

Technical Memorandum #3 Future No Build Technical Appendices

Appendix B – 2045 Select-Link Analysis

Methodology

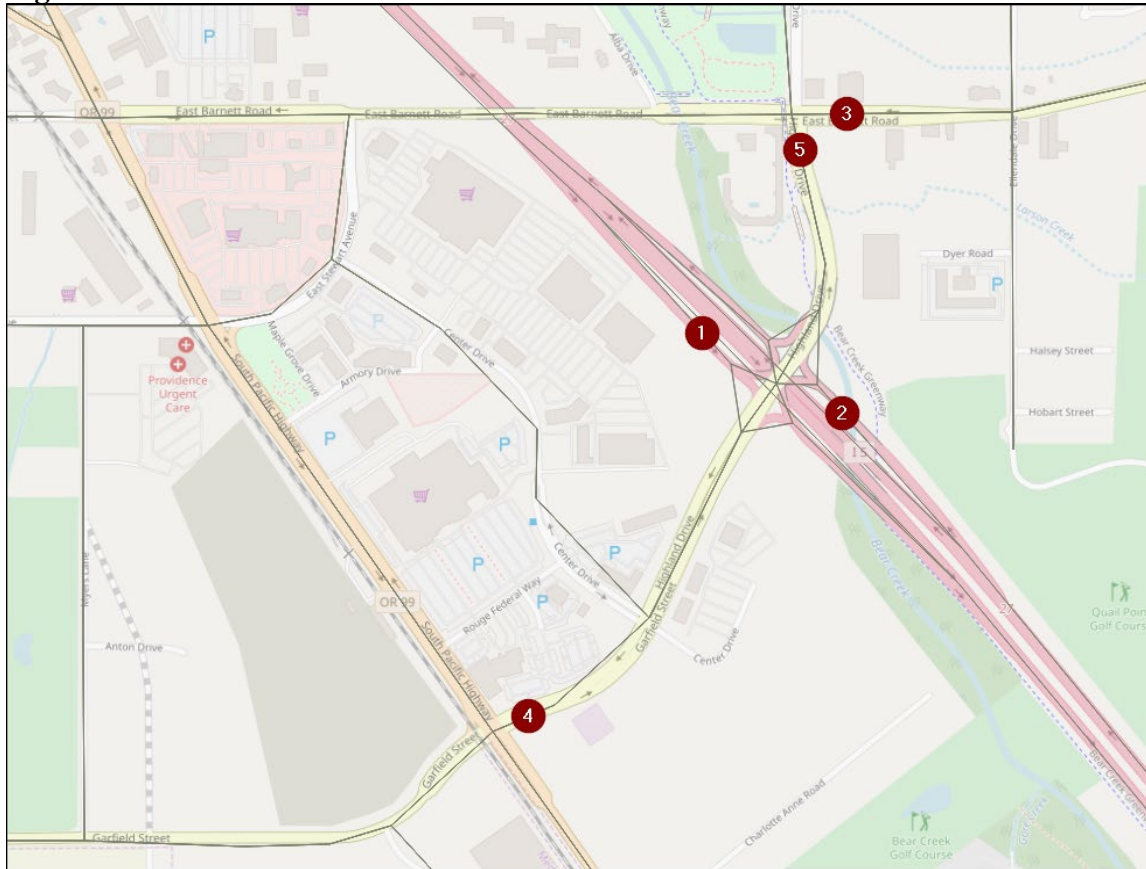
TPAU used the current Rogue Valley MPO (RVMPO, version 4.3) JEMnR (Joint Estimated Model in R) model to determine the routing of the traffic around the project area. The current RVMPO v. 4.3 model is calibrated for PM peak hour; AM peak hour factors were developed to provide an AM peak hour scenario. This project used the SOABM (Southern Oregon Activity Based Model) 2045 land use in the JEMnR model, since the SOABM itself is still being developed and not yet available.

The project team compared the City of Medford expected household and employment growth by 2045 based on Medford's comprehensive plan to the PSU population limits used in the SOABM. Overall the City of Medford comprehensive plan expected growth was 380 out of 39,000 households higher, and 1275 out of ~ 32,000 higher for employment. To check whether there would be significant differences in traffic volumes in the study area, model runs were done using the SOABM 2045 land use forecast and the updated Medford forecast. Volumes on links within the study area were within 10% of each other for the two model runs, except for west of the OR99. Further investigation revealed that while the SOABM had no household growth in TAZ 459, Medford had growth of 200 households and 180 higher employment growth. The SOABM land use forecast did not include the Stewart Meadows mixed-use development, which is approved and underway; nor the Providence Medical office that is already built and in use at the southwest corner of OR 99 and Stewart Avenue. It was decided to proceed with the Medford updated 2045 land use and 2045 as the future analysis year.

Select-link analysis was completed on both the AM and PM peak scenarios for the locations shown above in Figure B-1.

1. Southbound I-5 off-ramp
2. Northbound I-5 off-ramp
3. East leg of Barnett Road/Highland Drive intersection, both directions
4. South leg of Barnett Road/Highland Drive intersection, both directions
5. Northeast leg of Garfield Street/OR99 intersection, both directions

Figure B-1 – Select-Link Locations



Results

Figures B-2 through Figure B-27 show the percent traffic volume that travels to/from the selected links.

Exit 27 Southbound (SB) off ramp

Figure B-2 and Figure B-3 show that ~40% of the Exit 27 southbound off ramp 2045 traffic volume is forecast to be getting on I-5 at Exit 30 to the north (38% AM peak, 42% PM peak), most of the traffic coming from the east of the freeway. Another 26% (AM peak), 35% is expected to get onto the freeway at the next exit to the north, Exit 33, as seen in Figure B-4 and Figure B-5.

Figures B-6 and B-7 show that the Exit 27 southbound off ramp 2045 traffic volume is then expected to split between going south on Garfield Street (AM peak 53%; PM peak 54%) and northbound on Garfield Street (AM peak 47%; PM peak 46%). Of the traffic going southbound, ~12% would be turning north on Center Drive towards shopping areas (Walmart, Fred Meyer, Harry and David's), motels, and restaurants; ~25% turning left turn at OR 99 to go south on OR 99. The Exit 27 southbound off ramp traffic that goes north on Garfield Street predominantly is expected to turn right to go east on Barnett Road (AM peak 43%, PM peak 41%).

Table B-1 – 2045 Traffic Percentages to and from Exit 27 Southbound off Ramp

Exit 27 SB Off Ramp	Percent Traffic			Figure(s)
	AM Peak Hour	PM Peak Hour		
From				
Exit 30 SB on ramps	38%	42%	From east of freeway AM~22%, PM ~26%; From west of freeway AM 15%, PM 16%	Figure B-2 Figure B-3
Exit 33 SB on ramps	26%	35%	From east of freeway AM 8%, PM ~16%	Figure B-4 Figure B-5
To				
South on Garfield St	53%	54%		Figure B-6 Figure B-7
North on Center Dr	12%	11%		
South on OR 99	24%	25%		
North on Garfield St	47%	46%		
East on Barnett Rd	43%	41%		
North on Highland Dr	3%	4%		
West on Barnett Rd	<1%	<1%		

Figure B-2 – AM Peak Hour SB I-5 Off-Ramp Percent Traffic from Exit 30

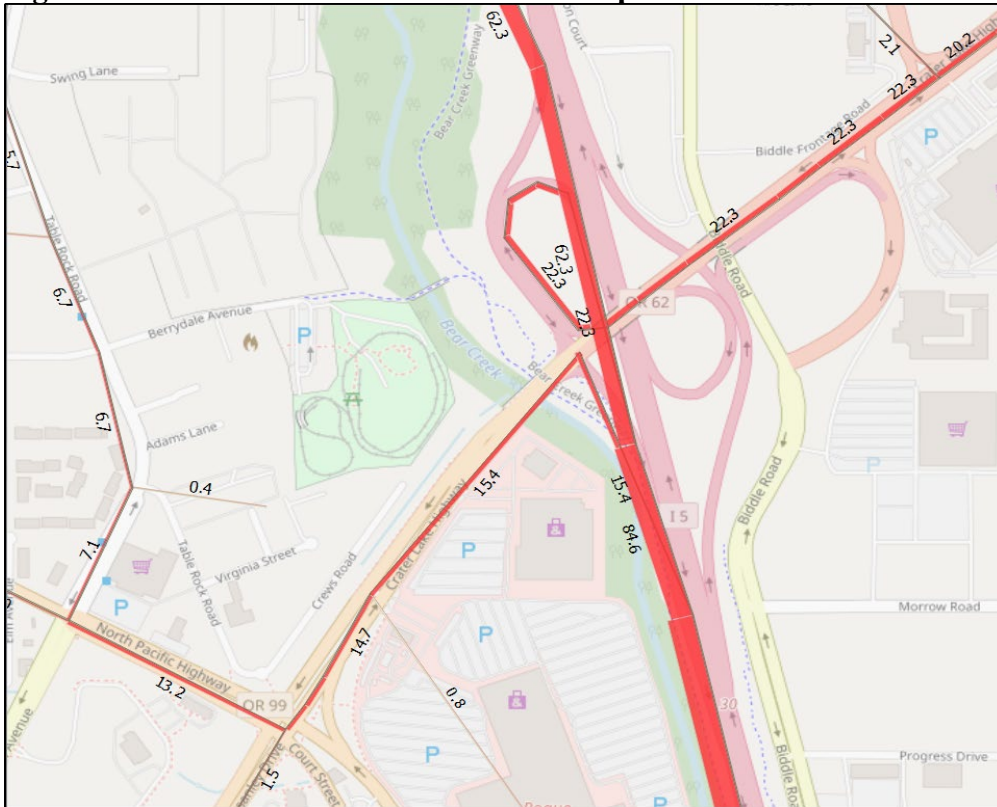


Figure B-3 – PM Peak Hour SB I-5 Off-Ramp Percent Traffic from Exit 30

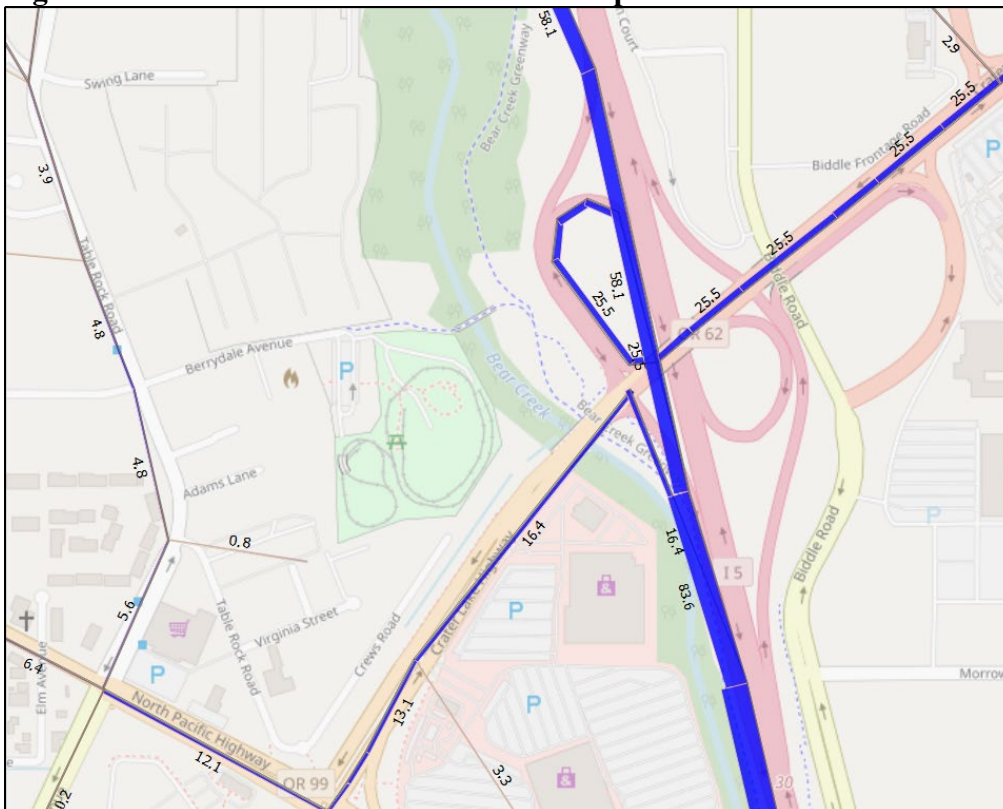


Figure B-4 – AM Peak Hour SB I-5 Off-Ramp Percent Traffic from Exit 33

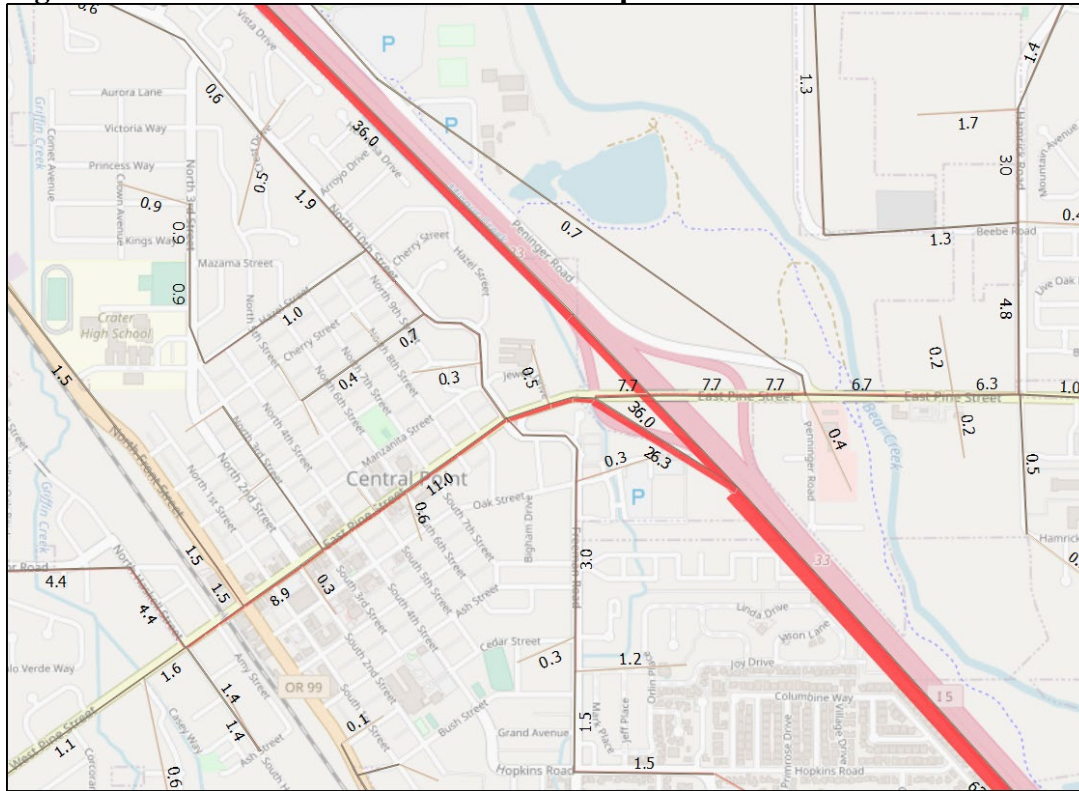


Figure B-5 – PM Peak Hour SB I-5 Off-Ramp Percent Traffic from Exit 33

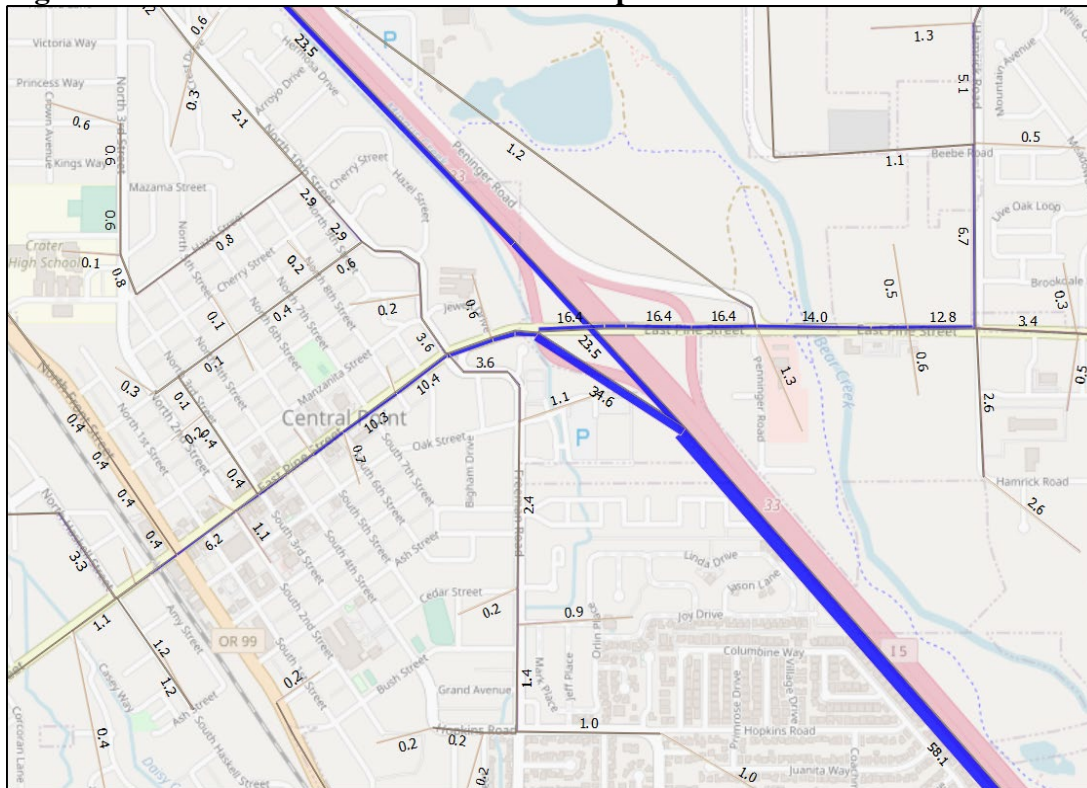


Figure B-6 – AM Peak Hour where SB I-5 Off-Ramp Traffic is Going, by Percentage

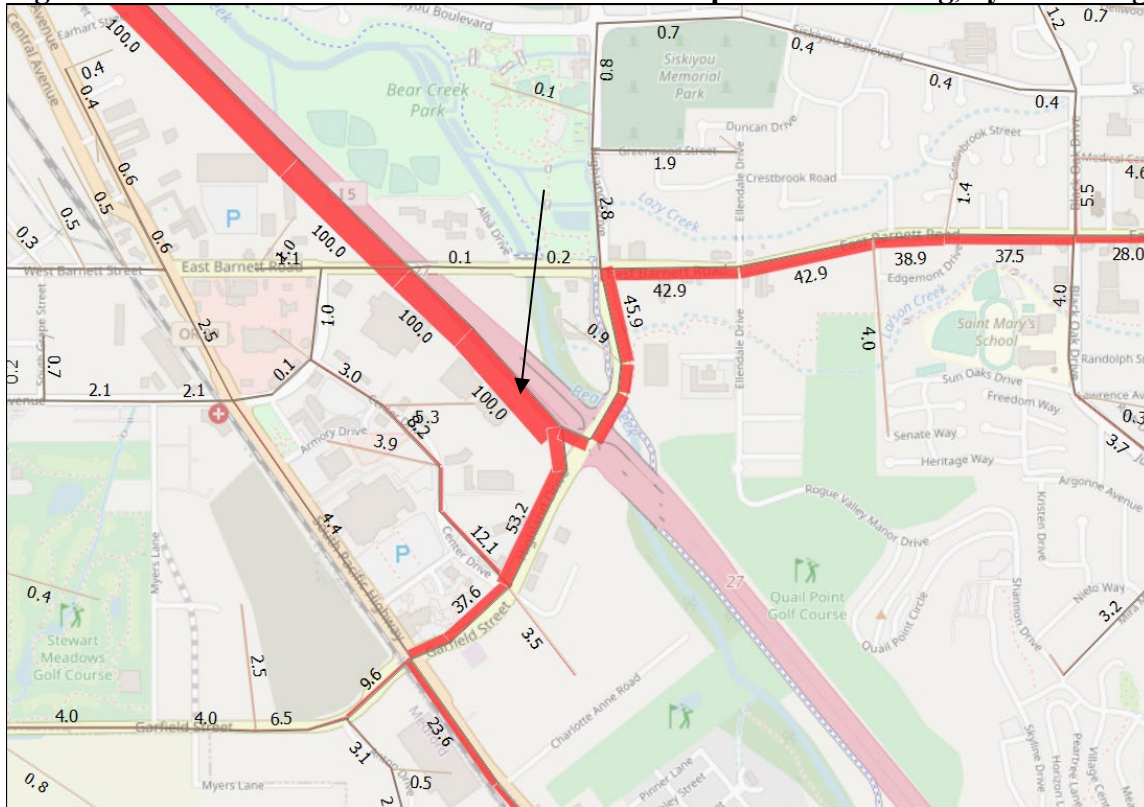
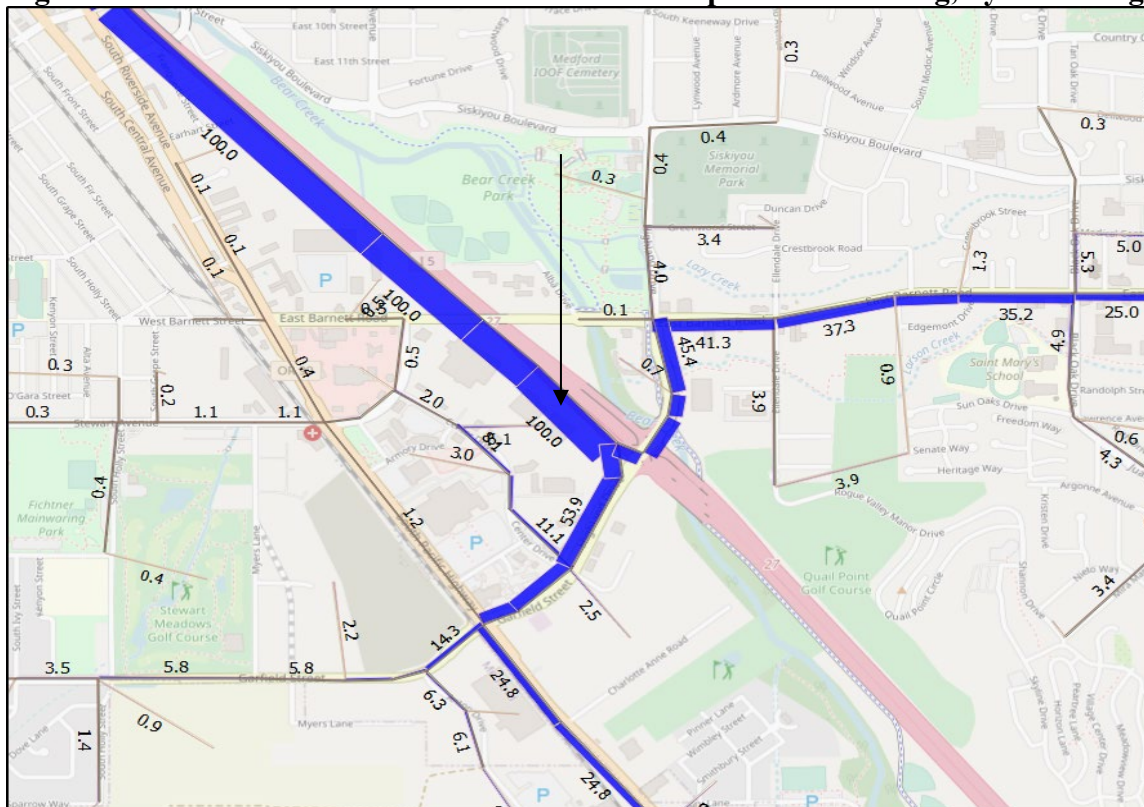


Figure B-7 – PM Peak Hour where SB I-5 Off-Ramp Traffic is Going, by Percentage



Exit 27 Northbound (NB) off ramp

Roughly half the Exit 27 northbound off ramp 2045 traffic volume is forecast to be coming from the on the three ramps to the south: Exit 24 (Figure B-8, AM peak 20%; Figure B-9, PM peak 22%); Exit 21 (Figure B-10, AM peak 13%; Figure B-11, PM peak 6%) and Exit 19 (Figure B-12, AM peak 20%; Figure B-13, PM peak 20%), mostly from west of the freeway at Exits 19 and 21. The remaining traffic volume (AM peak 48%, PM peak 53%) is coming from farther south.

Figures B-14 and B-15 show that the Exit 27 northbound off ramp traffic volume is forecast to split between going south on Garfield Street (AM peak 31%; PM peak 34%) and north on Garfield Street (AM peak 69%; PM peak 66%).

Of the traffic volume going south, <10% is expected to turn north on Center Drive towards shopping areas (Walmart, Fred Meyer, Harry and David's), motels, and restaurants. Of the remaining southbound traffic on Garfield, 17% is expected to go northbound on OR 99 in the AM peak, 18% in the PM peak.

Northbound from the northbound off ramp, some of the traffic volume is expected to turn left at Barnett, then continue west to turn right to go north on OR 99 (AM peak 20%; PM peak 11%); other traffic is expected to continue north on Highland Drive (AM peak 23%, PM peak 33%), or turn right onto eastbound Barnett (AM peak 17%, PM peak 16%).

Table B-2 – 2045 Traffic Percentages to and from Exit 27 Northbound off Ramp

Exit 27 NB Off Ramp	Percent Traffic			Figure(s)
	AM Peak Hour	PM Peak Hour		
From				
Exit 24 on ramp	20%	22%	AM ~ even split; PM ~2/3 from the east	Figure B-8 Figure B-9
Exit 21 on ramp	13%	6%	Most from west of I-5	Figure B-10 Figure B-11
Exit 19 on ramp	20%	20%	Most from west of I-5	Figure B-12
farther south	48%	53%		Figure B-13
To				
South on Garfield St	31%	34%		Figure B-14 Figure B-15
North on Center Dr	8%	9%		
South on OR 99	1%	0%		
West on Garfield St	4%	7%		
North on OR 99	17%	18%		
North on Garfield St	69%	66%		
North on OR 99 from Barnett Rd	20%	11%		
North on Highland Dr	23%	33%		
East on Barnett Rd	17%	16%		

Figure B-8 – AM Peak Hour NB I-5 Off-Ramp Percent Traffic from Exit 24

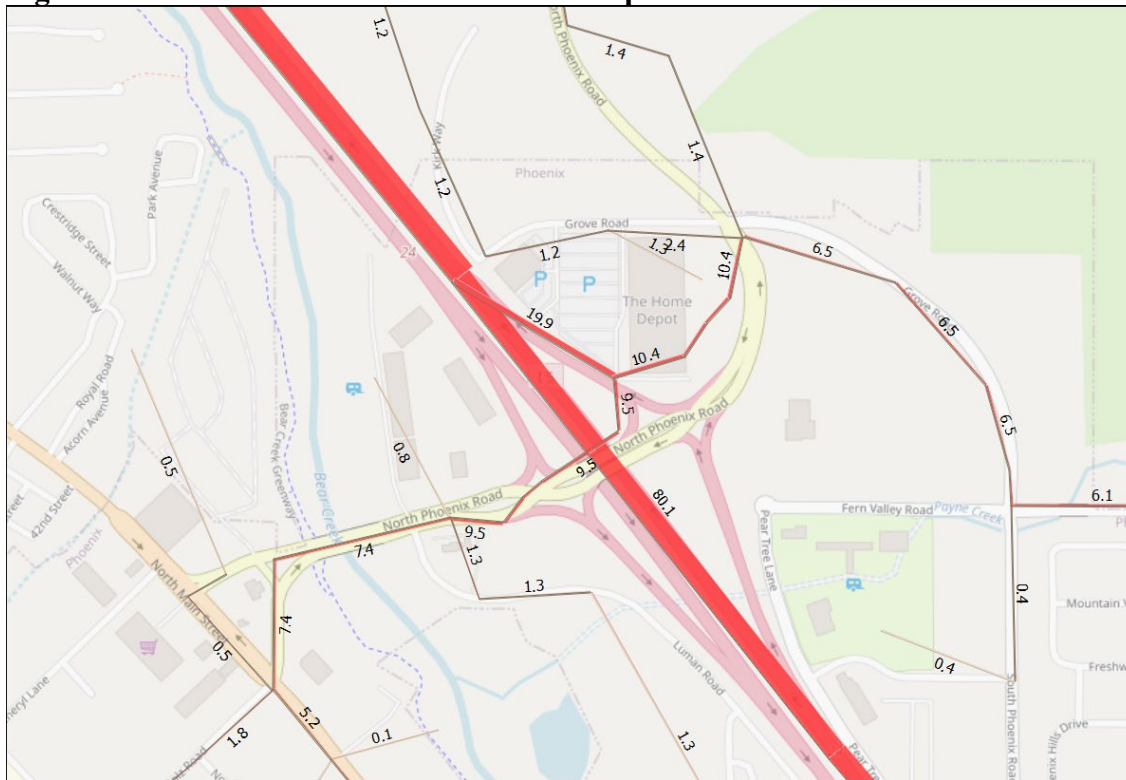


Figure B-9 – PM Peak Hour NB I-5 Off-Ramp Percent Traffic from Exit 24

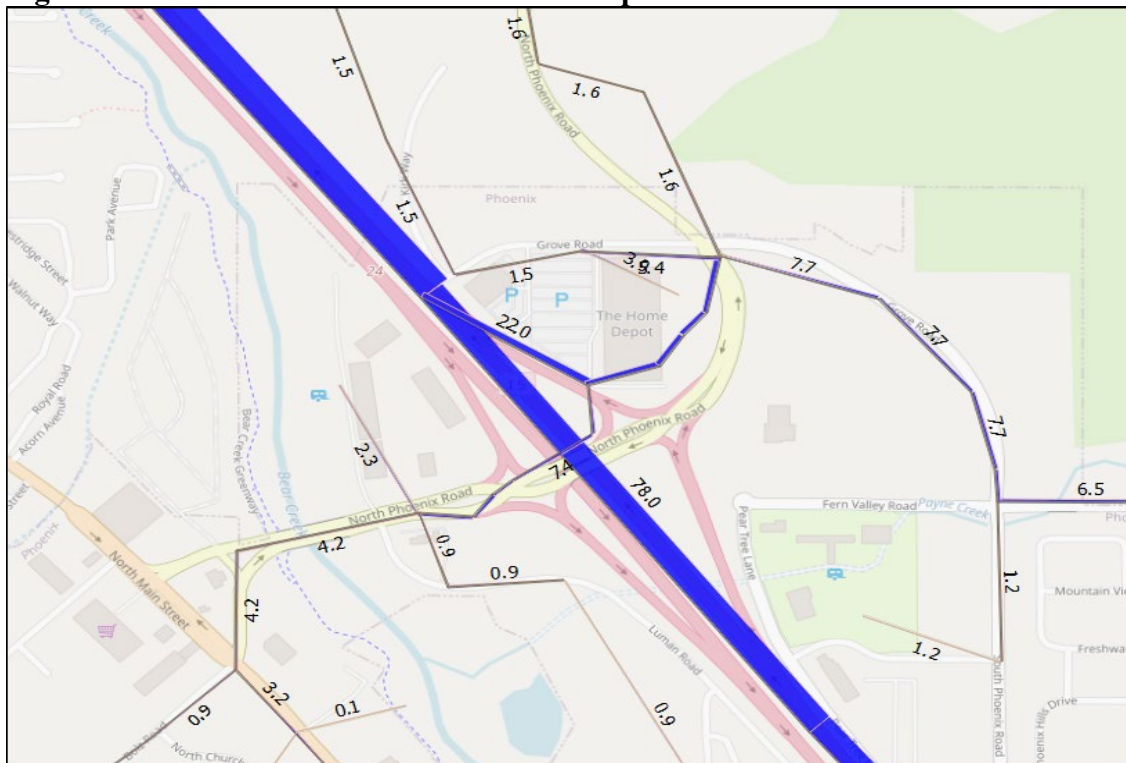


Figure B-10 – AM Peak Hour NB I-5 Off-Ramp Percent Traffic from Exit 21

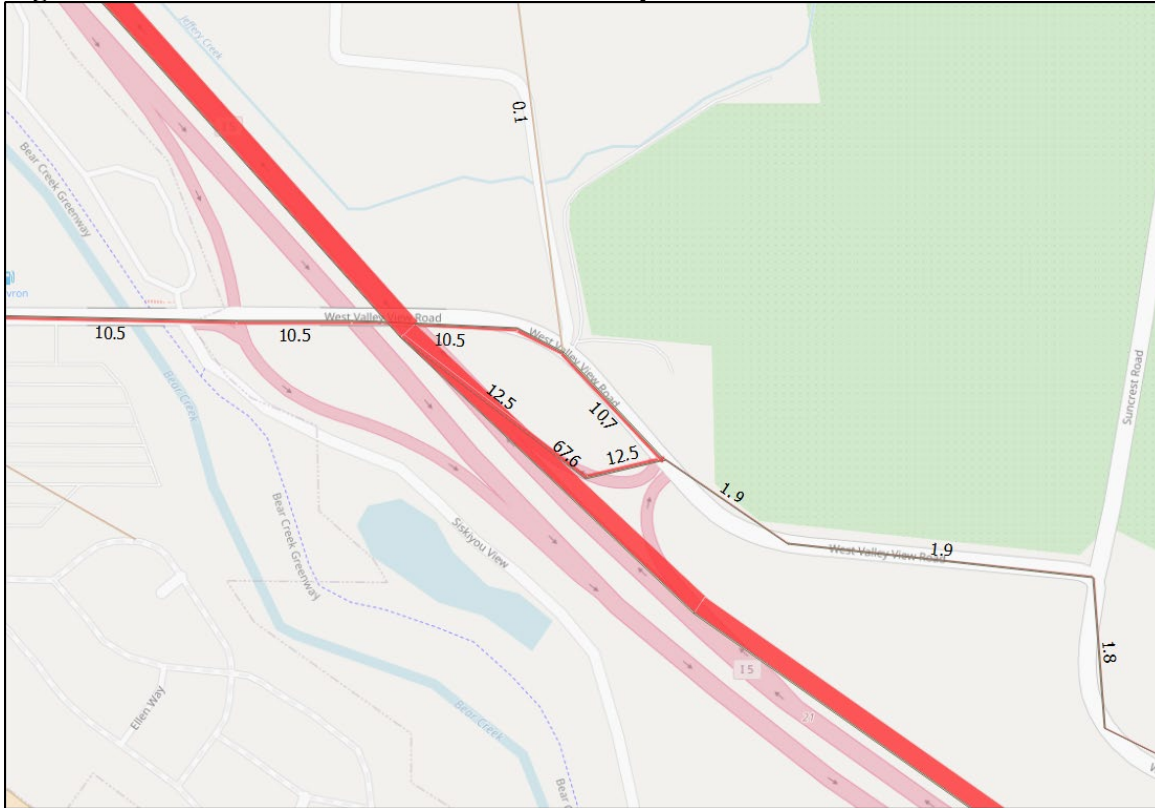


Figure B-11 – PM Peak Hour NB I-5 Off-Ramp Percent Traffic from Exit 21

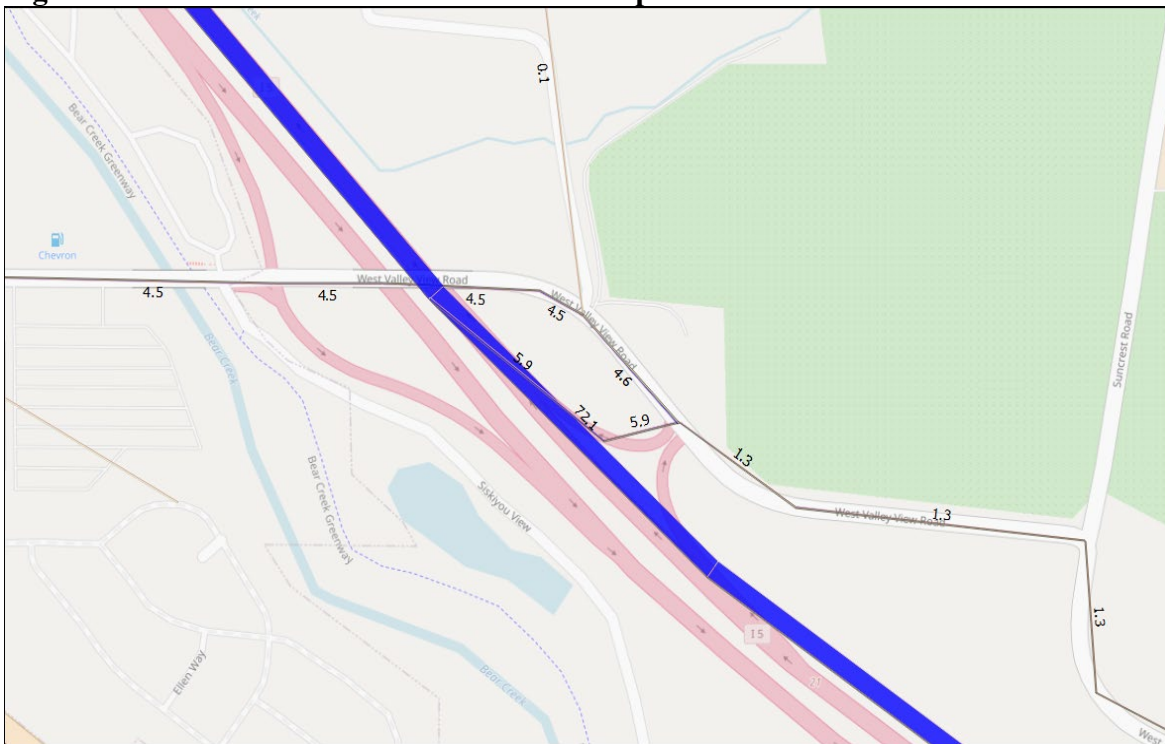


Figure B-12 – AM Peak Hour NB I-5 Off-Ramp Percent Traffic from Exit 19

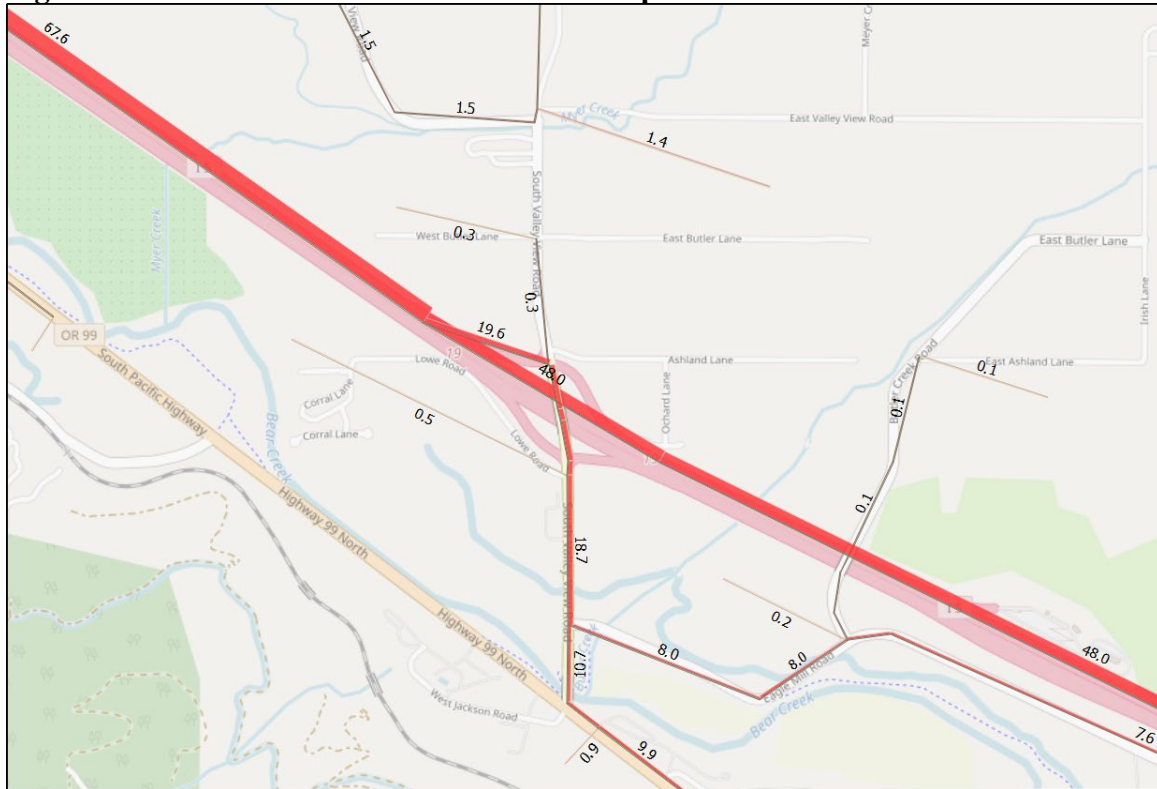


Figure B-13 – PM Peak Hour NB I-5 Off-Ramp Percent Traffic from Exit 19

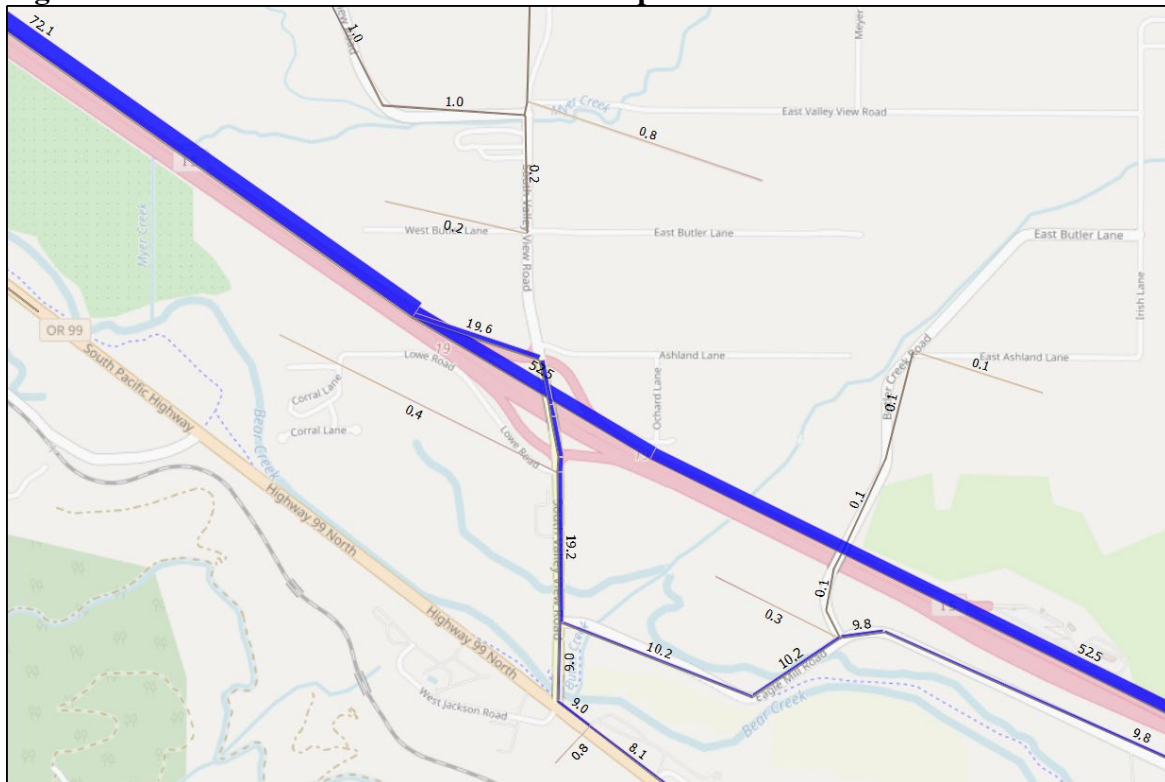


Figure B-14 – AM Peak Hour where NB I-5 Off-Ramp Traffic is Going, by Percentage

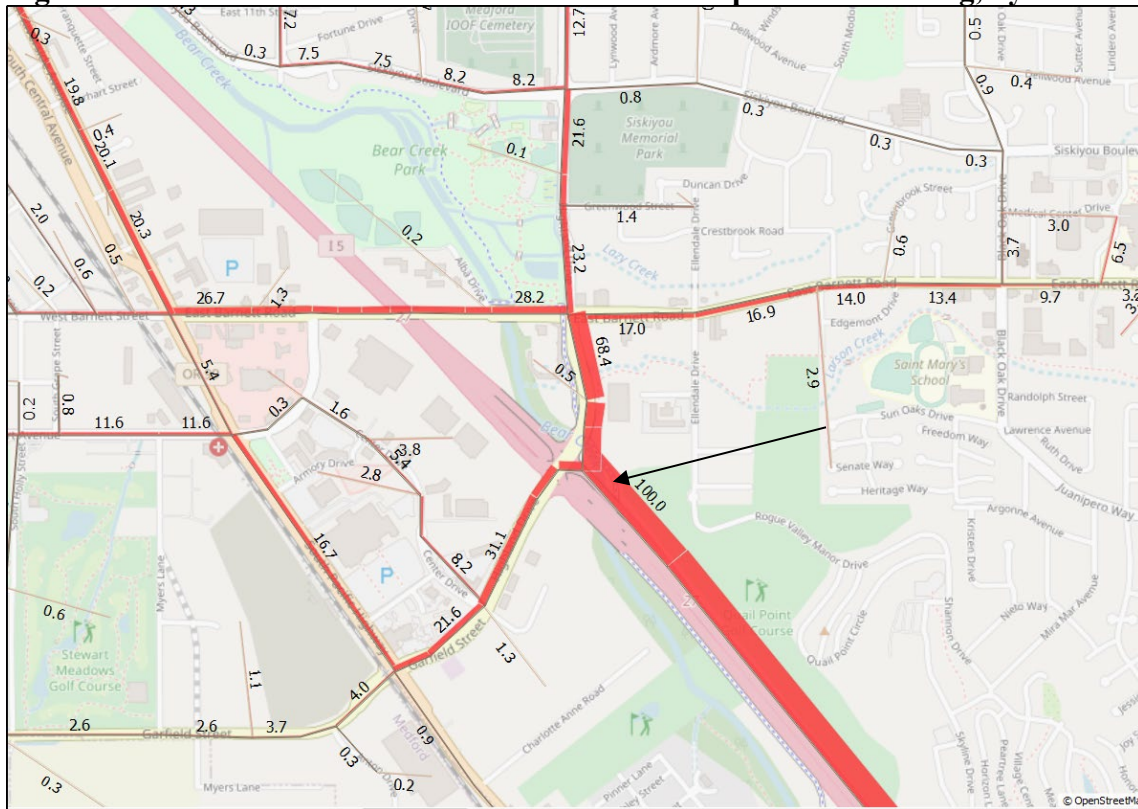
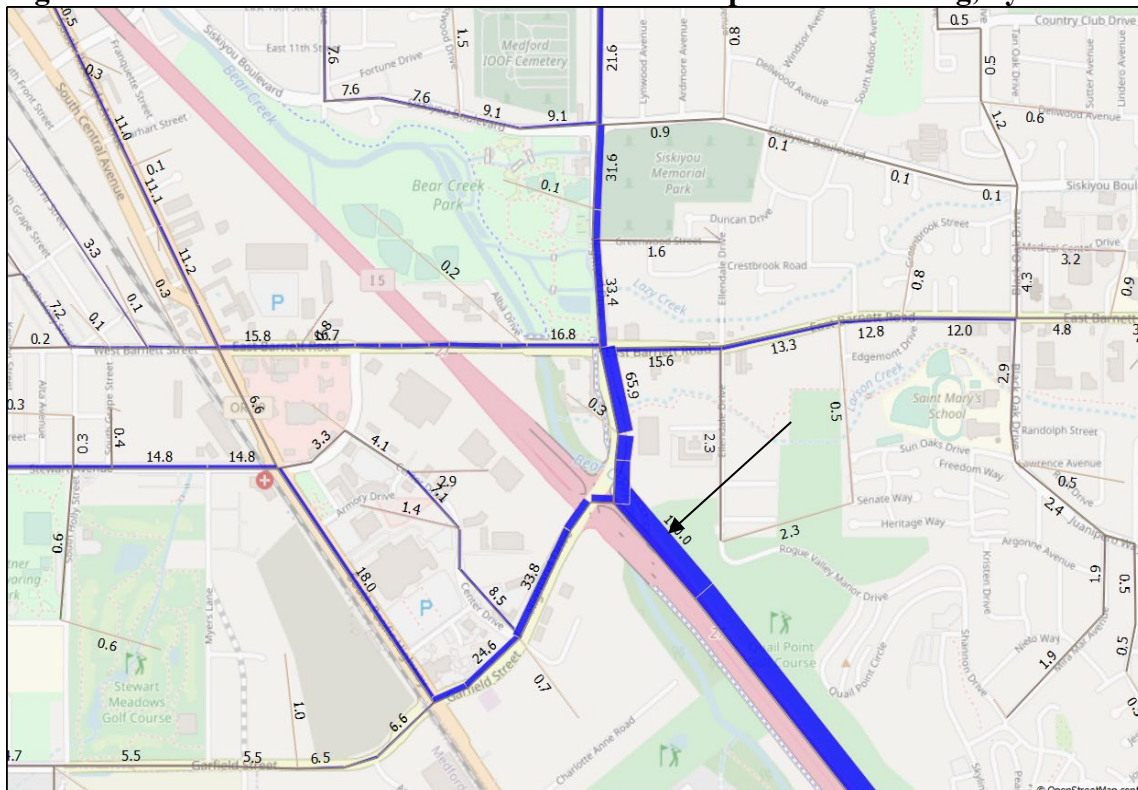


Figure B-15 – PM Peak Hour where NB I-5 Off-Ramp Traffic is Going, by Percentage



Barnett Road at Garfield Street

Figures B-16 and B-17 show where traffic volumes going through eastbound Barnett Road, east of the Highland Drive intersection are coming from and going to. Traffic is forecast to be coming from eastbound Barnett Road (AM peak 36%, PM peak 49%); from the Exit 27 southbound off ramp (AM peak 30%, PM peak 20%), from Garfield Street east of OR 99 (AM peak 10%, PM peak 10%), and from the Exit 27 northbound off ramp (AM peak 13%, PM peak 10%). Traffic volumes from this link are expected to go south on Hilldale Avenue (AM 11% and PM peak 2%), south on Black Oak Drive (AM peak 12%, PM peak 11%), north into the Asante Medical Center (AM peak 22%, PM peak 4%) and continuing east (AM peak 42%, PM peak 58%).

Table B-3 – 2045 Traffic Percentages to and from EB Barnett Rd, east of Highland Drive

EB Barnett Rd, East of Highland Drive	Percent Traffic		Figure(s)
	AM Peak Hour	PM Peak Hour	
From			
EB Barnett Rd	36%	49%	Figure B-16 Figure B-17
Exit 27 SB off ramp	30%	20%	
EB Garfield St west of OR 99	10%	10%	
Exit 27 NB off ramp	13%	10%	
To			
South on Hilldale Ave	11%	2%	Figure B-16 Figure B-17
South on Black Oak Dr	12%	11%	
North into Asante Medical Center	22%	4%	
continuing east	42%	58%	

Figures B-18 and B-19 show where traffic volumes going through westbound Barnett Road, east of the Highland Drive intersection are coming from and going to. Traffic is forecast to be coming from Hilldale Avenue to the south (AM peak 9%, PM peak 11%), from Black Oak Drive to the south (AM peak 12%, PM peak 10%), from the Asante Medical Center north of Barnett Road (AM peak 10%, PM peak 28%) and from farther east (AM peak 56%, PM peak 47%). Traffic is forecast to be going south on Garfield Street (AM peak 54%, PM peak 53%), west on Barnett Road (AM peak 45%, PM peak 46%), and north on Highland Drive (1% AM, PM peak).

Table B-4 – 2045 Traffic Percentages to and from WB Barnett Rd, east of Highland Drive

WB Barnett Rd, East of Highland Drive	Percent Traffic		Figure(s)
	AM Peak Hour	PM Peak Hour	
From			
NB Hilldale Ave	9%	11%	Figure B-18 Figure B-19
NB Black Oak Dr	12%	10%	
SB from Asante Medical Center	10%	28%	
WB Barnett Rd	56%	47%	
To			
South on Garfield St	54%	53%	Figure B-18 Figure B-19
West on Barnett	45%	46%	
North on Highland Dr	1%	1%	

Figure B-16 – AM Peak Hour Percent Traffic to and from EB East Leg Barnett/Highland

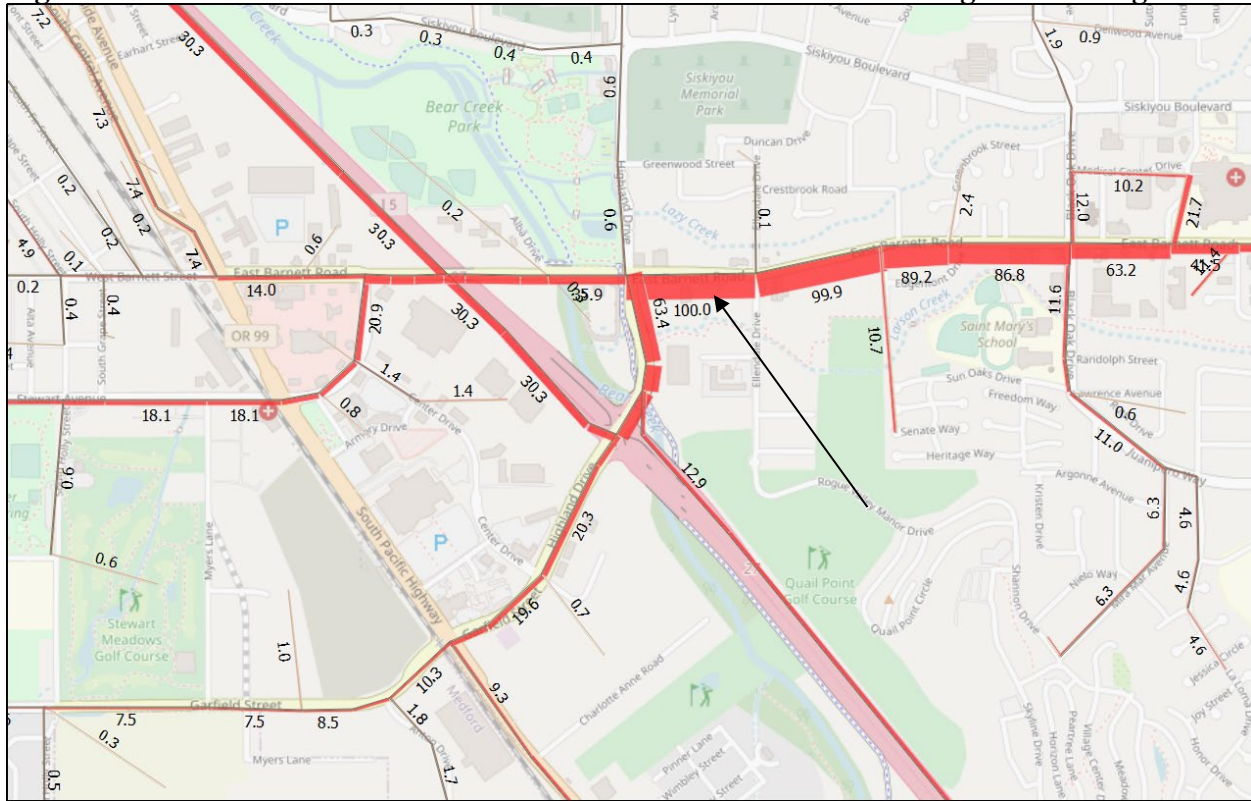


Figure B-17 – PM Peak Hour Percent Traffic to and from EB East Leg Barnett/Highland

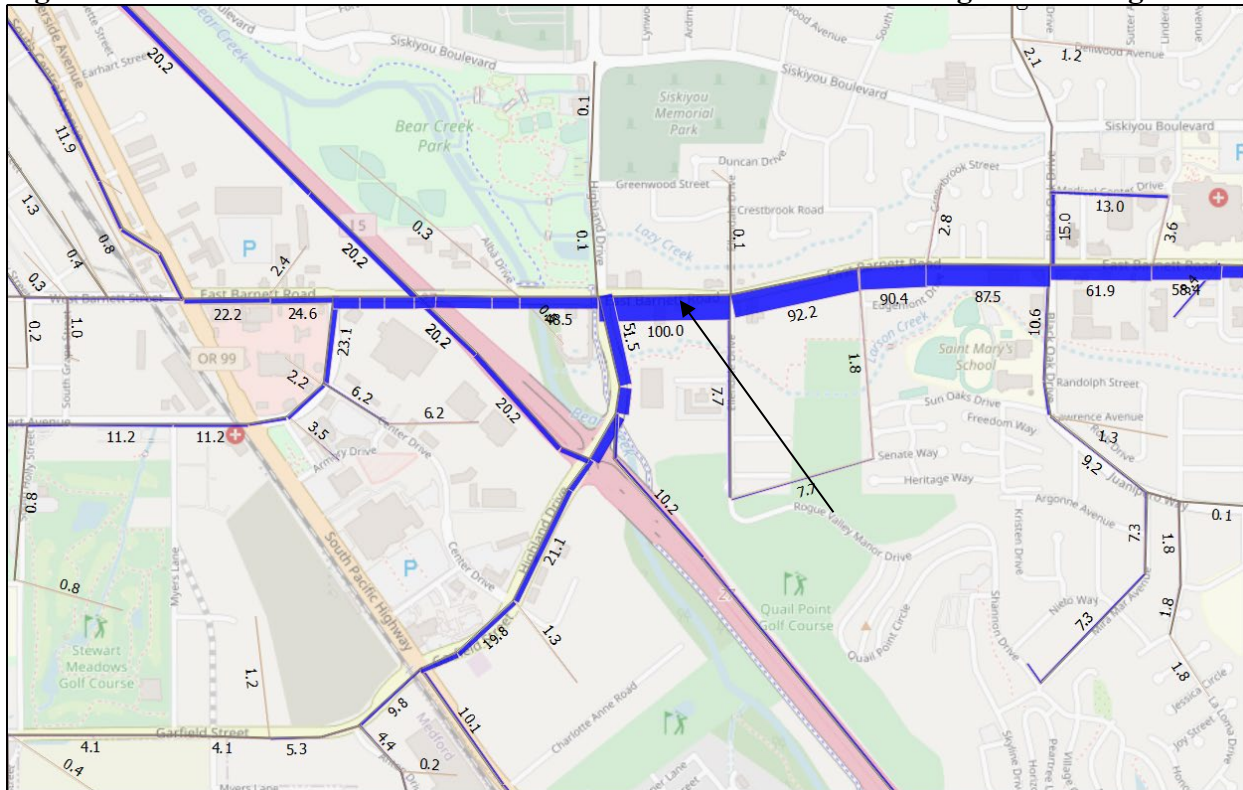


Figure B-18 – AM Peak Hour Percent Traffic to and from WB East Leg Barnett/Highland

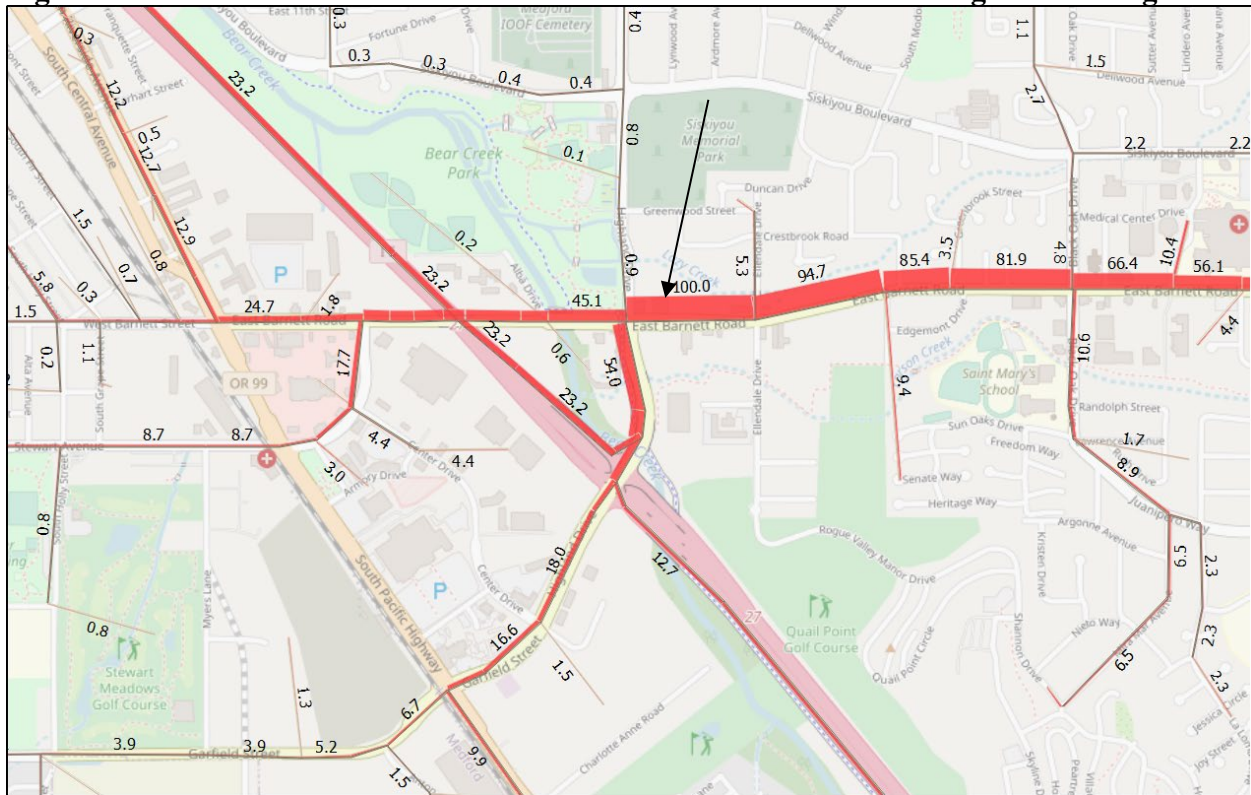
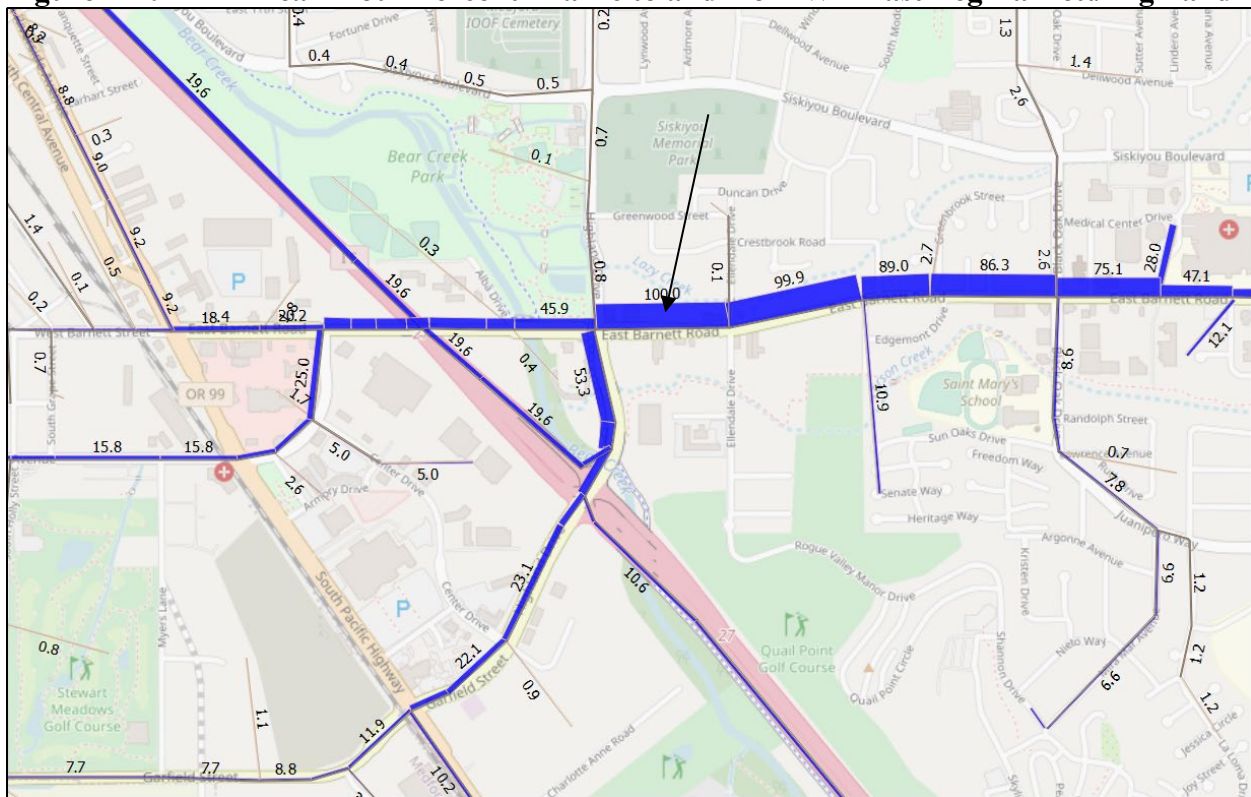


Figure B-19 – PM Peak Hour Percent Traffic to and from WB East Leg Barnett/Highland



Highland Drive at Barnett Road

Figures B-20 and B-21 show where traffic volumes going through northbound Highland Drive approaching Barnett Road are coming from and going to. Traffic volume is forecast to be coming from the Exit 27 southbound off ramp (AM peak 29%, PM peak 23%), from Garfield Street west of OR 99 (AM peak 13% and PM peak 14%), from northbound OR 99 (AM peak 11%, PM peak 15%), and from the Exit 27 northbound off ramp (AM peak 47%, PM peak 45%). Half the traffic volume is forecast to be going eastbound on Barnett Road (AM peak 57%, PM peak 54%). The rest splits between continuing northbound on Highland Drive (AM peak 23 %, PM peak 34%) and turning left to go west on Barnett Road (AM peak 19%, PM peak 12%).

Table B-5 – 2045 Traffic Percentages to and from NB Highland Drive at Barnett Road

NB Highland Drive at Barnett Road	Percent Traffic		Figure(s)
	AM Peak Hour	PM Peak Hour	
From			
Exit 27 SB off ramp	29%	23%	Figure B-20 Figure B-21
EB Garfield St west of OR 99	13%	14%	
NB OR 99	11%	15%	
Exit 27 NB off ramp	47%	45%	
To			
West on Barnett Rd	19%	12%	Figure B-20 Figure B-21
North on Highland Dr	23%	34%	
East on Barnett Rd	57%	54%	

Figures B-22 and B-23 show where traffic volumes going through southbound Highland Drive exiting the Barnett Road intersections are coming from and going to. Most of the volume is forecast to be coming from westbound Barnett Road (AM peak 57%, PM peak 59%). The rest comes from through traffic on southbound Highland Drive (AM peak 35%, PM peak 32%) and from eastbound Barnett Road turning right (AM peak 7%, PM peak 10%). About 27% of the volume is forecast to be going onto the Exit 27 northbound on ramp both AM and PM peak; other volume is going west on Garfield Street past OR 99 (10% AM peak, 17% PM peak), south on OR 99 (15% AM peak, 16% PM peak), and south onto the Exit 27 southbound on ramp (45% AM peak, 40% PM peak).

Table B-6 – 2045 Traffic Percentages to and from SB Highland Drive at Barnett Road

SB Highland Drive at Barnett Road	Percent Traffic		Figure(s)
	AM Peak Hour	PM Peak Hour	
From			
EB on Barnett Rd	7%	10%	Figure B-22 Figure B-23
SB on Highland Dr	35%	32%	
WB Barnett Rd	57%	59%	
To			
Exit 27 NB on ramp	27%	27%	Figure B-22 Figure B-23
West on Garfield St west of OR 99	10%	17%	
South on OR 99	15%	16%	
South on Exit 27 on ramp	45%	40%	

Figure B-20 – AM Peak Hour Percent Traffic to and from NB South Leg Barnett/Highland

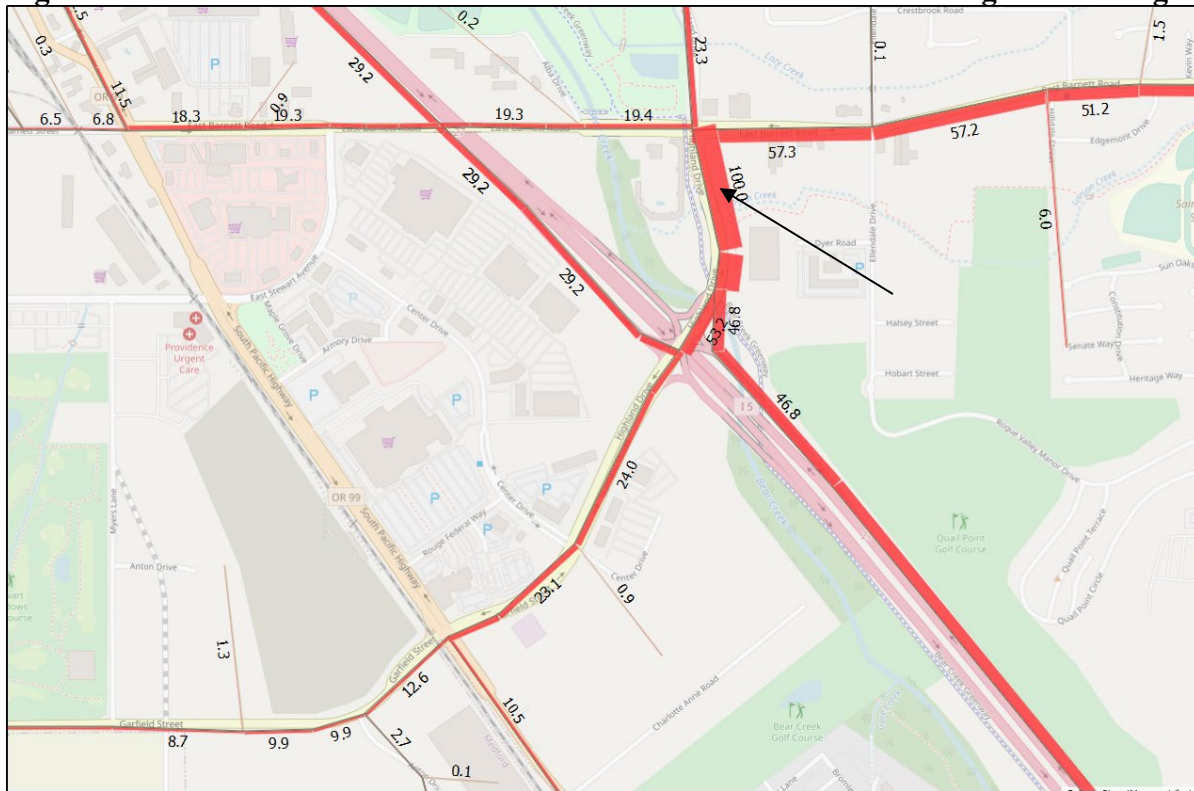


Figure B-21 – PM Peak Hour Percent Traffic to and from NB South Leg Barnett/Highland

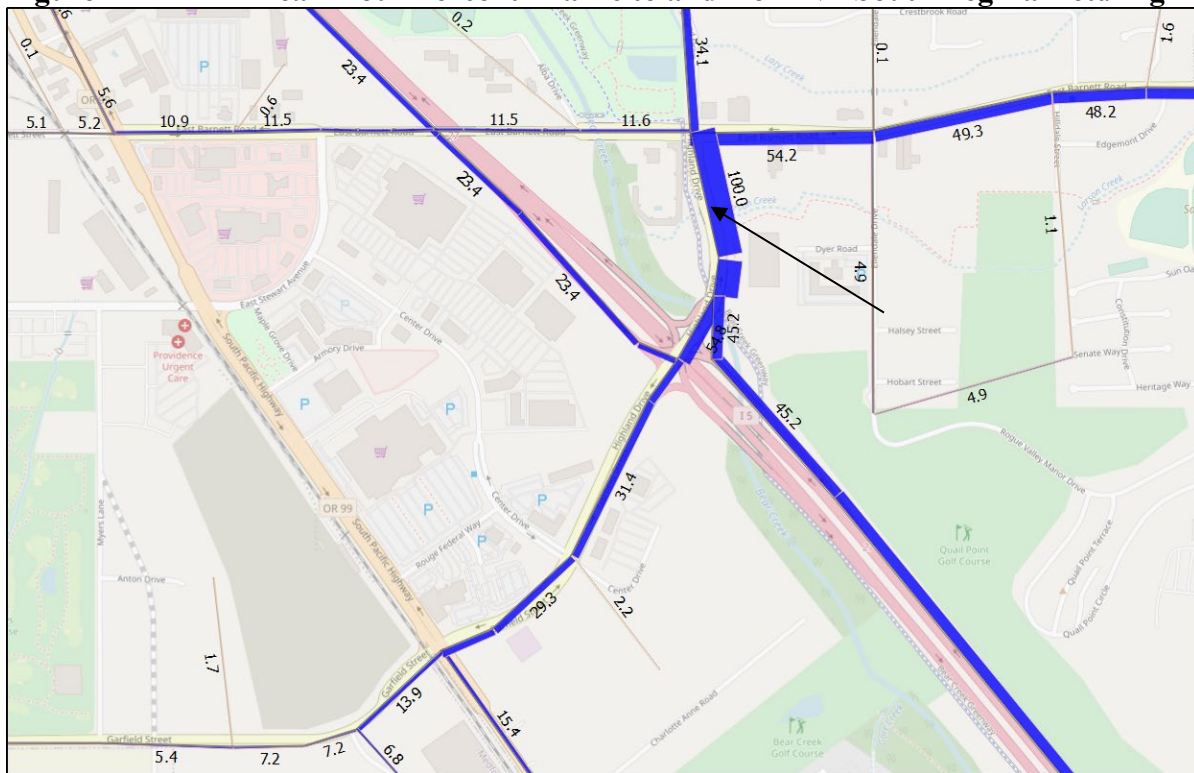


Figure B-22 – AM Peak Hour Percent Traffic to and from SB South Leg Barnett/Highland

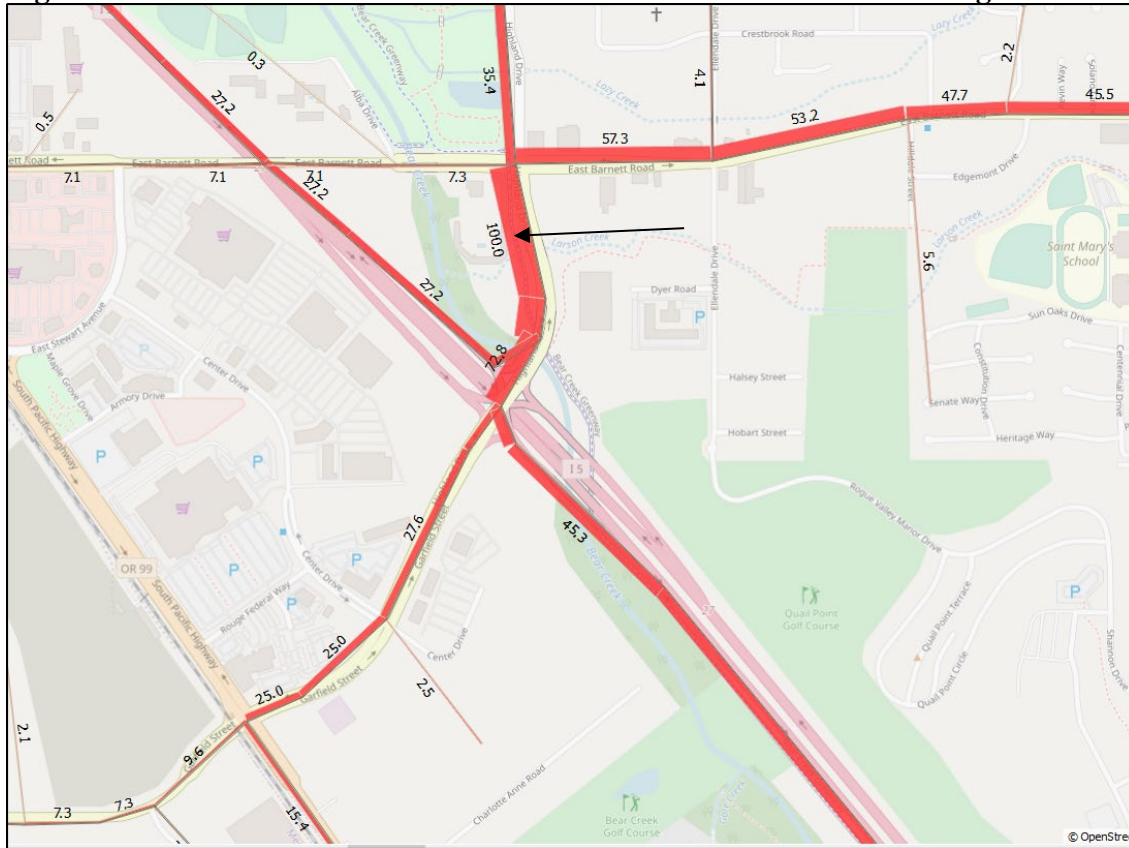
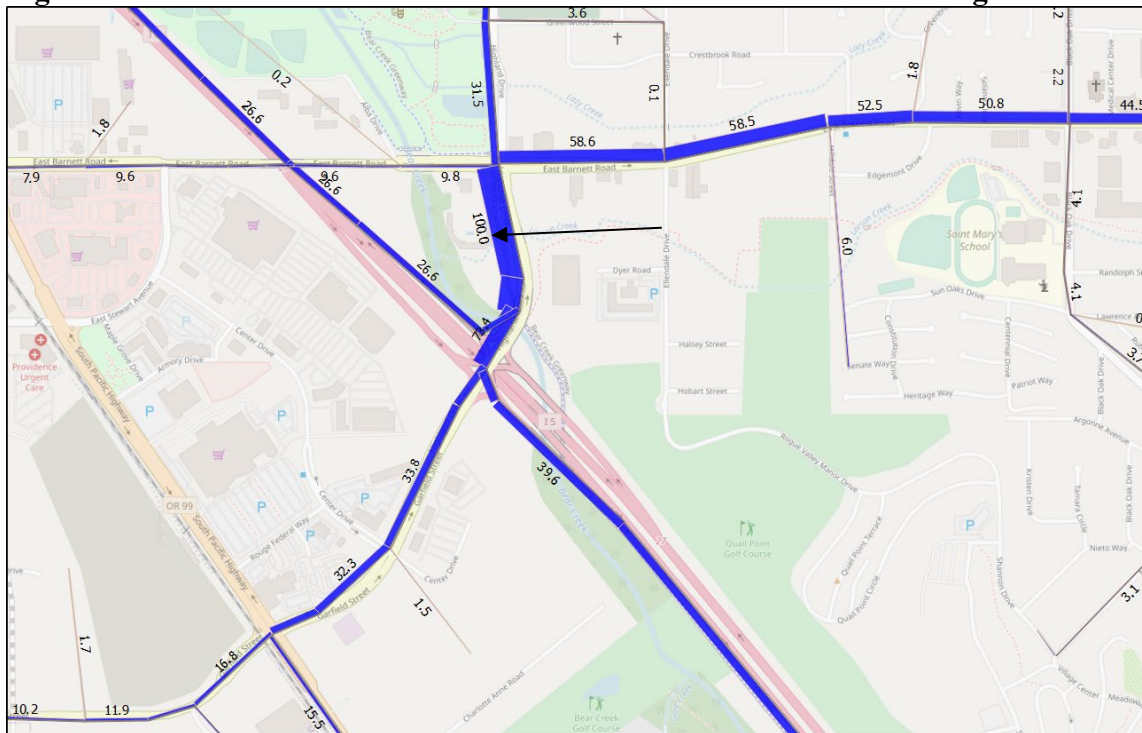


Figure B-23 – PM Peak Hour Percent Traffic to and from SB South Leg Barnett/Highland



Garfield Street at OR 99

Figures B-24 and B-25 show where 2045 volumes going eastbound through the northeast leg of the Garfield Street intersection with OR 99 are forecast to be coming from and going to. Traffic volume is forecast to be coming from northbound OR 99 (AM peak 31% and PM peak 37%), from Garfield Street east of OR 99 (AM peak 38%, PM peak 32%), and from southbound OR 99 (AM peak 31%, PM peak 31%). Traffic volume is forecast to go to the Exit 27 northbound on ramp (AM peak 23%, PM peak 24%), continue north on Garfield Street (AM peak 34%, PM peak 37%), and go onto the Exit 27 southbound on ramp (AM peak 36%, PM peak 32%).

Table B-7 – 2045 Traffic Percentages to and from EB Garfield Street at OR 99W

EB Garfield Street at OR 99W	Percent Traffic		Figure(s)
	AM Peak Hour	PM Peak Hour	
From			
NB on OR 99	31%	37%	Figure B-24 Figure B-25
EB Garfield St west of OR 99	38%	32%	
SB on OR 99	31%	31%	
To			
Exit 27 NB on ramp	23%	24%	Figure B-24 Figure B-25
North on Garfield St	34%	37%	
Exit 27 SB on ramp	36%	32%	

Figures B-26 and B-27 show where volumes going westbound through the northeast leg of the Garfield Street intersection with OR 99 are coming from and going to. Traffic volume is forecast to be coming from the Exit 27 southbound off ramp (AM peak 37%, PM peak 29%), continuing south from Barnett Road (AM peak 35%, PM peak 41%), and from the Exit 27 northbound off ramp (23% both AM and PM). Traffic volume is forecast to be going to northbound OR 99 (AM peak 24%, PM peak 18%), onto Garfield Street east of OR 99 (AM peak 28%, PM peak 40%), and south on OR 99 (AM peak 47%, PM peak 42%).

Table B-8 – 2045 Traffic Percentages to and from WB Garfield Street at OR 99W

WB Garfield Street at OR 99W	Percent Traffic		Figure(s)
	AM Peak Hour	PM Peak Hour	
From			
Exit 27 SB off ramp	37%	29%	Figure B-26 Figure B-27
SB on Highland Dr/ Garfield St from Barnett Rd	35%	41%	
Exit 27 NB off ramp	23%	23%	
To			
North on OR 99	24%	18%	Figure B-26 Figure B-27
West on Garfield, west of OR 99	28%	40%	
South on OR 99	47%	42%	

Figure B-24 – AM Peak Hour Percent Traffic to and from EB on NE Leg Garfield/OR99

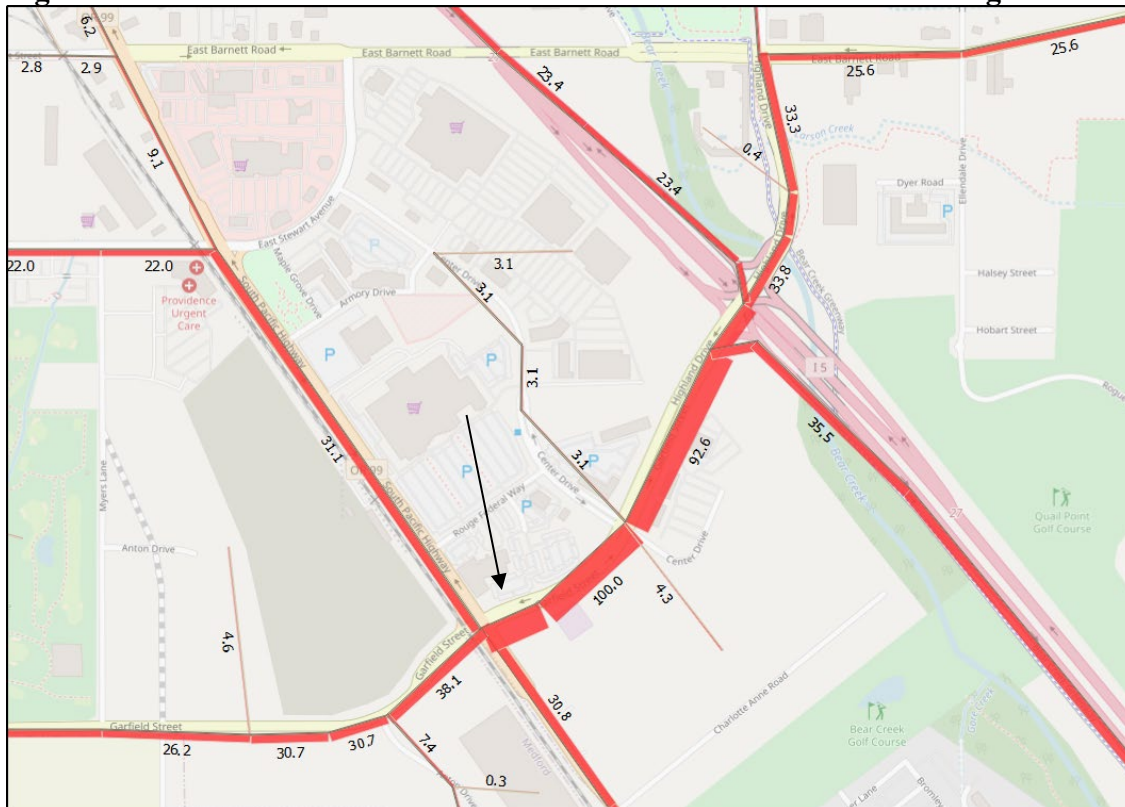


Figure B-25 – PM Peak Hour Percent Traffic to and from EB on NE Leg Garfield/OR99



Figure B-26 – AM Peak Hour Percent Traffic to and from WB on NE Leg Garfield/OR99

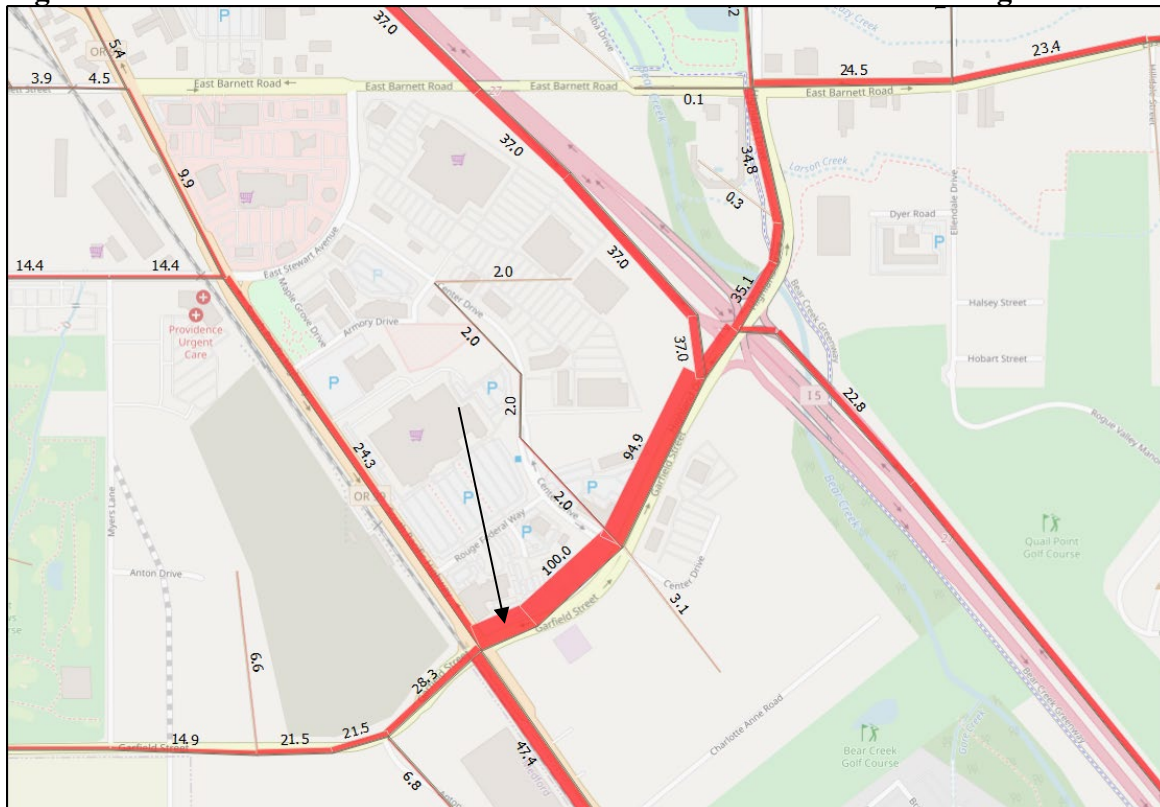
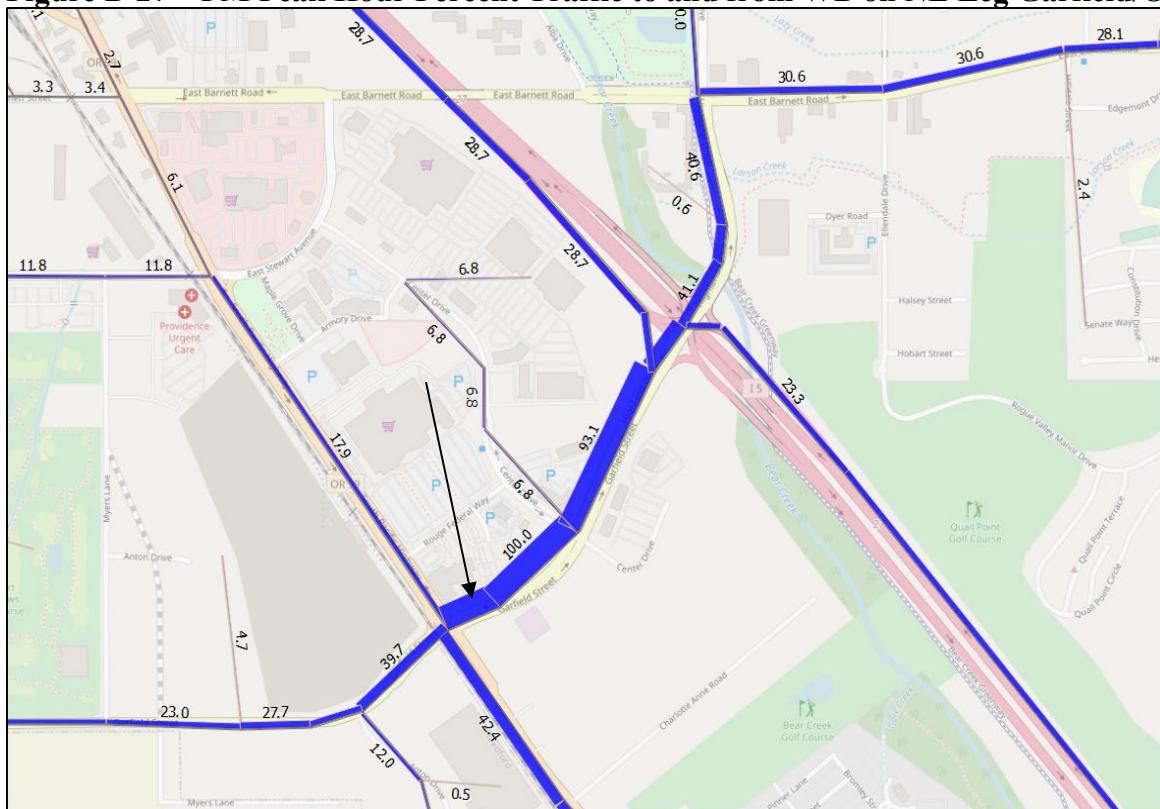


Figure B-27 – PM Peak Hour Percent Traffic to and from WB on NE Leg Garfield/OR99



Conclusions

About half of the Exit 27 off ramp traffic volume is forecast to come from short freeway trips of eight miles or less: ~40% of the southbound off-ramp volumes comes from the interchange to the north (Exit 30, three miles away) and another quarter to a third from Exit 33; and northbound from the three interchanges to the south (Exit 24, Exit 21, and Exit 19).

Exit 27 Southbound (SB) off ramp

Roughly 40% of the Exit 27 southbound off ramp traffic volume is forecast to get onto I-5 at Exit 30, with a fairly even split coming from west and east of I-5. Another quarter (AM) to a third (PM) of the Exit 27 southbound off-ramp volume is forecast to enter the freeway at Exit 33.

More than half the traffic volume off the Exit 27 southbound off ramp is forecast to go southbound (AM peak 53%, PM peak 54%). More than 40% of the traffic volume is forecast to head to eastbound Barnett Road (AM peak 43%, PM peak 41%).

11-12% of the traffic volume from the Exit 27 southbound off ramp is forecast to go north on Center Drive, to major shopping, food, and lodging attractors. A quarter of the Exit 27 southbound off ramp traffic volume is forecast to head south on OR 99 W.

Exit 27 Northbound (NB) off ramp

The Exit 27 northbound off ramp is forecast to get roughly half of its traffic volume from the three previous on ramps, with some time of day differences at these ramps.

More than two thirds of the traffic volume from the Exit 27 northbound off ramp is forecast to go to the north (AM peak 69%, PM peak 66%), splitting between westbound, northbound, and eastbound directions from there.

Barnett Road at Garfield Street

Traffic volumes eastbound on Barnett Road, east of Highland Drive, are forecast to come ~one third from eastbound Barnett and one third from the Exit 27 southbound off ramp during the AM peak. In the PM peak half of the traffic volume is forecast to come from eastbound Barnett Road.

Traffic volumes eastbound on Barnett Road have higher percentages forecast to go to the Asante Medical Center in the AM peak (22%) than PM peak (4%). Westbound Barnett has higher percentage traffic volumes forecast to come from the Asante Medical Center in PM peak (28%) than in the AM peak (10%).

Highland Drive at Barnett Road

Northbound Highland Drive at the Barnett Road intersection is forecast to have a higher percentage of traffic volume coming from the Exit 27 southbound and northbound off ramps in the AM peak (76%) than in the PM peak (68%) hour. There is a higher percentage of traffic volume forecast from northbound OR 99 in the PM peak than in the AM peak (AM peak 11%, PM peak 15%).

Southbound Highland Drive from the Barnett Road intersection is forecast to get a high percentage of traffic volume from westbound Barnett Road in both AM peak (57%) and PM peak (59%), so the westbound Barnett Road left turn is forecast to be heavily used during both peak periods.

Garfield Street at OR 99

Eastbound Garfield Street leaving the intersection with OR 99 is forecast to come from three directions, nearly evenly split: southbound on OR99, eastbound on Garfield, and northbound on OR 99. Nearly a third of this volume is forecast to be headed to the southbound on-ramp; a quarter to the northbound on-ramp; and the remaining more than a third continue north on Garfield Street to Barnett Road.

Westbound Garfield Street at OR 99 is forecast to have a higher percentage of traffic volume from the Exit 27 southbound off ramp in the AM peak (37%) than in the PM peak (29%). A high percentage of traffic volume is forecast to make the left turn to continue south on OR 99 in both AM peak (47%) and PM peak (42%).

Contact Information

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