

3.9 TRANSPORTATION

This section presents a summary of the transportation impact analysis for the Proposed Action, Alternative 1, and the No Action Alternative. The full analysis is contained in the Transportation Impact Analysis (The Transpo Group, March 2006; see **Appendix I**). The transportation issues addressed in this section include: the existing roadway network, trip generation, trip distribution, traffic operations, safety, Tumwater Middle School access, pedestrian transportation, truck access, parking, and potential mitigation measures.

3.9.1 Affected Environment

This section summarizes both existing conditions and future baseline conditions for the year 2007 when the proposal is anticipated to begin operations. Existing and baseline conditions discussed herein include the roadway network and planned improvements, traffic volumes, traffic operations, safety, and non-motorized facilities.

Study Area Intersections

Major intersections in the site vicinity and known congestion points along likely travel routes to/from the site were evaluated for this EIS. The intersections that were studied are listed below along with the existing traffic control noted in parentheses (see **Figure 3.9-1**).

- Capitol Boulevard / Trosper Road (Signalized)
- Capitol Boulevard / Lee Street (Signalized)
- I-5 NB Ramp / Trosper Road (Signalized)
- I-5 SB Ramp / Trosper Road (Signalized)
- Littlerock Road / Trosper Road (Signalized)
- Littlerock Road / Fred Meyer –Costco Access (Signalized)
- Littlerock Road / Costco Driveway (Unsignalized)
- Littlerock Road / Kingswood Drive (Unsignalized)
- Littlerock Road/ E Israel Road (Signalized)
- Littlerock Road / Tumwater Boulevard (Unsignalized)
- I-5 NB Ramp / Tumwater Boulevard (Unsignalized)
- I-5 SB Ramp / Tumwater Boulevard (Signalized)
- Tye Drive / Kingswood Drive (Unsignalized)

Roadway Network

Existing Roadways

Roadways within study area include:

- **Capitol Boulevard South** is a five-lane, north-south principal arterial with a posted speed limit of 35 mph in the site vicinity. Within the study area, the roadway has two through lanes in each direction, and a center, two-way, left-turn lane. The roadway provides access to Olympia from the north and to unincorporated Thurston County from the south. There is curb, gutter, and sidewalk on both sides of the roadway, and traffic signals at major intersections.

- **Trosper Road SW** is classified as a principal arterial that connects Capitol Boulevard SW to I-5 and the western city limits. It becomes 54th Avenue SW west of its intersection with Littlerock Road SW, and transitions to a minor arterial with a posted speed limit of 25 mph. Trosper Road SW is a four- to five-lane roadway with traffic signals at major intersections.
- **Israel Road** is classified as an urban collector that provides an east-west connection between Littlerock Road and Capitol Boulevard. In the site vicinity, Israel Road is a two-lane roadway with one travel lane in each direction. The posted speed limit is 35 mph.
- **Tumwater Boulevard** is a major east-west arterial within the site vicinity that extends between Littlerock Road SW and Henderson Blvd SE. The roadway has a two- to three-lane section west of I-5 and a four-lane section from I-5, east to Linderson Way. East of Linderson Way a three lane section is provided. There are intermittent sidewalks along Tumwater Boulevard and Class II bicycle lanes on both sides of the roadway between Capitol Boulevard and Linderson Way. The bicycle lanes are striped and signed. The posted speed limit is 35 mph, with traffic signals at the I-5 southbound ramps, Linderson Way, and Capitol Boulevard.
- **Littlerock Road** is classified as a minor arterial that provides a north-south connection between Trosper Road and Tumwater Boulevard, as well as providing access to/from unincorporated areas to the south. The cross-section varies between two/three lanes to five lanes closer to the Trosper Road intersection. The posted speed limit is 30 mph north of Odegard Road and 35 mph south of Odegard Road. Paved shoulders are provided along the corridor. Where new development has occurred, curb, gutter, and sidewalks have been constructed.

Planned Improvements

Planned improvements to the Tumwater transportation system are identified in the City of Tumwater's *2006 - 2011, Six-Year Capital Facilities Plan* (CFP) and were confirmed with City staff. One roadway improvement was identified that affects the study area intersections and is scheduled to begin before the 2007 horizon year for this EIS analysis. This planned improvement is described below.

Littlerock Road – Trosper Road to City Limits. This fully funded improvement will extend from Trosper Road south, beyond Tumwater Boulevard. Based on information provided by City staff, north of Kingswood Drive, the ultimate roadway section will be similar to the existing conditions, and include a typical 5-lane section. South of Kingswood Drive, Littlerock Road will consist of one to two travel lanes in each direction, depending on the segment, with a median restricting access. To accommodate left-turning traffic, roundabouts are proposed at several locations, including Kingswood Drive (two-lane roundabout), Odegard Road (one-lane roundabout), Israel Road (one-lane roundabout with eastbound right-turn bypass), and Tumwater Boulevard (two-lane roundabout). The City is currently in the process of securing the necessary right-of-way for the project. Construction is anticipated to be completed in 2008.

In addition, the Capitol Boulevard corridor within the study area is currently the focus of a long-range planning study as part of the citywide transportation plan. Implementation of any proposed improvements would occur beyond the 2007 horizon year; therefore, no improvements were assumed for this analysis.

Traffic Volumes

Due to the retail nature of the proposed project and typically limited trip generation of retail uses during the weekday AM peak hour, the analysis of weekday transportation conditions focuses on the PM peak hour. Saturday conditions were also considered; however, the weekday PM peak hour still represents the period with the highest overall combination of site-generated and background street traffic volumes (see **Appendix I** for a comparison of existing Saturday and weekday PM peak hour traffic counts).

Existing Volumes

Traffic counts for weekday PM peak hour conditions at the 13 study area intersections were collected in October and November 2004, and January and September 2005; Saturday peak hour traffic counts were collected in January 2005. **Figure 3.9-1** shows existing weekday PM peak hour traffic volumes at the study intersections. (See **Appendix I** for discussion of Saturday traffic counts.)

Baseline Volumes in 2007

In order to estimate future baseline traffic volumes in 2007 at the study area intersections, a 3.0-percent annual growth rate was applied to the 2005 existing traffic volumes to account for an increase in general background traffic volumes. While historical counts at certain study area intersections suggest a 1.0-percent annual growth rate, the higher 3.0-percent annual growth rate was used per City staff direction. Additionally, peak hour “pipeline” project volumes were added to the forecast 2007 volumes. Pipeline projects are planned developments that have not yet been constructed, but would ultimately generate traffic within the study area. Based on City staff direction, future traffic volumes from these pipeline projects were accounted for: Pinehurst Apartments, Towncenter East—Phases 1 and 2, Airdustrial Park, GA Project, Kirsop Village, The Old Towne Plaza, Sovran, Littlerock Retail, and 6501 Capitol (see **Appendix I** for further detail). The use of both pipeline project traffic volumes and background growth rates provides a conservative (high) estimate of future baseline traffic volumes. The 2007 future baseline weekday PM peak hour traffic volumes are illustrated in **Figure 3.9-2**.

Traffic Operations

Traffic operations for an intersection are described alphabetically with a range of levels of service (LOS A through F), with LOS A indicating free-flowing traffic and LOS F indicating

Figure 3.9-1
Existing Weekday PM Peak Hour Traffic Volumes

Figure 3.9-2
2007 Baseline Weekday PM Peak Hour Traffic Volumes

extreme congestion and long vehicle delays. At signalized intersections, LOS is measured in total control delay per vehicle. At stop-sign-controlled intersections, LOS is measured in total control delay per vehicle and is typically reported for the intersection turning movement with the highest delay.

City of Tumwater LOS Standard

The City of Tumwater has adopted an intersection LOS concurrency standard of E for Capitol Boulevard/Trosper Road and the Trosper Road I-5 interchange, and a LOS standard of D for all other arterial intersections under City jurisdiction (Tumwater Municipal Code 15.48.030). While the standard does not apply to private unsignalized driveways, proposed project site driveways, such as the Littlerock Road/South Costco Driveway (which is intended to be a shared access used by the proposed project), were also evaluated for purposes of SEPA disclosure.

Existing Traffic Operations

Individual intersection levels of service (LOS) were calculated at the study intersections for the weekday PM peak hour (see **Appendix I** for discussion of LOS calculation methods). Under existing conditions (2005) all signalized intersections in the study area operate within the City's LOS standard. Of the four unsignalized arterial intersections that were studied, two do not currently meet the City's LOS standard: the westbound left-turns at Tumwater Boulevard and Littlerock Road currently operate at LOS E; and, the northbound left-turn at Tumwater Boulevard and the I-5 NB ramps operates at LOS F. The westbound left-turn at Littlerock Road and the south Costco driveway also operates poorly at LOS F. As previously noted, this intersection is not subject to City of Tumwater LOS concurrency standards. **Table 3.9-1** shows existing (2005) weekday PM peak hour LOS at the study intersections.

An assessment of queuing conditions (the length of vehicle lineups at intersections) along the Trosper Road corridor was conducted for this EIS as directed by the City, in order to evaluate the impacts of the project on the operations of the corridor, given the proximity of the traffic signals to one another. A detailed micro-simulation analysis was performed for the Trosper Road corridor as requested by the City, to assess these queuing impacts. To develop the micro-simulation model, new vehicle counts were collected in September, 2005. Additional data collected included traffic counts by lane and by movement in addition to observations of existing queue lengths for key movements. The existing conditions column in **Table 3.9-2** provides a summary of the field observations. For movements where field observations were not determined necessary for model calibration purposes, no values are shown (as n/a). In addition to the vehicle queuing observations, an origin-destination study was performed to link vehicle trips to/from the north along I-5 and trips to/from Capitol Boulevard south of the Trosper Road intersection. The origin destination study provides additional information on vehicle travel patterns through the corridor not collected as part of a standard turning movement count.

The existing maximum queues at several locations currently extend beyond the storage (queuing lane length) provided. The most significant queues are at the following locations: the northbound queues at Capitol Boulevard/Trosper Road; the northbound, southbound, and eastbound queues at I-5 Southbound Ramps/Trosper Road; and, the westbound queues at Littlerock Road/Trosper Road. **Table 3.9-2** shows existing queuing conditions along the Trosper Road corridor, and where the storage is exceeded, the estimated spillback. Spillback is defined as the queue that extends beyond an adjacent intersection (see **Appendix I** for further discussion).

Baseline Traffic Operations in 2007

Baseline (2007) LOS was calculated for all study intersections and a queuing analysis for the Troser Road corridor was performed. Under the baseline condition in 2007 (without the proposed project), most signalized intersections within the study area will operate within the City's LOS standards. Two arterial intersections are forecast to operate at LOS F in the future without the proposed project. These include the northbound and southbound I-5 ramps at Tumwater Boulevard. The City has identified the need for a future improvement at this interchange (the City is in the process of collecting SEPA mitigation fees for these proposed

**Table 3.9-1
2005 EXISTING AND 2007 BASELINE WEEKDAY PM PEAK HOUR LOS SUMMARY**

Study Intersection	Type ¹	2005 Existing			2007 Baseline (Without Project)		
		LOS ²	Delay ³	V/C ⁴ or WM ⁵	LOS	Delay	V/C or WM
Capitol Blvd / Lee St	Signal	B	17.4	0.59	D	35.1	0.66
Capitol Blvd / Troser Rd	Signal	D	50.8	0.82	E	67.8	0.95
I-5 NB Ramps/ Troser Rd	Signal	A	8.8	0.41	A	6.9	0.46
I-5 SB Ramps/ Troser Rd	Signal	D	48.3	0.79	E	56.0	0.95
Littlerock Rd/ Troser Rd	Signal	D	44.2	0.68	D	43.6	0.72
Littlerock Rd/ North Costco Drwy	Signal	A	9.7	0.37	B	10.1	0.39
Littlerock Rd/ Israel Rd	Sig/Rd	B	13.5	0.69	B	18.8	0.97
I-5 SB Ramps/ Tumwater Blvd	Signal	B	18.5	0.83	F	97.5	1.21
I-5 NB Ramps/ Tumwater Blvd	Stop	F	823.3	NBL	F	>999	NBL
Littlerock Rd/ South Costco Drwy	Stop	F	181.2	WBL	F	>999	EB
Littlerock Rd/ Kingswood Dr	Sp/Rd	D	34	WBL	A	4.3	0.5
Littlerock Rd/ Tumwater Blvd	Sp/Rd	E	41.3	WBL	A	6.3	0.31
Tyee Rd/ Kingswood Dr	Stop	A	9.2	EBL	A	9.3	EBL

Source: *The Transpo Group, 2005.*

¹ Intersection control type. "Sig/Rd" means intersection is signalized but will be converted to a roundabout by 2007. "Stp/Rd" means the intersection is stop-controlled but will be converted to a roundabout by 2007. Roundabouts are part of the Littlerock Road Improvement project.

² Level of service, based on 2000 *Highway Capacity Manual* methodology.

³ Average delay in seconds per vehicle. Where ">999" is shown, calculated delay would be greater than the minimum LOS F delay criteria.

⁴ Volume-to-capacity ratio reported for signalized intersections.

⁵ Worst movement reported for unsignalized intersections.

projects that would add additional traffic to this interchange). In addition to these two intersections, at the intersection of Littlerock Road and the Costco south driveway, LOS F conditions are anticipated to continue with the addition of traffic from previously approved projects (Sovran Development and Littlerock Retail Project) on the west side of the intersection. **Table 3.9-1** shows forecast LOS at study intersections under the baseline condition in 2007 (without the project).

**Table 3.9-2
2005 EXISTING AND 2007 PM PEAK HOUR
BASELINE 95TH PERCENTILE QUEUE LENGTH RESULTS
FOR TROSPER ROAD CORRIDOR (IN FT.)¹**

Study Intersection	Movement	Available Storage (ft)	2005 Existing		2007 Baseline (Without Project)	
			Queue Length ²	Exceeds Capacity (ft)	Queue Length ³	Exceeds Capacity (ft)
Capitol Blvd / Lee St	NBT	1000	525	No	705	No
	SBL	150	n/a ⁵	n/a	90	No
	SBT	650	n/a	n/a	390	No
Capitol Blvd / Trosper Rd	NBL	550	225	No	170	No
	NBTL	650	700	Yes +50	755	Yes +105
	NBTR	650	675	Yes +25	725	Yes +75
	SBT	1000	n/a	n/a	350	No
	EBL	325	230	No	280	No
	EBTL	325	250	No	300	No
	EBR	325	250	No	215	No
I-5 NB Ramps/ Trosper Rd	NBL	150	n/a	n/a	150	No
	EBT	780	n/a	n/a	180	No
	WBT	325	n/a	n/a	90	No
I-5 SB Ramps/ Trosper Rd	NBLT	150	115	No	185	Yes +35
	NBR	150	250	Yes +100	355	Yes +205
	SBL	450	275	No	225	No
	SBLT	1000	410	No	750	No
	SBR	400	430	Yes +30	910	Yes +510
	EBL	125	115	No	525	Yes +400
	EBT-in	400	200	No	540	Yes +140
	EBT-out	400	430	Yes +30	565	Yes +165
	EBR	100	20	No	20	No
	WBL	350	n/a	n/a	350	No
	WBT	780	n/a	n/a	310	No
Littlerock Rd/ Trosper Rd	NBL	300	n/a	n/a	760	Yes +460
	NBR	800	n/a	n/a	>800	Yes +>25
	EBL	150	100	No	90	No
	EBT	1000	205	No	265	No
	EBTR	300	260	No	575	Yes ⁴ +75
	WBL	175	280	Yes +105	415	Yes +240
	WBTL	400	500	Yes +100	420	Yes +20
WBTR	400	210	No	285	No	

Source: The Transpo Group, 2005.

¹ 95th percentile queue lengths are the longest expected queue for the majority (95 percent) of the time.

² 95th percentile queue lengths – Observed.

³ 95th percentile queue lengths – Forecasted from micro-simulation model.

⁴ Future storage lengths revised from existing conditions due to planned improvements by the City.

⁵ N/a – field queuing observations not quantified for these movements. Key movements for model calibration purposes were determined through coordination with the City.

Under the baseline condition in 2007, future queue lengths at several intersections locations along the Trospen Road corridor are anticipated to extend beyond the storage provided. Due to planned improvements at the Littlerock/Trospen Road intersection and signal timing adjustments along the Trospen Road corridor to better manage forecasted volumes, some baseline queue lengths are forecast to be less than under existing conditions. However, the maximum queue lengths are generally forecast to be longer than under existing conditions (see **Table 3.9-2** above).

Traffic Safety

Historical accident records were obtained from the City of Tumwater for the most recent period available (2001 to 2003). In general, a signalized intersection is considered a high-accident location (HAL) if it experiences, on average, ten or more accidents per year. An unsignalized intersection is considered a high-accident location if, on average, five or more accidents are reported on an annual basis. In addition, an intersection is generally considered a high accident location if the accident rate per million entering vehicles (MEV) is greater than 1.0. Based on these criteria, none of the intersections analyzed are considered high accident locations. All intersections at or adjacent to the study area have accident rates less than 1.0 accidents per MEV and have annual averages less than industry standards. Intersection accident reports were not obtained for I-5 on/off ramp study intersections; however, WSDOT confirmed that no HALs exist at these interchanges. Therefore, no significant safety issues currently exist. See Table 3 in **Appendix I** for the analysis of existing conditions traffic safety.

Tumwater Middle School Access

Currently, three driveways serve Tumwater Middle School, which is located southwest of the site on the opposite side of Littlerock Road (see **Figure 2-1**). Two driveways, restricted to buses only, provide access to the front bus loading area of the school, while a third, located to the north of the school provides access to the school's parking area. The northernmost driveway is located approximately 780 feet from Kingswood Drive. The City's planned corridor project includes the construction of a roundabout at the Littlerock Road/Kingswood Drive intersection. As a result of this improvement, all of the school driveways will be limited to right-in/right-out only. Access to the school from the south will be accommodated through u-turns at the Kingswood Drive intersection.

Non-Motorized Facilities

Pedestrian facilities along Littlerock Road primarily consist of paved shoulders. Properties developed recently have included the construction of curb, gutter, and sidewalks. North of the project site, towards Trospen Road and the other retail developments, continuous sidewalks are provided on the east side of Littlerock Road. Tyee Drive has a sidewalk on the west side of the road and Kingswood Drive has sidewalks on both sides.

Existing non-motorized facilities along Littlerock Road will be improved as part of the Littlerock Road corridor improvements.

3.9.2 Impacts

As stated above, impacts of the Proposed Action and alternatives were evaluated for the year 2007 horizon year, shortly after opening of the proposed retail store. Transportation conditions

with the project in 2007 were compared to baseline conditions in 2007 described under Affected Environment (without the proposed project). Transportation issues evaluated in this section include: trip generation, trip distribution, traffic operations, safety, school and pedestrian transportation, and truck access.

Proposed Action

Trip Generation

Weekday PM peak hour trip generation estimates for the proposed project were based on data collected from similar retail stores in the northwestern U.S., as summarized in Trip Generation Study for Free-Standing Discount Superstores (The Transpo Group, April 2003), and on data collected at various fueling stations located as out-lots to larger retail properties (The Transpo Group, 2005). While the actual store data confirms the rate for such uses provided in the *ITE Trip Generation Manual*, 7th Edition, it shows a somewhat higher rate; therefore, it provides a conservative estimate of project-generated trips (see **Appendix I** for further information). Additionally, a 17 percent pass-by rate was assumed in the analysis, based on the *ITE Trip Generation Handbook*. Pass-by trips represent trips that are currently passing by the site. With the addition of the proposed development, these trips would stop at the site before continuing on their way. As such, these trips do not represent new trips to the adjacent roadway network.

In summary, the proposed retail development is expected to generate a total of 9,716 new daily, and 793 net new weekday PM peak hour trips. The trip generation estimate for the proposed project is summarized in **Table 3.9-3**.

**Table 3.9-3
PROJECT TRIP GENERATION SUMMARY**

Land Use	Size	Total Daily Trips ¹	PM Peak Hour Trips		
			Total	In	Out
Discount Retail Superstore ²	207,751	8,432	672 ⁴	343	329
Garden Center	20,822 ⁵	623	66 ⁴	40	26
Fueling Station	12 vfp ³	661	54 ⁴	28	26
Total Development (Primary Trips)		9,716	793	411	382
Total Development (Pass-by Trips – 17%)		2,570	210	105	105
Total Development (Driveway Trips)		12,286	1,003	516	487

Source: *The Transpo Group, 2005.*

¹Based on *ITE Trip Generation Manual* 7th Edition, includes primary trips only

²Based on *Trip Generation Study for Free-Standing Discount Superstores* (The Transpo Group, April 2003).

³Vehicle Fueling Positions

⁴Includes primary trips only

⁵Trip generation estimated using the rate identified for a garden center at a discount supercenter, as directed by City staff.

Trip Distribution and Traffic Volumes

Project traffic was assigned to the surrounding roadway system, based on travel patterns identified in the Home Depot Traffic Impact Analysis (The Shea Group, 2002) located immediately south of the proposed project. Approximately 70 percent of the project traffic is anticipated to travel north of the site via Littlerock Road or Tyee Drive. Of this 70 percent, 10 percent is anticipated to continue north beyond Troser Road via 2nd Avenue, 10 percent west of Littlerock Road, 25 percent north on I-5, 5 percent south on I-5, and the remaining 20 percent split north and south on Capitol Boulevard. Thirty percent of the future project traffic is anticipated to travel south of the site destined for SB I-5, south on Littlerock, and east of I-5 via E Israel Road and Tumwater Boulevard. **Figure 3.9-3** depicts the anticipated project distribution of new trips.

Project-generated weekday PM peak hour traffic volumes at study intersections are depicted in **Figures 3.9-4** and **3.9-5** (**Figure 3.9-5** is a detail view, showing volumes at future site access points). Estimated total traffic volumes in 2007, including both project and non-project volumes, are shown in **Figures 3.9-6** and **3.9-7** (**Figure 3.9-7** is a detail view, showing volumes at future site access points).

Traffic Operations Impacts

Traffic operations at the study intersections were evaluated for the 2007 with-project conditions and then compared to 2007 baseline conditions to identify project-related impacts.

Of the 12 study area arterial intersections, which do not include the site driveways, three are forecast to operate below the City of Tumwater's LOS standard:

- The I-5 SB Ramps/Troser Road intersection is anticipated to operate at LOS F by 2007 with the proposed project without mitigation, compared to LOS E without the proposed project. In addition, due to the proximity of this intersection to the Troser Road/Littlerock Road SW intersection, eastbound queuing at the I-5 SB ramps would impact the operations of the Littlerock Road intersection. As a result, mitigation measures intended to mitigate project impacts and improve system performance are identified for both intersections. Mitigation measures are proposed for this intersection (see Section 3.9.3, Mitigation Measures below).
- The intersection of I-5 SB Ramps/Tumwater Boulevard is forecast to operate at LOS F with or without the proposed project, without mitigation. Based on the current City of Tumwater Capital Facilities Plan (2006-2011), the City is collecting mitigation fees as part of the SEPA process for proposed projects that would add traffic to this intersection. These fees would be used for the improvements at this interchange and are based on a pro-rata share of the improvement costs, based on the contribution of new trips through this interchange. These improvement projects are not expected to be completed by the 2007 horizon year.
- The I-5 NB Ramps/Tumwater Boulevard intersection is forecast to operate at LOS F with or without the proposed project, without mitigation. Mitigation fees will be collected for this intersection as part of the funding for the I-5/Tumwater Boulevard interchange project.

**Figure 3.9-3
Trip Distribution**

Figure 3.9-4
Project –Generated Weekday PM Peak Hour Traffic Volumes

Figure 3.9-5
Project-Generated Weekday PM Peak Hour Traffic Volumes – Site Detail

Figure 3.9-6
2007 With-Project Weekday PM Peak Hour Traffic Volumes

Figure 3.9-7
2007 With-Project Weekday PM Peak Hour Traffic Volumes – Site Detail

Table 3.9-4 summarizes LOS at study intersections under the Proposed Action.

Queue lengths are forecast to increase along the Trosper Road corridor as a result of the proposed project. The greatest increase is anticipated at the I-5 SB Ramps/Trosper Road intersection. The LOS analysis described previously has identified the need for mitigation at this intersection.

Along Trosper Road, east of the I-5 SB Ramps/Trosper Road intersection, the increases in queue lengths over baseline conditions without the proposed project are forecasted to be 50 feet or less, which represents two car lengths. For example, queue lengths at the Capitol Boulevard/Trosper Road intersection are forecast to increase by one to two vehicles during the weekday PM peak hour. This level of increase does not by itself trigger the need for additional improvements because no new queue spillback is expected to be triggered. At the NB Ramps/Trosper Road intersection, the northbound left-turn is forecast to increase beyond the designated storage by only one vehicle. Based on the current width of pavement on that approach, there is adequate width for vehicles destined for the right-turn movement to bypass this peak condition queue. **Table 3.9-5** summarizes forecasted queue lengths along the Trosper Road corridor with the proposed project.

**Table 3.9-4
2007 BASELINE AND WITH-PROJECT PM PEAK HOUR LOS SUMMARY**

PM Peak Hour	Type ¹	2007 Baseline			2007 With Project		
		LOS ²	Delay ³	V/C ⁴ or WM ⁵	LOS ²	Delay ³	V/C ⁴ or WM ⁵
Capitol Blvd / Lee St	Signal	D	35.1	0.66	D	35.8	0.68
Capitol Blvd / Trosper Rd	Signal	E	67.8	0.95	E	74.6	0.98
I-5 NB Ramps / Trosper Rd	Signal	A	6.9	0.46	A	7.3	0.53
I-5 SB Ramps / Trosper Rd	Signal	E	56.0	0.95	F ⁶	96.9	1.13
Littlerock Rd / Trosper Rd	Signal	D	43.6	0.72	D	48.2	0.80
Littlerock Rd / North Costco Drwy	Signal	B	10.1	0.39	A	9.9	0.47
Littlerock Rd / Israel Rd	Round	B	18.8	0.97	D	38.4	1.14
I-5 SB Ramps / Tumwater Blvd	Signal	F	97.5	1.21	F	121.9	1.33
I-5 NB Ramps / Tumwater Blvd	Stop	F	>999	NBL	F	>999	NBL
Littlerock Rd / South Costco Drwy	Stop	F	>999	EB	F	>999	EB
Littlerock Rd / Kingswood Dr	Round	A	4.3	0.5	A	6.2	0.65
Littlerock Rd / Tumwater Blvd	Round	A	6.3	0.31	A	6.4	0.34
Tyee Rd / Kingswood Dr	Stop	A	9.3	EBL	B	11.4	EBL

Source: *The Transpo Group, 2005.*

¹ Intersection control type. "Round" means roundabout, which will be installed as part of the Littlerock Road Improvement project.

² Level of service, based on 2000 *Highway Capacity Manual* methodology.

³ Average delay in seconds per vehicle. Where ">999" is shown, calculated delay would be greater than the minimum LOS F delay criteria.

⁴ Volume-to-capacity ratio reported for signalized intersections.

⁵ Worst movement reported for unsignalized intersections.

⁶ Without mitigation.

Site Access/Circulation Analysis

Under the proposed site plan, the parking lot would be bisected by Kingswood Drive (see **Chapter 2** and **Figure 2-3**). The shared access with Costco and Albany International (Littlerock Road/South Costco Driveway) is forecast to operate at LOS F with (and without) the proposed project. A traffic signal is proposed by the applicant at the Littlerock Road/south Costco driveway (shared access) intersection (see Section 3.9.3, Mitigation Measures). With installation of a signal, the intersection would improve to LOS A.

Traffic Safety Impacts

Generally, as traffic volumes increase through the area, the potential for traffic accidents would also increase. However, the Littlerock Road improvement project will significantly improve operations and traffic safety as it relates to turning conflicts. North of the site along Troser Road, only minor increases in intersection delay would be expected, and no significant increase in the number of accidents is anticipated. Mitigation to improve safety and operations for the minor street movements is proposed at the south Costco shared access.

Under the proposed site plan, there would be frequent pedestrian crossings of Kingswood Drive, because the site is bisected by this roadway (see **Chapter 2** and **Figure 2-3**). While a striped pedestrian walkway is proposed, the need for pedestrians to cross would increase pedestrian/vehicle conflicts and affect the operations of Kingswood Road. However, overall, no significant safety impacts are anticipated.

Tumwater Middle School Impacts

Currently three driveways serve the Middle School. Two driveways provide access to the front bus loading area of the school, while a third, located to the north of the school, provides access to the school's parking area. These two areas are not connected and are served independently by the access points previously described. The northernmost driveway is located approximately 780 feet from Kingswood Drive. The City's planned corridor project includes the construction of a roundabout at the Littlerock Road/Kingswood Drive intersection. As a result of this improvement all driveways will be restricted such that they are limited to right-in/right-out only. Access to the school from the south will be accommodated through u-turns at the Kingswood Drive intersection. Due to the turn restrictions and the access management planned by the City, the proposed retail project would have little impact on the safety and operations of the school access. Furthermore, traffic exiting the site from Kingswood Drive will be forced to yield to u-turn traffic from the south destined for the school; in addition, the peak periods of the school would occur during the non-peak commute hours and thus would not overlap with the peak hours of the proposed retail project. Due to the proximity of the school access points to the future roundabout at Kingswood Drive and the traffic calming effect caused by the roundabout, travel speeds are anticipated to be within the design speeds of the roadway.

Additionally, as part of the Littlerock Road improvements, full non-motorized improvements including sidewalks and marked crossings at the roundabout will be constructed. These improvements will provide safe and effective means for students to walk to school without being impacted by any additional traffic to be generated by the project.

**Table 3.9-5
2007 BASELINE AND WITH-PROJECT 95TH PERCENTILE PM PEAK HOUR
QUEUE LENGTH RESULTS FOR TROSPER ROAD CORRIDOR (FT.)¹**

Study Intersection	Movement	Available Storage	2007 Baseline		2007 With-Project	
			Queue Length	Exceeds Capacity	Queue Length	Exceeds Capacity
Capitol Blvd / Lee St	NBT	1000	705	No	720	No
	SBL	150	90	No	90	No
	SBT	650	390	No	390	No
Capitol Blvd / Trospers Rd	NBL	550	170	No	220	No
	NBTL	650	755	Yes +105	750	Yes +100
	NBTR	650	725	Yes +75	710	Yes +60
	SBT	1000	350	No	355	No
	EBL	325	280	No	305	No
	EBTL	325	300	No	300	No
	EBR	325	215	No	160	No
I-5 NB Ramps / Trospers Rd	NBL	150	150	No	180	Yes +30
	EBT	780	180	No	190	No
	WBT	325	90	No	170	No
I-5 SB Ramps / Trospers Rd	NBLT	150	185	Yes +35	300	Yes +150
	NBR	150	355	Yes +205	405	Yes +255
	SBL	450	225	No	240	No
	SBLT	1000	750	No	>1000	Yes +>25 ²
	SBR	400	910	Yes +510	>1000	Yes +>600 ²
	EBL ³	125	125	No	125	No
	EBT-in	400	540	Yes +140	540	Yes +140
	EBT-out	400	565	Yes +165	545	Yes +145
	EBR	100	20	No	20	No
	WBL	350	350	No	670	Yes +320
WBT	780	310	No	340	No	
Littlerock Rd / Trospers Rd	NBL	300	760	Yes +460	>800	Yes +>500 ²
	NBR	800	>800	Yes +>25	>800	Yes +>25 ²
	EBL	150	90	No	98	No
	EBT	1000	265	No	370	No
	EBTR ⁴	500	575	Yes +75	>800	Yes +>300 ²
	WBL	175	415	Yes +240	410	Yes +235
WBTL	400	420	Yes +20	440	Yes +40	
WBTR	400	285	No	300	No	

Source: *The Transpo Group, 2005.*

¹ 95th percentile queue lengths are the longest expected queue for the majority (95 percent) of the time. Forecasted from micro-simulation model.

² Queue will exceed capacity under forecast with-project (without-mitigation conditions); estimation not possible.

³ Movement forecasted to operate at an adequate LOS. Vehicle queuing for this movement is influenced by the through queue and therefore is not calculated in this table.

⁴ Future storage lengths revised from existing conditions due to planned improvements by the City.

Pedestrian Impacts

The proposed project would include typical pedestrian facilities to promote the use of alternate modes of transportation. Typically, non-motorized trips are not a major component of the overall traffic patterns associated with the type of retail development proposed. Although the site is not likely to generate a high number of pedestrian trips, the current proposal identifies frontage improvements along Littlerock Road that include curb, gutter, and sidewalks. The sidewalks on the east side of Littlerock Road would connect to the sidewalks constructed as part of the Littlerock Road improvement project, and would provide a linkage to areas north of the site. With the frontage improvements required of this project, the continuous section of sidewalk would extend to Kingswood Drive. Under the proposed site plan, there would be frequent pedestrian crossings of Kingswood Drive, because the site is bisected by this roadway (see **Chapter 2** and **Figure 2-3**). While a striped pedestrian walkway is proposed, the need for pedestrians to cross would increase pedestrian/vehicle conflicts and affect the operations of Kingswood Road. However, overall, no significant impacts to non-motorized transportation are anticipated with the proposed project.

Truck Access

An analysis of the operation of truck routes through the site verified that the truck turning radius could be adequately accommodated. See **Appendix I** for further detail, including Figure 11 in **Appendix I** for the truck access turning templates.

Parking

The project proposes to provide 822 onsite parking stalls (including ADA handicap stalls) north of Kingswood Drive. With the proposed 207,751 gsf of retail space, this would translate to a parking ratio of 4.0 stalls per 1,000 gross square feet (gsf) of retail space, which matches the 4.0 stalls per 1,000 gsf allowed by the Tumwater Municipal Code (Chapter 18.50.070) for large retail and shopping centers. Including the additional 316 stalls south of Kingswood Drive, the total site parking ratio would be 5.5 stalls per 1,000 gsf. An administrative modification of the Tumwater Municipal Code has been requested by the applicant to allow an increased amount of parking for the proposed project.

A parking demand analysis was performed for the project (see **Appendix I**). Calculations for the analysis were derived from the *ITE Parking Generation Manual 3rd Edition* (2004). Peak parking demand rates for the Proposed Action under three scenarios were calculated: Saturday (non-December), Saturday (December) and weekday (December) (see Table 8 in **Appendix I**). The parking demand rates reflect the 85th percentile (85 percent of the ITE field studies had a rate at or below the 85th-percentile rate), as well as the 85th percentile with a retail “practical capacity” of 85 percent to 90 percent. As a general rule, the number of parking spaces provided should be greater than the demand, since it is not practical to assume that every space can be filled. Therefore, a surplus of about 10 to 15 percent should be provided (The Transpo Group, 2005). This is termed “practical capacity”. A practical capacity of 85 percent to 90 percent means that the parking could be considered “fully utilized” when occupancy reaches 85 to 90 percent.

The proposed parking supply rate in the current proposal for the stalls north of Kingswood Drive would fall within the peak parking demand range (considering the 85 to 90 percent practical capacity) calculated for the non-December Saturday scenario (see Table 8 in **Appendix I**; the

peak parking demand range is 3.53 – 4.06 stalls per 1,000 gsf). The parking supply would not be designed to meet the practical capacity of peak annual conditions onsite (in December). As with most retail uses, during the peak retail season (i.e., around the Christmas holiday in December), measures would be instituted if parking onsite reaches full capacity; such measures could include offsite employee parking.

Alternative 1

Trip Generation and Distribution and Traffic Volumes

Trip generation would be the same for Alternative 1 as described above for the Proposed Action. Trip distribution and assignment would be similar to that described for the Proposed Action; trip assignment near the site would be somewhat different, reflecting the Alternative 1 site plan (see **Figure 2-7**). See Figures 13 and 4 in **Appendix I** for project traffic volumes and total traffic volumes in 2007 that would differ under Alternative 1, respectively.

Traffic Operations Impacts

Impacts to offsite intersections would be as described for the Proposed Action. Both the I-5 SB Ramps/Trosper Road and I-5 SB Ramps/Tumwater Boulevard intersections would operate below the City's LOS standard; however, the I-5 SB Ramps/Tumwater Boulevard intersection would operate below the standard with or without Alternative 1.

Site Access/Circulation Analysis

In comparison to the Proposed Action, the Alternative 1 site plan would result in one single, contiguous parking lot for the proposed retail store; improved access; and a better layout for the parking lot. Under Alternative 1, all but one site access driveway (Littlerock Road/south Costco driveway) would operate at LOS C or better. As under the baseline condition and under the Proposed Action, the shared access at the south Costco driveway would continue to operate poorly if no traffic signal is installed. As discussed previously, the applicant proposes to signalize this intersection as mitigation. With installation of a signal, the intersection would improve to LOS A.

Traffic Safety Impacts

Traffic safety impacts would be lower than those described for the Proposed Action. Because the site would not be bisected by a City street (Kingswood Drive), there would be much less potential for pedestrian/vehicle conflicts along that street.

Tumwater Middle School Impacts

Under Alternative 1, Kingswood Drive would be located approximately 450 feet further to the south than under the Proposed Action (see **Figure 2-7**). With the relocation of Kingswood Drive further to the south, one design alternative could shift the school's primary access to the north to become a new west leg of the Kingswood Drive/Littlerock Road roundabout. This would provide easier vehicular access to the school while maintaining adequate operations at the Kingswood Drive intersection. The location of the school access aligned with the roundabout would reduce the circulating traffic along Littlerock Road by not requiring northbound traffic to use the

roundabout as a U-turn route. The other design option is to maintain the three right-in-right out access points currently planned by the City. Under either design option Alternative 1 would have minimal impacts on the Tumwater middle school access.

The school district has provided written comments to the City with respect to the location of the roundabout and the intersection of Kingswood Drive/Littlerock Boulevard. The school district's traffic engineer formed the opinion that the Kingswood Drive relocation south of its existing location would "enhance safety and improve access for Tumwater Middle School." The school district has requested four considerations associated with the relocation of the roundabout. These considerations include specific comments related to the final design and consideration of the school access and parking lot configuration.

Pedestrian Impacts

Pedestrian impacts would be less than under Proposed Action. Because the site would not be bisected by Kingswood Drive, there would be much less potential for pedestrian/vehicle conflicts along Kingswood Drive.

Truck Access

The Alternative 1 site plan would adequately accommodate truck movement. See Figure 15 in **Appendix I** for verification that truck turning radius could be accommodated by the Alternative 1 site plan.

Parking

A total of 972 parking stalls would be provided under this alternative. This would translate to a parking rate of 4.7 stalls per 1,000 gsf of retail space, which would exceed the maximum of 4.0 stalls per 1,000 gsf of retail space that is allowed by Chapter 18.50 of the TMC. As under the Proposed Action, an administrative modification would be sought. Parking supply demand would be the same as under the Proposed Action. Therefore, the supply of 4.7 spaces per 1,000 gsf would provide for parking within the recommended practical capacity range for the non-December Saturday (see **Appendix I** for details).

No Action Alternative

In the short-term, transportation conditions under the No Action Alternative would be the same as under the 2007 baseline condition (see Section 3.9.1, Affected Environment). However, in the long term it is likely that development would occur on the site. While a one-year moratorium on certain retail development in the Littlerock Road Subarea is currently in place (see **Section 3.6, Relationship to Existing Plans and Policies**), the site could accommodate two 125,000 square-foot retail buildings under existing zoning. Other uses could also be proposed for the site including office/retail mixed-use and service businesses. While potential traffic impacts of possible future uses of the site cannot be projected with any certainty at this time, it is likely that such impacts would be similar to those under the Proposed Action.

3.9.3 Mitigation Measures

The lead agency for this proposed project has determined that it would have probable significant adverse impacts on transportation operations. The probable significant adverse impacts

identified would be capable of being mitigated to a level of nonsignificance if the transportation improvement measures identified below are implemented by the applicant. This DSEIS assumes that the applicant would comply with all City ordinances and standards governing the type of development proposed.

The traffic that would be generated by the Wal-Mart project, as quantified and described in the Transportation Impact Analysis set forth in **Appendix I**, would have significant adverse environmental impacts by reduction of existing peak-hour capacity on the Trosper Road/I-5 Interchange, and the intersection of Trosper Road/Capitol Boulevard, and the intersection of Trosper Road/Littlerock Road, and the intersection of Littlerock Road/Costco shared access, and the Tumwater Boulevard/I-5 interchange.

The identified impacts would require planning, design and construction of additional, improved transportation facilities; or the replacement of transportation facilities, as set forth below.

Mitigation of the above-stated impacts may be in the form of elimination, minimization, reduction of, or alternatively, compensation for transportation impacts.

- Elimination of impacts may occur by delaying the project until additional transportation capacity is provided by other development applicants, the City, another governmental agency, or by not building the proposed project.
- Minimization of impacts could occur by modifying the proposed project in order to reduce the project impacts at the above described locations to a degree where mitigation would not be required.
- Reduction of impacts may occur in a variety of ways, such as those described for minimizing the impacts or through operational measures which reduce the timing and volume of traffic impacts at the identified locations.
- Compensation of impacts may take one of two forms: actual construction of transportation capacity improvements, or voluntary payment of proportionate share mitigation fees. The applicant can construct transportation capacity improvements that have been identified in order for the applicant to meet adopted level of service standards necessary to provide the required capacity — including the capacity that would be consumed by the proposed project. Alternatively, compensation for impacts to the Tumwater Boulevard/I-5 Interchange may be in the form of a voluntary payment by the applicant of mitigation fees pursuant to RCW 82.02.020, which equal an identified proportionate share of the cost of constructing the improvements.

The City's six-year street program, the Thurston Regional Transportation Plan, the land division provisions of the municipal code (TMC, Title 17), all as referenced in the City's SEPA policies at TMC 16.04.150, provide authority for requiring new development projects to make adequate provision for transportation facilities needed to serve the proposed project.

The applicant has proposed to implement the following transportation improvements, as identified in the Transportation Impact Analysis in **Appendix I**, as necessary mitigation for project impacts:

- **Trosper Road/I-5 SB Ramp Intersection (Tyee Drive):** The addition of exclusive through-lanes for the north and southbound approaches, the implementation of a northbound right-turn overlap phase, and signal timing optimization and phase modifications. These mitigations are more fully described in **Appendix I**.
- **Trosper Road/Littlerock Road:** Reconfigure the northbound approach to include a right-turn lane, a right-through lane, and a left-turn lane. Reconfigure the westbound approach to include two exclusive left-turn lanes and a single through-right. Modify the signal phasing accordingly. These mitigations are more fully described in **Appendix I**.
- **Littlerock Road/Costco Shared Access:** Installation of a traffic signal including channelization. Traffic control would be provided at the internal intersection with Costco. Stop signs would be installed on both the north and south leg of this intersection. In addition, an eastbound right-turn lane from the shared access drive into the Wal-Mart parking lot would be constructed to improve internal circulation. These mitigations are more fully described in **Appendix I**.

In addition, the applicant has volunteered to take the following actions to improve non-project related transportation deficiencies:

- **Trosper Road/Capitol Boulevard:** Eliminate the signal phasing for the east leg of the intersection and construct a northbound U-turn, north of M Street. These mitigations are more fully described in **Appendix I**.

The Applicant would endeavor to construct the Trosper Road/Capitol Boulevard improvements described above, but if necessary right-of-way is not available or construction is prevented by circumstances outside the applicant's control, the City would accept a letter of credit for the cost of these improvements. Completion of these improvements would not be a precondition to issuance of the certificate of occupancy for the project.

Finally, the applicant would voluntarily pay a mitigation fee under RCW 82.02.020 for impacts to the Tumwater Boulevard/I-5 Interchange as described below:

- **Tumwater Boulevard/I-5 Interchange:** The City's planned transportation improvements at the Tumwater Boulevard/I-5 interchange include widening of the existing overpass, adding a second lane to the northbound on-ramp, signalization of the northbound ramp terminal, addition of new interchange on-ramps for both eastbound to northbound and westbound to southbound traffic. These mitigations are more fully described in **Appendix I**.

The proportionate share of constructing the improvements is derived by dividing the total costs of improvements by the total amount of capacity (in trips) provided by those improvements. In this case, that proportionate share amounts to a mitigation fee of \$3,103 for each of the 118 trips that would be generated by the project that are distributed to the Tumwater Boulevard/I-5 interchange; for a total of \$366,154.

In sum, the applicant would construct the improvements identified for Trosper Road/I-5 Interchange, Trosper Road/Littlerock Road, and Littlerock Road/Costco shared access. If

necessary right-of-way is not available or construction is prevented by circumstances outside the applicant's control, the City would accept a letter of credit for the cost of the improvements identified for Trosper Road/Capitol Boulevard. In addition, the applicant would accept the SEPA mitigation fees for impacts to the Tumwater Boulevard/I-5 Interchange and execute the necessary voluntary agreement.

The applicant also proposes to implement the following mitigation measure:

- Measures would be instituted during the peak retail season if parking onsite reaches full capacity. These measures could include requiring employees to park offsite in designated areas.

3.9.4 Significant Unavoidable Adverse Impacts

With proposed mitigation, no significant unavoidable adverse impacts to transportation would be expected. The I-5 SB Ramps/Tumwater Boulevard intersection will not meet City of Tumwater LOS standards with or without the proposed project; however, the project would contribute to future improvements at this intersection in the form of SEPA mitigation fees.