	-	-	-	0.006
HCM Lane LOS	A	-	-	-	A
HCM 95th Percentile Queue (veh)	0.022	-	-	-	0.017

Queuing and Blocking Report 2013

5/21/2013

Intersection: 24: Main St (STOP Controlled)/Main St & IC 43 SB OFF Ramp

Movement	EB	NB	SB	
Directions Served	LTR	TR	LT	Realigned intersections not used for queuing simulations.
Maximum Queue (ft)	68	28	42	
Average Queue (ft)	33	11	18	
95th Queue (ft)	58	34	45	
Link Distance (ft)	990	83	627	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 60: Rogue River Hwy (OR 99 and OR 234) & N River Rd/State Hwy 234 (OR 99)

Movement	EB	
Directions Served	T	
Maximum Queue (ft)	39	
Average Queue (ft)	23	
95th Queue (ft)	49	
Link Distance (ft)	117	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 62: N River Rd/Rogue River Hwy (OR 99 and OR 234)

Movement	EB	NB
Directions Served	R	LR
Maximum Queue (ft)	25	6
Average Queue (ft)	1	0
95th Queue (ft)	11	4
Link Distance (ft)	47	528
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report 2013

5/21/2013

Intersection: 65: N River Rd

Movement	NB
Directions Served	L
Maximum Queue (ft)	35
Average Queue (ft)	4
95th Queue (ft)	23
Link Distance (ft)	47
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 70: Rogue River Hwy (OR99 and OR234) & Lampman Rd

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	31	34
Average Queue (ft)	2	15
95th Queue (ft)	14	35
Link Distance (ft)	622	642
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 80: Main St & Rogue River Hwy (OR99)/Rogue River Hwy (OR99 and OR234)

Movement	EB	NB
Directions Served	TR	LR
Maximum Queue (ft)	39	48
Average Queue (ft)	26	25
95th Queue (ft)	47	38
Link Distance (ft)	1083	295
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report 2013

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Intersection: 90: Main St & IC 43 NB OFF Ramp

Movement	WB	NB
Directions Served	LTR	LT
Maximum Queue (ft)	32	19
Average Queue (ft)	18	1
95th Queue (ft)	39	10
Link Distance (ft)	937	585
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 100: Main St & IC 43 SB OFF Ramp

Movement	EB	NB
Directions Served	LTR	TR
Maximum Queue (ft)	60	29
Average Queue (ft)	26	8
95th Queue (ft)	49	29
Link Distance (ft)	1135	60
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 110: Frontage Rd/Profetta Ln & Main St

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	6	26
Average Queue (ft)	0	4
95th Queue (ft)	4	19
Link Distance (ft)	1212	60
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

Intersection

Intersection Delay (sec/veh): 15.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	65	230	125	90	260	75
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	2	3	1	0
Movement Flow Rate	72	256	139	100	289	83
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	0	0	328	0	578	200
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	378	-
Follow-up Headway	-	-	2.218	-	3.509	3.3
Pot Capacity-1 Maneuver	-	-	1232	-	479	846
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	695	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	1232	-	422	846
Mov Capacity-2 Maneuver	-	-	-	-	422	-
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	612	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	4.8	34.9
HCM LOS	A	A	D

Lane	NBLn1	EBT	EBR	WBL	WBT
Capacity (vph)	475				
HCM Control Delay (s)	34.9	-	-	8.293	-
HCM Lane VC Ratio	0.784	-	-	0.113	-
HCM Lane LOS	D	-	-	A	-
HCM 95th Percentile Queue (veh)	7.024	-	-	0.38	-

HCM 2010 TWSC
20: Access Rd & Lampman Rd

5/21/2013

Intersection						
Intersection Delay (sec/veh):	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	10	20	15	325	330	25
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	0	0			0
Median Width	12			0	0	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	1	0	0
Movement Flow Rate	11	22	17	361	367	28
Number of Lanes	1	0	0	1	1	0

Major/Minor	Major 1			Major 2	
Conflicting Flow Rate - All	776	381	395	0	0
Stage 1	381	-	-	-	-
Stage 2	395	-	-	-	-
Follow-up Headway	3.5	3.3	2.2	-	-
Pot Capacity-1 Maneuver	369	671	1175	-	-
Stage 1	695	-	-	-	-
Stage 2	685	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-
Mov Capacity-1 Maneuver	362	671	1175	-	-
Mov Capacity-2 Maneuver	362	-	-	-	-
Stage 1	695	-	-	-	-
Stage 2	673	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	12.4	0.4	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	SBT	SBR
Capacity (vph)			522		
HCM Control Delay (s)	8.108	-	12.4	-	-
HCM Lane VC Ratio	0.014	-	0.064	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th Percentile Queue (veh)	0.043	-	0.204	-	-

Intersection												
Intersection Delay (sec/veh):	8.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	115	5	210	90	130	0	0	255	95
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None											
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles(%)	0	0	0	0	50	1	0	1	0	0	1	3
Movement Flow Rate	0	0	0	121	5	221	95	137	0	0	268	100
Number of Lanes	0	0	0	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 1		Major 1		Major 2	
Conflicting Flow Rate - All	645	695	137	368	0	0
Stage 1	327	327	-	-	-	-
Stage 2	318	368	-	-	-	-
Follow-up Headway	3.5	4.45	3.309	2.2	-	2.2
Pot Capacity-1 Maneuver	388	312	914	1202	-	1459
Stage 1	690	570	-	-	-	-
Stage 2	698	545	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	0
Mov Capacity-1 Maneuver	362	285	914	1202	-	1459
Mov Capacity-2 Maneuver	362	285	-	-	-	-
Stage 1	631	521	-	-	-	-
Stage 2	698	545	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	19.8	3.4	0
HCM LOS	C	A	A

Lane	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (vph)				584			
HCM Control Delay (s)	8.251	-	-	19.8	0	-	-
HCM Lane VC Ratio	0.079	-	-	0.595	-	-	-
HCM Lane LOS	A	-	-	C	A	-	-
HCM 95th Percentile Queue (veh)	0.256	-	-	3.892	0	-	-

Intersection												
Intersection Delay (sec/veh):	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	60	0	140	0	0	0	0	160	150	175	195	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free								
Right Turn Channelized	None											
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	67	0	156	0	0	0	0	178	167	194	217	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Major/Minor	Minor 2			Major 1			Major 2		
Conflicting Flow Rate - All	867	950	217	217	0	0	345	0	0
Stage 1	605	605	-	-	-	-	-	-	-
Stage 2	262	345	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	275	262	828	1365	-	-	1225	-	-
Stage 1	488	491	-	-	-	-	-	-	-
Stage 2	747	640	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	237	215	828	1365	-	-	1225	-	-
Mov Capacity-2 Maneuver	237	215	-	-	-	-	-	-	-
Stage 1	488	403	-	-	-	-	-	-	-
Stage 2	747	640	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	19.1	0	4
HCM LOS	C	A	A

Lane	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (vph)				474			
HCM Control Delay (s)	0	-	-	19.1	8.492	-	-
HCM Lane VC Ratio	-	-	-	0.469	0.159	-	-
HCM Lane LOS	A	-	-	C	A	-	-
HCM 95th Percentile Queue (veh)	0	-	-	2.456	0.564	-	-

HCM 2010 TWSC
50: Old Stage Rd & Access Rd

5/21/2013

Intersection						
Intersection Delay (sec/veh):	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	35	15	15	275	285	50
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	0	40			0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	3
Movement Flow Rate	39	17	17	306	317	56
Number of Lanes	1	0	1	1	1	0

Major/Minor	Major 1			Major 2	
Conflicting Flow Rate - All	685	345	373	0	0
Stage 1	345	-	-	-	-
Stage 2	340	-	-	-	-
Follow-up Headway	3.5	3.3	2.2	-	-
Pot Capacity-1 Maneuver	417	702	1197	-	-
Stage 1	722	-	-	-	-
Stage 2	725	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-
Mov Capacity-1 Maneuver	411	702	1197	-	-
Mov Capacity-2 Maneuver	411	-	-	-	-
Stage 1	722	-	-	-	-
Stage 2	715	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	13.7	0.4	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	SBT	SBR
Capacity (vph)			469		
HCM Control Delay (s)	8.05	-	13.7	-	-
HCM Lane VC Ratio	0.014	-	0.118	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th Percentile Queue (veh)	0.042	-	0.4	-	-

HCM 2010 TWSC
200: Old Stage Rd & Driveway

5/21/2013

Intersection						
Intersection Delay (sec/veh):	4.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Volume (vph)	180	2	10	110	130	170
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0	0	0			0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles(%)	2	2	2	2	2	2
Movement Flow Rate	212	2	12	129	153	200
Number of Lanes	1	1	0	1	1	0

Major/Minor	Major 1			Major 2	
Conflicting Flow Rate - All	406	253	353	0	0
Stage 1	253	-	-	-	-
Stage 2	153	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-
Pot Capacity-1 Maneuver	601	786	1206	-	-
Stage 1	789	-	-	-	-
Stage 2	875	-	-	-	-
Time blocked-Platoon(%)	0	0	0	-	-
Mov Capacity-1 Maneuver	594	786	1206	-	-
Mov Capacity-2 Maneuver	594	-	-	-	-
Stage 1	789	-	-	-	-
Stage 2	865	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	14.3	0.7	0
HCM LOS	B	A	A

Lane	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (vph)			594	786		
HCM Control Delay (s)	8.014	-	14.4	9.6	-	-
HCM Lane VC Ratio	0.01	-	0.357	0.003	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th Percentile Queue (veh)	0.03	-	1.608	0.009	-	-

Queuing and Blocking Report 2013

5/21/2013

Intersection: 10: Access Rd & 2nd Ave (OR 99 and OR 234)/Blackwell Rd (OR 99)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	20	79	185
Average Queue (ft)	1	30	89
95th Queue (ft)	11	68	152
Link Distance (ft)	923	1032	267
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 20: Access Rd & Lampman Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	48	43
Average Queue (ft)	18	6
95th Queue (ft)	43	28
Link Distance (ft)	627	129
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 30: Access Rd & IC 40 NB OFF Ramp

Movement	WB	NB	SB
Directions Served	LTR	LT	TR
Maximum Queue (ft)	186	63	37
Average Queue (ft)	80	24	1
95th Queue (ft)	149	57	15
Link Distance (ft)	868	566	129
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report 2013

5/21/2013

Intersection: 40: Access Rd & IC 40 SB OFF Ramp

Movement	EB	NB	SB
Directions Served	LTR	TR	LT
Maximum Queue (ft)	137	9	91
Average Queue (ft)	55	1	37
95th Queue (ft)	101	7	73
Link Distance (ft)	813	247	566
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 50: Old Stage Rd & Access Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	65	31
Average Queue (ft)	30	6
95th Queue (ft)	56	26
Link Distance (ft)	997	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		40
Storage Blk Time (%)		0
Queuing Penalty (veh)		1

Intersection: 200: Old Stage Rd & Driveway

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	89	35	37	4
Average Queue (ft)	52	4	4	0
95th Queue (ft)	79	22	21	3
Link Distance (ft)	237	237	326	210
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 1

Intersection

Intersection Delay (sec/veh): 1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	5	85	105	60	40	10
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	Yield	Yield
Storage Length	25			0	0	50
Median Width		12	12		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	4	0	0	0	0
Movement Flow Rate	6	94	117	67	44	11
Number of Lanes	1	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	184	0	0	0	257	151
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	106	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1403	-	-	-	736	901
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	923	-
Time blocked-Platoon(%)	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1403	-	-	-	733	901
Mov Capacity-2 Maneuver	-	-	-	-	733	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	919	-

Approach	EB	WB	SB
HCM Control Delay (s)	0.4	0	9.2
HCM LOS	A	A	A

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					916
HCM Control Delay (s)	7.576	-	-	-	9.2
HCM Lane VC Ratio	0.004	-	-	-	0.061
HCM Lane LOS	A	-	-	-	A
HCM 95th Percentile Queue (veh)	0.012	-	-	-	0.193

Intersection

Intersection Delay (sec/veh): 1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	15	90	105	10	0	25
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0
Movement Flow Rate	17	100	117	11	0	28
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	128	0	0	0	257	123
Stage 1	-	-	-	-	123	-
Stage 2	-	-	-	-	134	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1470	-	-	-	736	933
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	897	-
Time blocked-Platoon(%)	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1470	-	-	-	727	933
Mov Capacity-2 Maneuver	-	-	-	-	727	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	886	-

Approach	EB	WB	SB
HCM Control Delay (s)	1.1	0	9
HCM LOS	A	A	A

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					933
HCM Control Delay (s)	7.477	-	-	-	9
HCM Lane VC Ratio	0.011	-	-	-	0.03
HCM Lane LOS	A	-	-	-	A
HCM 95th Percentile Queue (veh)	0.034	-	-	-	0.092

HCM Unsignalized Intersection Capacity Analysis

81: Main St./OR 99 EB Realign & OR 99 WB

5/21/2013



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	65	65	155	55	50	35
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	68	68	163	58	53	37
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		205	0	311	171
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		205	0	311	171
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	96		75	95	89	95
cM capacity (veh/h)	1636		666	1085	481	695
Direction, Lane #						
	WB 1	NB 1	SB 1			
Volume Total	137	221	89			
Volume Left	68	0	53			
Volume Right	68	58	0			
cSH	1636	741	551			
Volume to Capacity	0.04	0.30	0.16			
Queue Length 95th (ft)	3	31	14			
Control Delay (s)	3.8	11.9	12.8			
Lane LOS	A	B	B			
Approach Delay (s)	3.8	11.9	12.8			
Approach LOS		B	B			
Intersection Summary						
Average Delay			9.6			
Intersection Capacity Utilization			35.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM 2010 TWSC
90: Main St & IC 43 NB OFF Ramp

5/21/2013

Intersection												
Intersection Delay (sec/veh):	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	5	0	70	15	140	0	0	105	95
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None											
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles(%)	0	0	0	0	0	0	0	3	0	0	0	0
Movement Flow Rate	0	0	0	5	0	74	16	147	0	0	111	100
Number of Lanes	0	0	0	0	1	0	0	1	0	0	1	0

Major/Minor	Minor 1		Major 1			Major 2			
Conflicting Flow Rate - All	340	390	147	211	0	0	147	0	0
Stage 1	179	179	-	-	-	-	-	-	-
Stage 2	161	211	-	-	-	-	-	-	-
Follow-up Headway	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	618	548	905	1372	-	-	1447	-	-
Stage 1	827	755	-	-	-	-	-	-	-
Stage 2	846	731	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	612	541	905	1372	-	-	1447	-	-
Mov Capacity-2 Maneuver	612	541	-	-	-	-	-	-	-
Stage 1	816	745	-	-	-	-	-	-	-
Stage 2	846	731	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	9.5	0.7	0
HCM LOS	A	A	A

Lane	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (vph)				877			
HCM Control Delay (s)	7.654	-	-	9.5	0	-	-
HCM Lane VC Ratio	0.012	-	-	0.09	-	-	-
HCM Lane LOS	A	-	-	A	A	-	-
HCM 95th Percentile Queue (veh)	0.035	-	-	0.296	0	-	-

HCM 2010 TWSC

101: Main St (FREE)/Main St & IC 43 SB OFF Ramp

5/21/2013

Intersection												
Intersection Delay (sec/veh):	9.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	145	5	0	0	0	0	0	10	5	105	5	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None											
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	2	67	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	161	6	0	0	0	0	0	11	6	117	6	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Major/Minor	Minor 2			Major 1			Major 2		
Conflicting Flow Rate - All	254	257	6	6	0	0	17	0	0
Stage 1	240	240	-	-	-	-	-	-	-
Stage 2	14	17	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.603	3.3	2.2	-	-	2.2	-	-
Pot Capacity-1 Maneuver	699	550	1083	1628	-	-	1613	-	-
Stage 1	763	602	-	-	-	-	-	-	-
Stage 2	1006	768	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	660	510	1083	1628	-	-	1613	-	-
Mov Capacity-2 Maneuver	660	510	-	-	-	-	-	-	-
Stage 1	763	558	-	-	-	-	-	-	-
Stage 2	1006	768	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	12.4	0	7.1
HCM LOS	B	A	A

Lane	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (vph)				654			
HCM Control Delay (s)	0	-	-	12.4	7.406	-	-
HCM Lane VC Ratio	-	-	-	0.255	0.072	-	-
HCM Lane LOS	A	-	-	B	A	-	-
HCM 95th Percentile Queue (veh)	0	-	-	1.009	0.234	-	-

HCM 2010 AWSC

102: Main St (STOP Controlled)/Main St & IC 43 SB OFF Ramp

5/21/2013

Intersection												
Intersection Delay (sec/veh)	8.4											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	145	5	0	0	0	0	0	10	5	105	5	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	2	67	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	161	6	0	0	0	0	0	11	6	117	6	0
Number of Lanes	0	1	0	0	0	0	0	1	0	0	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	8.6	7.3	8.3
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Volume Left (%)	0%	97%	95%
Volume Thru (%)	67%	3%	5%
Volume Right (%)	33%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Volume by Lane	15	150	110
Left Turning Volume	10	5	5
Through Volume	5	0	0
Right Turning Volume	0	145	105
Lane Flow Rate	17	167	122
Geometry Group	1	1	1
Degree of Utilization, X	0.02	0.202	0.153
Departure Headway, Hd	4.234	4.369	4.508
Convergence(Y/N)	Yes	Yes	Yes
Capacity	850	808	801
Service Time	2.238	2.464	2.508
HCM Lane V/C Ratio	0.02	0.207	0.152
HCM Control Delay	7.3	8.6	8.3
HCM Lane LOS	A	A	A
HCM 95th Percentile Queue	0.1	0.8	0.5

HCM 2010 TWSC
110: Frontage Rd/Profetta Ln & Main St

5/21/2013

Intersection

Intersection Delay (sec/veh): 5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	10	0	0	5	0	5
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles(%)	0	0	0	0	0	0
Movement Flow Rate	12	0	0	6	0	6
Number of Lanes	0	1	1	0	1	0

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	6	0	0	0	27	3
Stage 1	-	-	-	-	3	-
Stage 2	-	-	-	-	24	-
Follow-up Headway	2.2	-	-	-	3.5	3.3
Pot Capacity-1 Maneuver	1628	-	-	-	993	1087
Stage 1	-	-	-	-	1025	-
Stage 2	-	-	-	-	1004	-
Time blocked-Platoon(%)	0	-	-	-	0	0
Mov Capacity-1 Maneuver	1628	-	-	-	986	1087
Mov Capacity-2 Maneuver	-	-	-	-	986	-
Stage 1	-	-	-	-	1025	-
Stage 2	-	-	-	-	997	-

Approach	EB	WB	SB
HCM Control Delay (s)	7.2	0	8.3
HCM LOS	A	A	A

Lane	EBL	EBT	WBT	WBR	SBLn1
Capacity (vph)					1087
HCM Control Delay (s)	7.227	-	-	-	8.3
HCM Lane VC Ratio	0.007	-	-	-	0.005
HCM Lane LOS	A	-	-	-	A
HCM 95th Percentile Queue (veh)	0.022	-	-	-	0.016

HCM 2010 TWSC
210: Driveway & Rogue River Hwy (OR99)

5/21/2013

Intersection						
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Intersection Delay (sec/veh):	6.5
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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	30	25	155	65	25	155
Conflicting Peds.(#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	None	None	None	None
Storage Length		0	0		0	0
Median Width	0			0	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles(%)	2	2	2	2	2	2
Movement Flow Rate	35	29	182	76	29	182
Number of Lanes	1	0	0	1	1	1

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	0	0	64	0	490	50
Stage 1	-	-	-	-	50	-
Stage 2	-	-	-	-	440	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1538	-	537	1018
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	649	-
Time blocked-Platoon(%)	-	-	0	-	0	0
Mov Capacity-1 Maneuver	-	-	1538	-	470	1018
Mov Capacity-2 Maneuver	-	-	-	-	470	-
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	569	-

Approach	EB	WB	NB
HCM Control Delay (s)	0	5.4	9.8
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (vph)	470	1018				
HCM Control Delay (s)	13.2	9.3	-	-	7.655	-
HCM Lane VC Ratio	0.063	0.179	-	-	0.119	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th Percentile Queue (veh)	0.2	0.651	-	-	0.403	-

Queuing and Blocking Report 2013

5/21/2013

Intersection: 24: Main St (STOP Controlled)/Main St & IC 43 SB OFF Ramp

Movement	EB	NB	SB	
Directions Served	LTR	TR	LT	Realigned intersections not used for queuing simulation.
Maximum Queue (ft)	102	33	70	
Average Queue (ft)	41	11	36	
95th Queue (ft)	69	34	52	
Link Distance (ft)	990	83	627	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 60: Rogue River Hwy (OR 99 and OR 234) & N River Rd/State Hwy 234 (OR 99)

Movement	EB
Directions Served	T
Maximum Queue (ft)	58
Average Queue (ft)	26
95th Queue (ft)	52
Link Distance (ft)	117
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 62: N River Rd/Rogue River Hwy (OR 99 and OR 234)

Movement	EB	WB	NB
Directions Served	R	L	LR
Maximum Queue (ft)	32	7	5
Average Queue (ft)	2	0	0
95th Queue (ft)	13	0	4
Link Distance (ft)	47	78	528
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report 2013

5/21/2013

Intersection: 65: N River Rd

Movement	NB
Directions Served	L
Maximum Queue (ft)	31
Average Queue (ft)	4
95th Queue (ft)	21
Link Distance (ft)	47
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 70: Rogue River Hwy (OR99 and OR234) & Lampman Rd

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	13	34
Average Queue (ft)	1	14
95th Queue (ft)	8	36
Link Distance (ft)	622	642
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 80: Main St & Rogue River Hwy (OR99)/Rogue River Hwy (OR99 and OR234)

Movement	EB	NB
Directions Served	TR	LR
Maximum Queue (ft)	77	58
Average Queue (ft)	41	29
95th Queue (ft)	62	48
Link Distance (ft)	246	286
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report 2013

5/21/2013

Intersection: 90: Main St & IC 43 NB OFF Ramp

Movement	WB	NB
Directions Served	LTR	LT
Maximum Queue (ft)	51	26
Average Queue (ft)	26	2
95th Queue (ft)	43	14
Link Distance (ft)	937	585
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 100: Main St & IC 43 SB OFF Ramp

Movement	EB	NB
Directions Served	LTR	TR
Maximum Queue (ft)	95	29
Average Queue (ft)	41	11
95th Queue (ft)	70	33
Link Distance (ft)	1135	60
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 110: Frontage Rd/Profetta Ln & Main St

Movement	SB
Directions Served	LR
Maximum Queue (ft)	25
Average Queue (ft)	3
95th Queue (ft)	17
Link Distance (ft)	60
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report 2013

5/21/2013

Intersection: 210: Driveway & Rogue River Hwy (OR99)

Movement	WB	NB	NB
Directions Served	LT	L	R
Maximum Queue (ft)	55	50	74
Average Queue (ft)	11	20	42
95th Queue (ft)	41	48	65
Link Distance (ft)	246	151	151
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 0

**I-5 Exits 40 and 43 (Gold Hill)
Interchange Area Management Plans**

**DRAFT Technical Memorandum #5
Appendix C: Preliminary Traffic Signal Warrants**

Prepared for

Oregon Department of Transportation, Region 3
3500 NW Stewart Parkway
Roseburg, Oregon 97470

Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

June 2013

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis¹

Major Street: Blackwell Rd	Minor Street: Access Rd
Project: IAMP 40	City/County: Jackson County
Year: 2012 PM	Alternative: Existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	Percent of standard warrants 70	Percent of standard warrants 100	Percent of standard warrants 70

Case A: Minimum Vehicular Traffic

Major Street	Minor Street	Percent of standard warrants 100	Percent of standard warrants 70	Percent of standard warrants 100	Percent of standard warrants 70
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500

Case B: Interruption of Continuous Traffic

Major Street	Minor Street	Percent of standard warrants 100	Percent of standard warrants 70	Percent of standard warrants 100	Percent of standard warrants 70
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

100 percent of standard warrants

X 70 percent of standard warrants²

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	4150	N
	Minor	1	1850	2350	
Case B	Major	1	9300	4150	N
	Minor	1	950	2350	

Analyst and Date: _____ Reviewer and Date: _____

¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

² Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis¹

Major Street: Blackwell Rd	Minor Street: Access Rd
Project: IAMP 40	City/County: Jackson County
Year: 2012 PM	Alternative: Existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants		Percent of standard warrants	
		100	70	100	70

Case A: Minimum Vehicular Traffic

Major Street	Minor Street	Major ADT	Minor ADT	Major ADT	Minor ADT
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500

Case B: Interruption of Continuous Traffic

Major Street	Minor Street	Major ADT	Minor ADT	Major ADT	Minor ADT
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

100 percent of standard warrants

X 70 percent of standard warrants²

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	4000	N
	Minor	1	1850	570	
Case B	Major	1	9300	4000	N
	Minor	1	950	570	

Analyst and Date: _____ Reviewer and Date: _____

¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

² Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis¹

Major Street: Blackwell Rd	Minor Street: Access Rd
Project: IAMP 40	City/County: Jackson County
Year: 2038 PM	Alternative: Future Baseline

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants		Percent of standard warrants	
		100	70	100	70

Case A: Minimum Vehicular Traffic

1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500

Case B: Interruption of Continuous Traffic

1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

100 percent of standard warrants

X 70 percent of standard warrants²

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	5050	N
	Minor	1	1850	2600	
Case B	Major	1	9300	5050	N
	Minor	1	950	2600	

Analyst and Date: _____ Reviewer and Date: _____

¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

² Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis¹

Major Street: Blackwell Rd	Minor Street: Access Rd
Project: IAMP 40	City/County: Jackson County
Year: 2012 PM	Alternative: Existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants		Percent of standard warrants	
		100	70	100	70

Case A: Minimum Vehicular Traffic

1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500

Case B: Interruption of Continuous Traffic

1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

100 percent of standard warrants

X 70 percent of standard warrants²

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	5000	N
	Minor	1	1850	750	
Case B	Major	1	9300	5000	N
	Minor	1	950	750	

Analyst and Date: _____ Reviewer and Date: _____

¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

² Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis¹

Major Street: Blackwell Rd	Minor Street: Access Rd
Project: IAMP 40	City/County: Jackson County
Year: 2038 PM	Alternative: Land Use Alternative

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants		Percent of standard warrants	
		100	70	100	70

Case A: Minimum Vehicular Traffic

1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500

Case B: Interruption of Continuous Traffic

1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

100 percent of standard warrants

X 70 percent of standard warrants²

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	5100	N
	Minor	1	1850	2600	
Case B	Major	1	9300	5100	N
	Minor	1	950	2600	

Analyst and Date:	Reviewer and Date:
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¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

² Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis¹

Major Street: Access Rd	Minor Street: NB Ramp
Project: IAMP 40	City/County: Jackson County
Year: 2038 PM	Alternative: Land Use Alternative

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants		Percent of standard warrants	
		100	70	100	70

Case A: Minimum Vehicular Traffic

Major Street	Minor Street	Major Street ADT	Minor Street ADT	Major Street ADT	Minor Street ADT
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500

Case B: Interruption of Continuous Traffic

Major Street	Minor Street	Major Street ADT	Minor Street ADT	Major Street ADT	Minor Street ADT
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

100 percent of standard warrants

X 70 percent of standard warrants²

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	5700	N
	Minor	1	1850	1200	
Case B	Major	1	9300	5700	N
	Minor	1	950	1200	

Analyst and Date: _____ Reviewer and Date: _____

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² Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis¹

Major Street: Access Rd	Minor Street: SB Ramp
Project: IAMP 40	City/County: Jackson County
Year: 2038 PM	Alternative: Land Use Alternative

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants		Percent of standard warrants	
		100	70	100	70

Case A: Minimum Vehicular Traffic

Major Street	Minor Street	Major ADT	Minor ADT	Major ADT	Minor ADT
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500

Case B: Interruption of Continuous Traffic

Major Street	Minor Street	Major ADT	Minor ADT	Major ADT	Minor ADT
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

100 percent of standard warrants

X 70 percent of standard warrants²

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	6800	N
	Minor	1	1850	600	
Case B	Major	1	9300	6800	N
	Minor	1	950	600	

Analyst and Date: _____ Reviewer and Date: _____

¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

² Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis¹

Major Street: Old Stage	Minor Street: Driveway
Project: IAMP 40	City/County: Jackson County
Year: 2038 PM	Alternative: Land Use Alternative

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	Percent of standard warrants 70	Percent of standard warrants 100	Percent of standard warrants 70

Case A: Minimum Vehicular Traffic

1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500

Case B: Interruption of Continuous Traffic

1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

100 percent of standard warrants

X 70 percent of standard warrants²

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	6200	4200	N
	Minor	1	1850	1800	
Case B	Major	1	9300	4200	N
	Minor	1	950	1800	

Analyst and Date:	Reviewer and Date:
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¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

² Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.