



## MEMORANDUM

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Date: April 4, 2016

Project #: 19731

To: Fabio De Freitas, and Jennifer Tower, PE; PBOT

Cc: Mike Peebles, PE and Jerry Offer; OTAK

From: Zachary Bugg, Julia Kuhn, PE, and Chris Brehmer, PE

Project: Everett Homes at 5920 SW 48<sup>th</sup> Avenue (City of Portland Land Use Case PC 15-242325)

Subject: Transportation Impact Study

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Everett Homes, Inc. proposes to subdivide the property located at 5920 SW 48<sup>th</sup> Avenue to develop 11 single family homes (City of Portland Land Use Case PC 15-242325). The property is located in southwest Portland in the one-half block bounded by SW 48<sup>th</sup> Avenue to the west and SW Pendleton Street to the north, as shown in Figures 1 and 2.

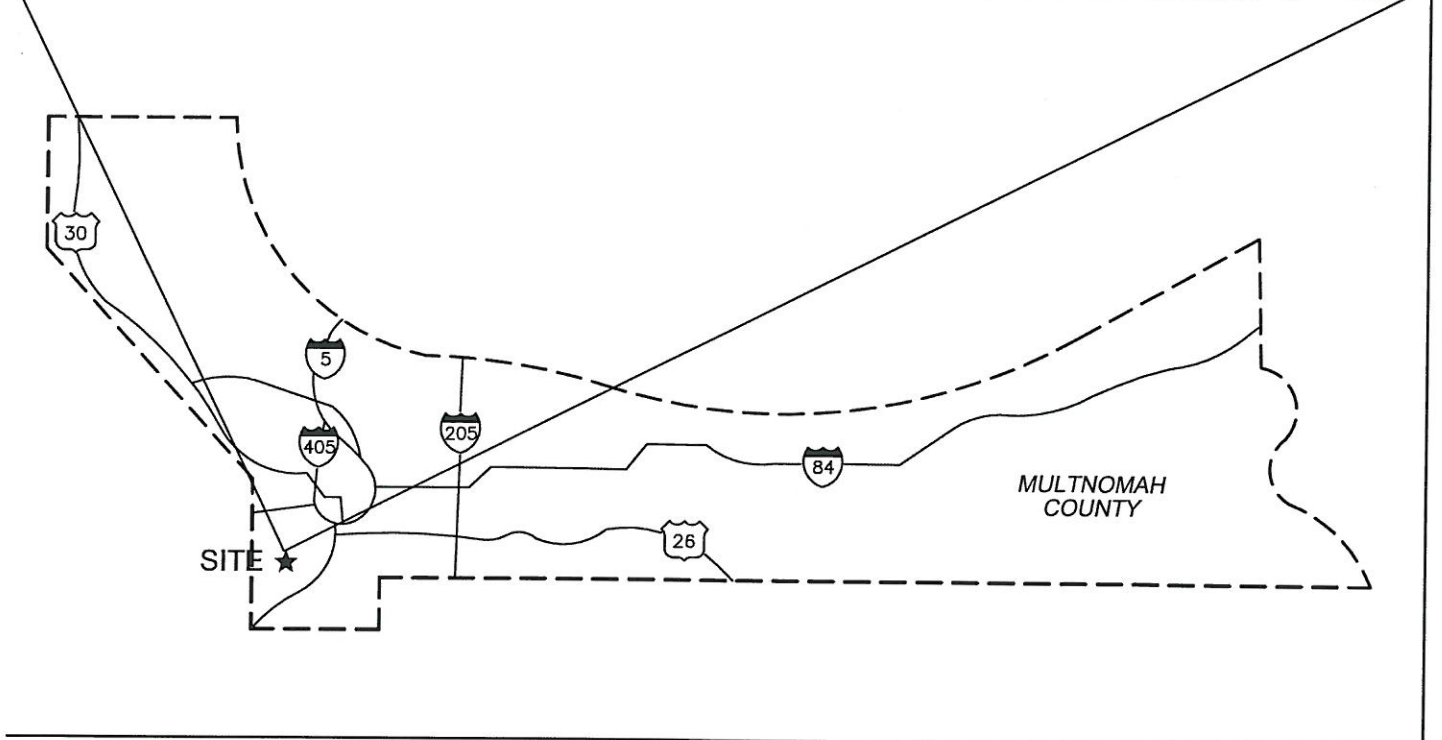
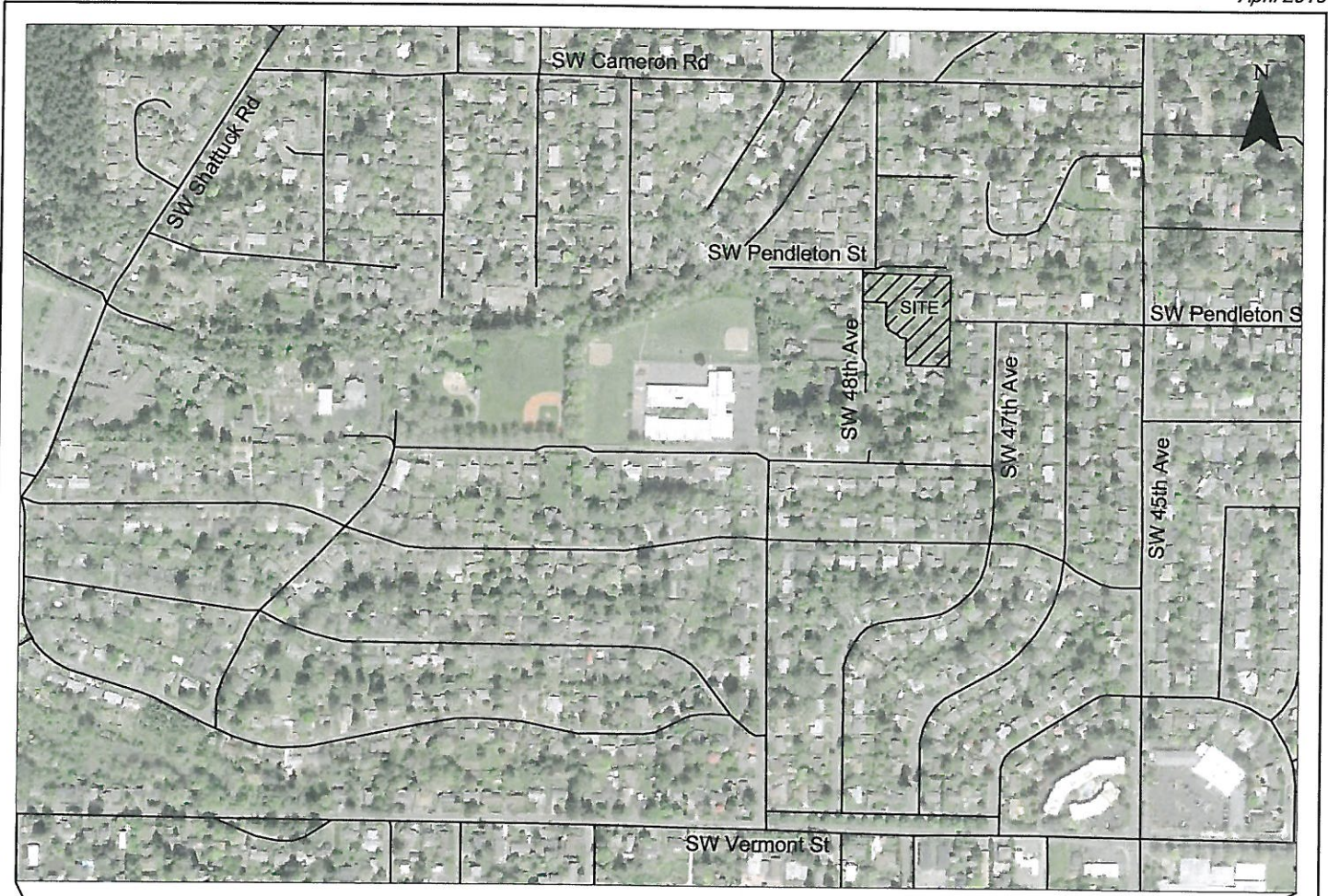
The existing site is zoned R7, and it is currently occupied by one home. As part of the subdivision, SW Pendleton Street will be extended through the property to provide a connection between the existing eastern and western termini of the street. Per Title 33 of the Portland Zoning Code (33.641.020), a transportation impact study is needed to ensure that the transportation is *“capable of safely supporting the proposed development in addition to the existing uses in the area. Evaluation factors include: street capacity and level-of-service; vehicle access and loading; on-street parking impacts; the availability of transit service and facilities and connections to transit; impacts on the immediate and adjacent neighborhoods; and safety for all modes.”* As such, this memorandum addresses the adequacy of the transportation facilities located in the site vicinity to accommodate the proposed subdivision.

### ADEQUACY OF THE PEDESTRIAN SYSTEM

SW 48<sup>th</sup> Avenue and SW Pendleton Street are classified as local service walkways in the site vicinity per the City's Transportation System Plan (TSP, Reference 1).

Sidewalks are not currently provided along the local streets in the vicinity of the property. Instead, residents walk along the shoulders of the neighborhood streets. This lack of facilities is largely a reflection of the street standards in-place at the time area residences were constructed as well as the topography of southwest Portland. As part of the proposed subdivision, sidewalks will be provided along the site frontage of SW 48<sup>th</sup> and SW Pendleton per city standards. These sidewalks will help build toward the longer-term establishment of a pedestrian infrastructure through trails and sidewalks in this area of the city. Therefore, the system pedestrian adequacy criterion can be satisfied.





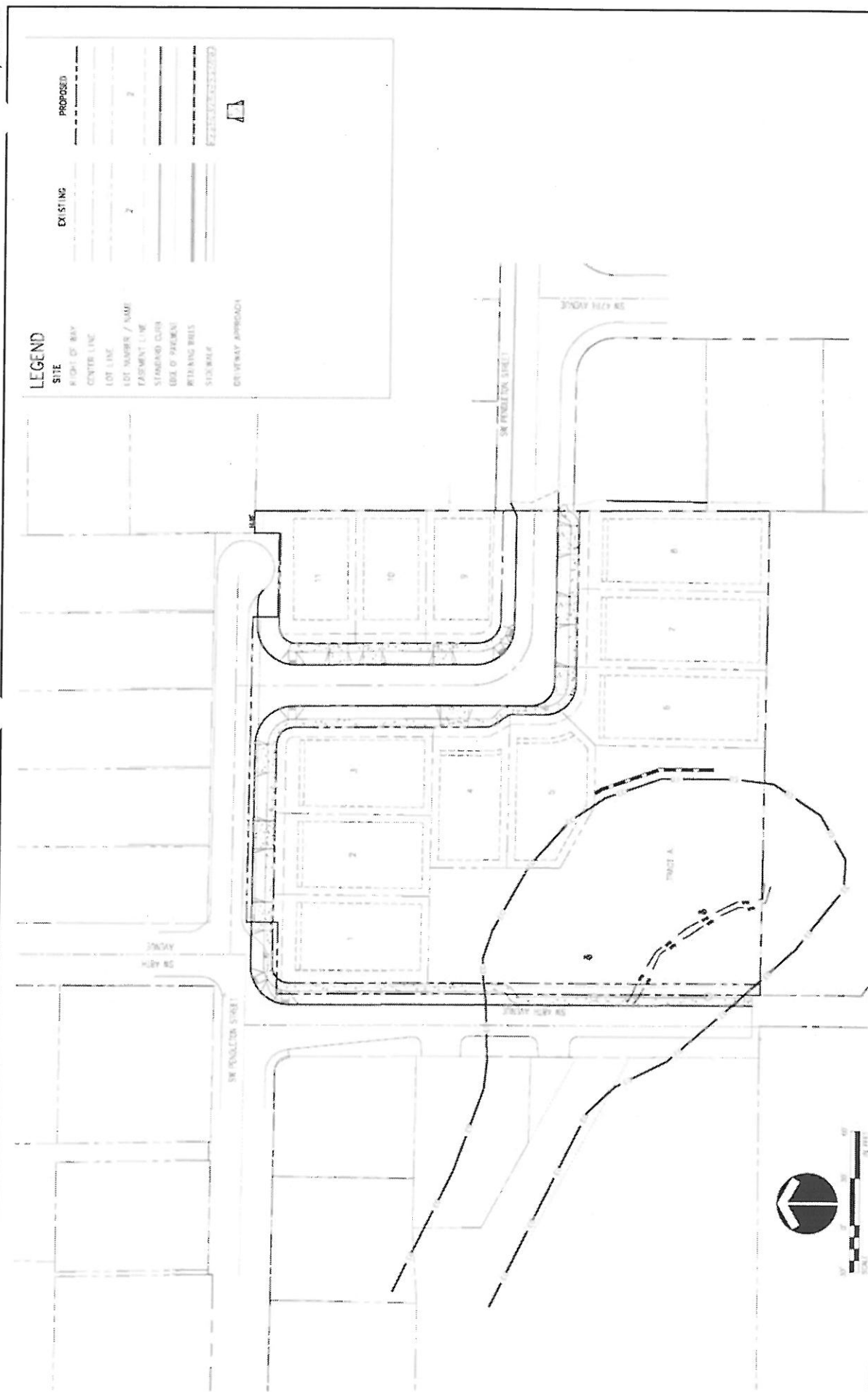
**Site Vicinity Map  
Portland, Oregon**

**Figure  
1**

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SITE PLAN PROVIDED BY OTAK ON APRIL 4, 2016

Proposed Site Plan  
Portland, Oregon  
Figure  
2

## ADEQUACY OF THE BICYCLE SYSTEM

All of the adjacent streets are classified as local service bikeways per the City's TSP. The subdivision of the property and associated development of eleven homes is consistent with these designations. The traffic volumes and speeds are appropriate for bicyclists to share the road with motorists on SW 48<sup>th</sup> Avenue and SW Pendleton Street within the site vicinity. Therefore, the bicycle system is sufficient to accommodate the proposed subdivision.

## ADEQUACY OF THE TRANSIT SYSTEM

SW 48<sup>th</sup> Avenue and SW Pendleton Street are both classified as local service transit streets. No transit service is provided on either roadway within the site vicinity.

The nearest existing transit service to the proposed development is provided by TriMet *Route 1 – Vermont*, which connects the site vicinity with Portland City Center. Service is provided at approximately half-hour intervals on weekdays during the morning (7 – 9 AM) and afternoon (4 – 6 PM) peak periods. Nearby bus stops are located at SW Cameron Road/SW Fairvale Court (approximately 800 feet from the site) and at SW 45<sup>th</sup> Avenue/SW Pendleton Street (approximately 600 feet from the site). These bus stops are less than one-quarter mile from the site. No changes to the transit service are proposed or needed to serve the 11 homes. Therefore, the existing transit system is adequate.

## ADEQUACY OF THE STREET SYSTEM

The dimensional features of the existing local and collector streets in the site vicinity are reflective of the existing topography and the standards in-place when the infrastructure and adjacent homes were developed. Table 1 summarizes the characteristics of existing transportation facilities in the study area. Table 2 identifies the City of Portland TSP designations.

**Table 1. Existing Transportation Facilities**

Roadway	Cross Section	Posted Speed (mph)	Sidewalks?	Bike Lanes?	On-Street Parking?
SW 48 <sup>th</sup> Avenue	2 lanes	25	No	No	Partial <sup>1</sup>
SW Pendleton Street	2 lanes	NP	No	No	Partial <sup>2</sup>

NP=not posted; 25-mph speed limit assumed

<sup>1</sup>On-street parking is allowed north of SW Pendleton Street, but the street width is inadequate for on-street parking south of SW Pendleton Street.

<sup>2</sup>On-street parking is allowed west of SW 48<sup>th</sup> Avenue, but the street width is only adequate for on-street parking on the north side of the street east of SW 48<sup>th</sup> Avenue.

**Table 2. Existing City of Portland Transportation System Plan (TSP) Roadway Designations**

Roadway	Traffic	Transit	Bicycle	Pedestrian	Freight
SW 48 <sup>th</sup> Avenue	Local Service Traffic Street	Local Service Transit Street	Local Service Bikeway	Local Service Walkway	Local Service
SW Pendleton Street	Local Service Traffic Street	Local Service Transit Street	Local Service Bikeway	Local Service Walkway	Local Service

The subdivision and development of eleven homes on the site are consistent with the local service designations of the streets. No changes to the classifications are anticipated to support the proposal. Therefore, this criterion is met.

## TRANSPORTATION CAPACITY IMPLICATIONS

The City of Portland Administrative Rule *TRN 10.27 - Administrative Rules for Traffic Capacity Analysis in Land Use Review Cases* provides standards for traffic impact studies required in the course of land use review or development. These include:

*"1. For signalized intersections, adequate level of service is LOS D, based on a weighted average of vehicle delay for the intersection.*

*2. For stop-controlled intersections, adequate level of service is LOS E. Level of service for two-way stop-controlled intersections is based on individual vehicle movement, and all-way stop controlled intersections is based on a weighted average of vehicle delay for the intersection.*

*3. An amendment or other land use application that requires analysis of traffic capacity and allows development that either (1) may cause a transportation facility to perform below the standards established in sections 1 and 2, or (2) adds vehicle trips to a facility that is already performing below the standards established in sections 1 and 2 may be approved if:*

*a. Development resulting from the amendment or other land use application will mitigate the impacts of the amendment or other land use application in a manner that avoids further degradation to the performance of the facility by the time of development through one or more of the following:*

*(i) the development is limited to result in no net increase in vehicle trips over what is allowed by the existing zoning; OR*

*(ii) one or more combination of transportation improvements or measures are imposed to mitigate the transportation impacts of the amendment or other land use application in a manner that avoids further degradation to the performance of the facility by the time of any development."*

Per discussions with City staff, the following intersections within the site vicinity were analyzed for the purposes of assessing the impacts of the subdivision on the existing street capacity:

1. SW Cameron Road/SW Shattuck Road
2. SW Cameron Road/SW 48<sup>th</sup> Avenue
3. SW Pendleton Street/SW 48<sup>th</sup> Avenue (west)
4. SW Pendleton Street/SW 48<sup>th</sup> Avenue (east)
5. SW Pendleton Street/SW 47<sup>th</sup> Avenue
6. SW Pendleton Street/SW 45<sup>th</sup> Avenue
7. SW Vermont Street/SW 45<sup>th</sup> Avenue

The following conditions were assessed at the study intersections as part of the traffic analysis:

- Existing traffic conditions during the weekday AM and PM peak hours,
- Background traffic conditions during the weekday AM and PM peak hours (without development of the proposed homes),
- Trip generation estimates associated with the proposed development,
- Trip distribution and assignment associated with the proposed development, and
- Total traffic conditions during the weekday AM and PM peak hours, including trips from the proposed development.

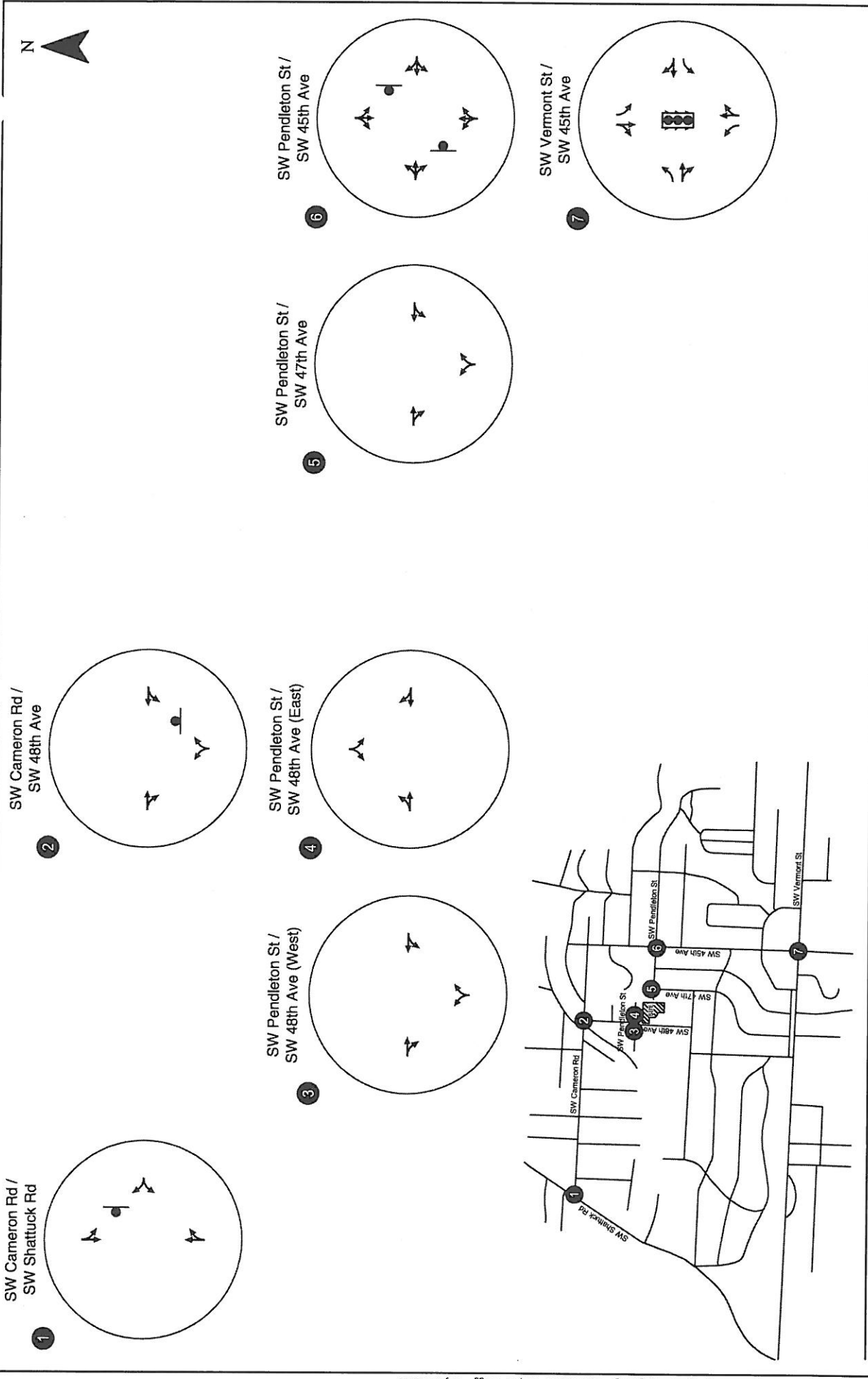
All level-of-service analyses conducted at the study intersections and as described in this report were performed in accordance with the procedures stated in the *2000 Highway Capacity Manual* (HCM, Reference 2). To ensure that the analyses were based on a reasonable worst-case scenario, the peak 15-minute flow rates were used in the evaluation of all intersection levels of service (LOS).

### Existing Traffic Conditions

Manual turning movement counts at the study intersections were conducted in March 2016 on a typical weekday when school was in session. The counts were conducted during weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) time periods on March 15, 2016. Figure 3 displays the existing lane configurations and traffic control devices at the study intersections. As shown in this figure, the local street intersections are uncontrolled today, which is typical of several intersections in southwest. In these cases, we assumed yield control on the lowest-volume approach as part of the operational analyses.

Figures 4 and 5 display the existing traffic volumes and corresponding operational analysis for the weekday AM and PM peak hours, respectively. As shown in the figures, all study intersections meet City standards under today's conditions. *Turning movement counts are located in Appendix A, and the level of service worksheets are located in Appendix B.*





Existing Lane Configurations  
and Traffic Control Devices  
Portland, Oregon

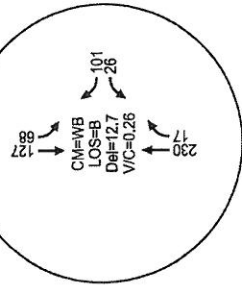
Figure  
3

- STOP SIGN
- TRAFFIC SIGNAL



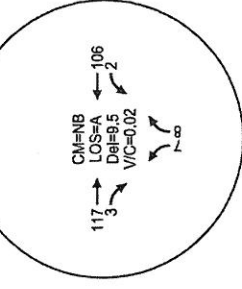
SW Cameron Rd /  
SW Shattuck Rd

1



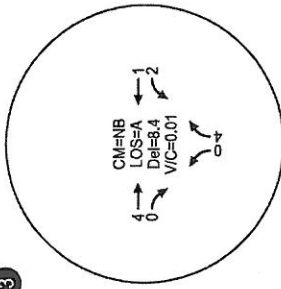
SW Cameron Rd /  
SW 48th Ave

2



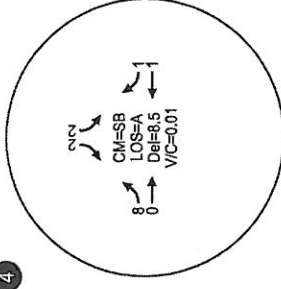
SW Pendleton St /  
SW 48th Ave (West)

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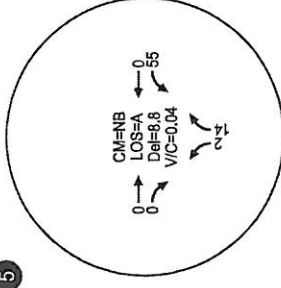
SW Pendleton St /  
SW 48th Ave (East)

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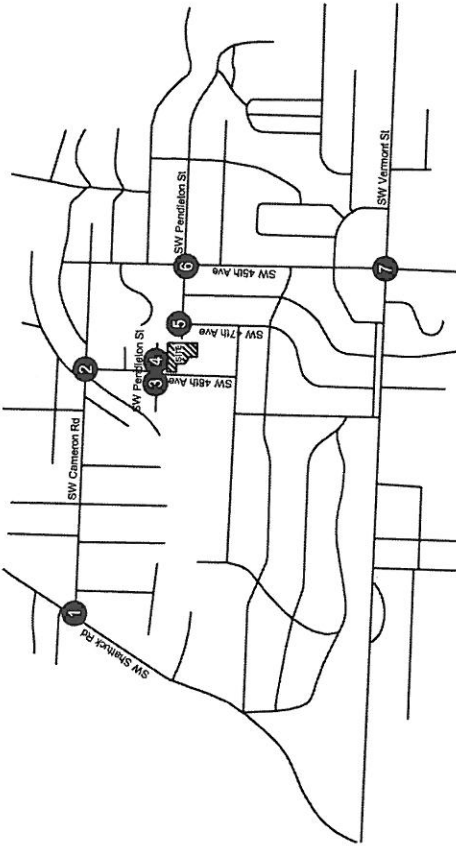
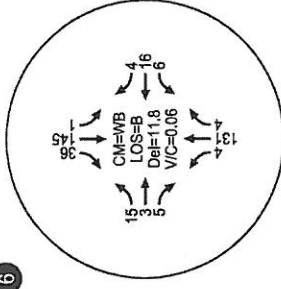
SW Pendleton St /  
SW 47th Ave

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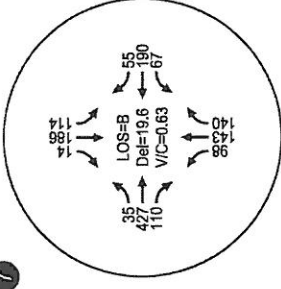
SW Pendleton St /  
SW 45th Ave

6



SW Vermont St /  
SW 45th Ave

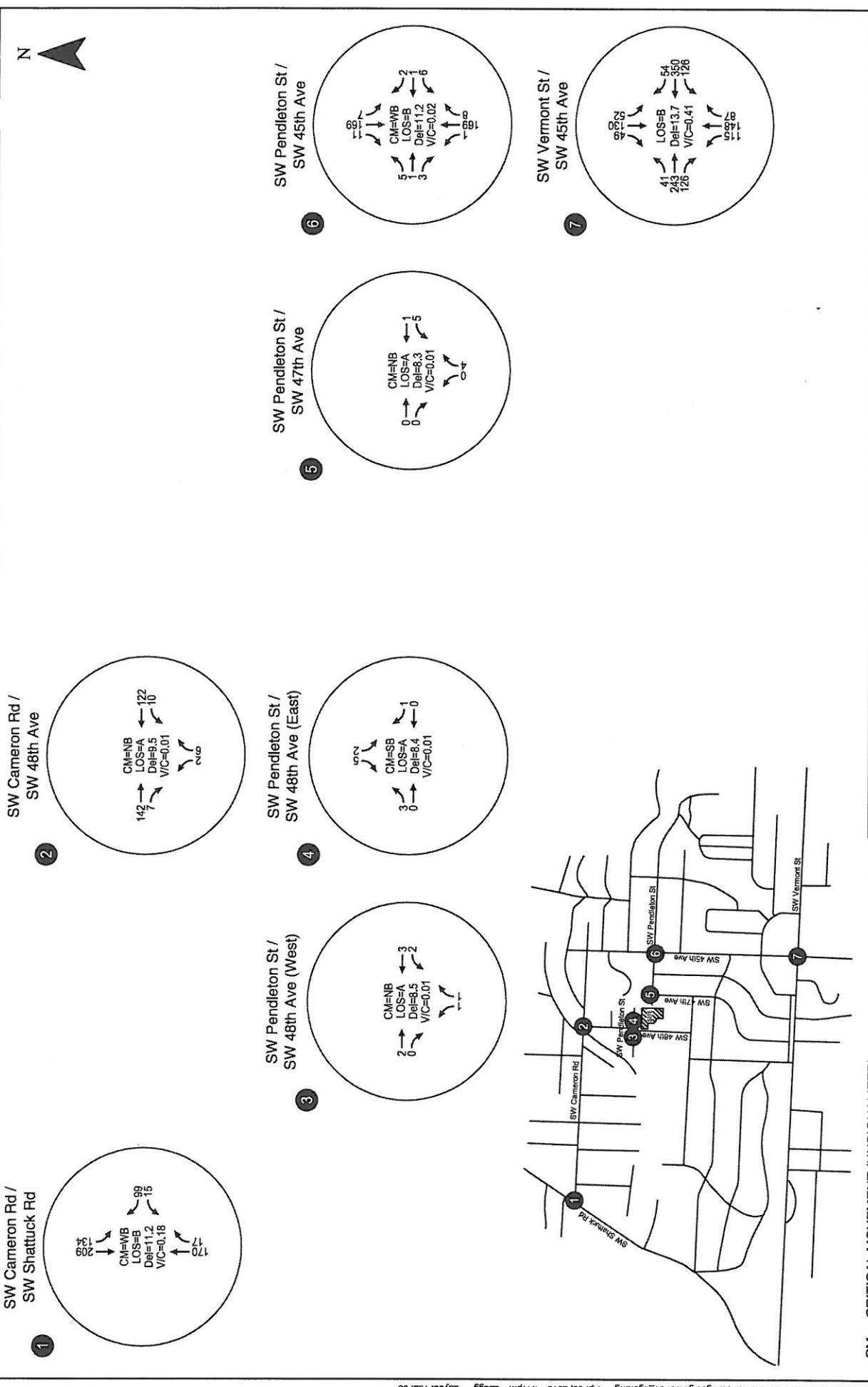
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Existing Traffic Conditions  
 Weekday AM Peak Hour  
 Portland, Oregon

Figure  
 4



Existing Traffic Conditions  
 Weekday PM Peak Hour  
 Portland, Oregon  
 Figure 5

### Use of Existing Streets for School Drop-off Traffic

Neighborhood residents have cited on-going issues regarding parents using SW 48<sup>th</sup> Avenue south of SW Pendleton Street to drop-off their children attending Hayhurst School. No street connection is provided between SW 48<sup>th</sup> and Hayhurst but an informal “trail” is used by school students. The traffic volumes were collected at the study intersections between 7 AM and 9 AM when school was in-session. Per the school’s website (<http://www.pps.k12.or.us/schools/hayhurst/>), classes begin at 8 AM at Hayhurst. Both the traffic counts conducted at SW 48<sup>th</sup>/Pendleton and at SW 47<sup>th</sup>/Pendleton reflect very low traffic volumes during the 7 AM – 9 AM periods and do not indicate a pattern of school drop-off/cut-through traffic.

However, it does appear that there are parents turning onto SW Pendleton from SW 45<sup>th</sup> to access SW 47<sup>th</sup> to drop-off off children at Hayhurst. As shown in Figure 4, there are 55 westbound left-turns during the AM peak hour at the SW Pendleton/SW 47<sup>th</sup> intersection that seem to be oriented toward the vehicular drop-off areas at the school. Of these, 36 vehicles originate north of the SW Pendleton/SW 45<sup>th</sup> intersection and 16 originate to the east. With the new street connectivity provided by the proposed subdivision, a portion of those vehicles from the north could be re-routed instead along SW 48<sup>th</sup> south of Cameron. This potential diversion is addressed later in the report.

### Crash Data Review

ODOT provided the five years of reported crash data at the study intersections (2010-2014). Table 3 summarizes the crash data at the study intersections by type and severity. No crashes were reported at SW Cameron Road/SW 48<sup>th</sup> Avenue, SW 48<sup>th</sup> Avenue/SW Pendleton Street, SW 47<sup>th</sup> Avenue/SW Pendleton Street, or SW 45<sup>th</sup> Avenue/SW Pendleton Street during the five-year analysis period.

**Table 3. Summary of Crash Data (January 1, 2010 to December 31, 2014)**

Intersection	Crash Severity			Crash Type				Total Crashes	Crash Rate <sup>1</sup>
	Fatal	Injury	PDO <sup>1</sup>	Angle	Turning	Rear End	Sideswipe		
SW Cameron Rd / SW Shattuck Rd	0	0	1	1	0	0	0	1	0.09
SW Vermont St / SW 45 <sup>th</sup> Ave	0	3	4	0	4	2	1	7	0.04

<sup>1</sup>Property damage only

<sup>2</sup>Per million entering vehicles

No crash trends were observed from the reported crash data, and no safety-based mitigation measures appear warranted. *Crash data are provided in Appendix D.*

### Year 2017 Background Traffic Conditions

For the purposes of analyzing background traffic conditions (without the proposed subdivision), we assumed a two percent annual growth rate to conservatively represent potential increases in regional growth given that the surrounding neighborhoods are built out with only minor amounts of vacant land. Figures 6 and 7 display the background AM and PM peak hour conditions at the study



intersections, respectively. As shown, the intersections continue to function acceptably and well under capacity. *Level of service worksheets are located in Appendix B.*

### Trip Generation

The Institute of Transportation Engineers *Trip Generation*, 9<sup>th</sup> Edition (Reference 3) was used to estimate the number of new trips generated by the 11 new homes associated with the subdivision. The resulting trip generation is provided in Table 4.

**Table 4. Estimated Site-Generated Trips**

Land Use	ITE Code	Size	Total Weekday Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Single-Family Detached Homes	210	11 homes	104	8	2	6	11	7	4

### Trip Distribution and Assignment

We assigned the trips generated by the proposed homes to the street system assuming the following distribution:

- 45 percent to the north via SW Shattuck Road,
- 35 percent to the east via SW Vermont Street,
- 15 percent to the west via SW Vermont Street, and
- 5 percent to the south via SW 45<sup>th</sup> Avenue.

The resultant assignment of trips is shown in Figure 8.

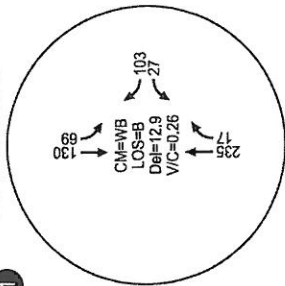
### Total Traffic Conditions

The site-generated trips shown in Figure 8 were added to the background traffic volumes reflected in Figures 6 and 7 to estimate total traffic volumes at the study intersections. The resultant volumes and level-of-service for the weekday AM and PM peak hours are shown in Figures 9 and 10, respectively. As shown, the intersections are forecast to continue meeting city standards after construction of the proposed subdivision. *Level of service worksheets are located in Appendix B.*



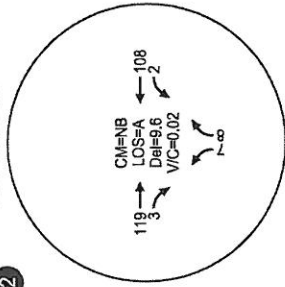
SW Cameron Rd /  
SW Shattuck Rd

1



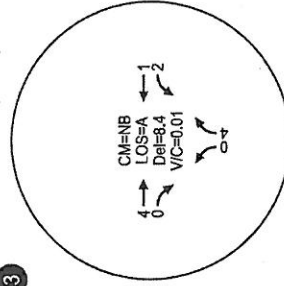
SW Cameron Rd /  
SW 48th Ave

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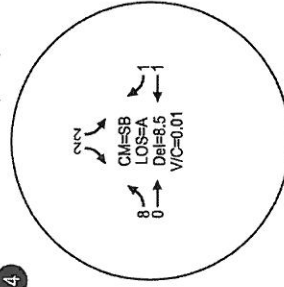
SW Pendleton St /  
SW 48th Ave (West)

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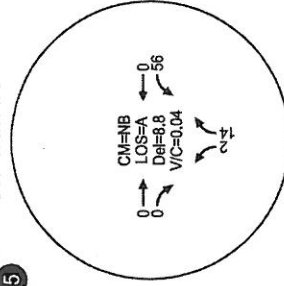
SW Pendleton St /  
SW 48th Ave (East)

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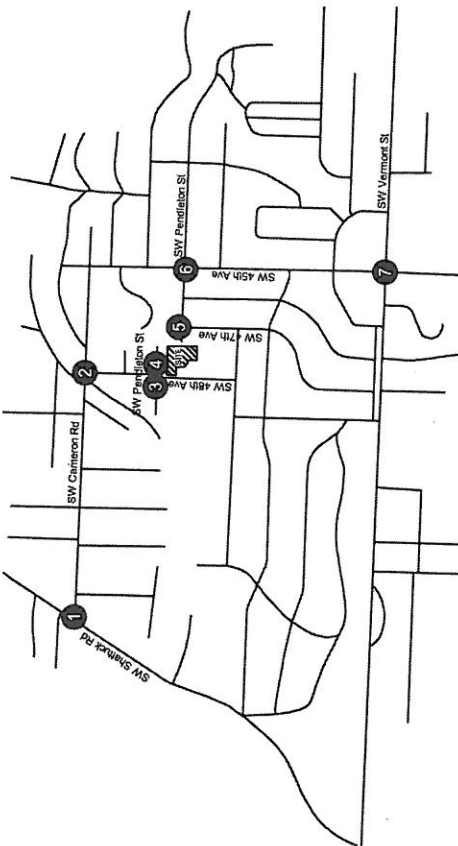
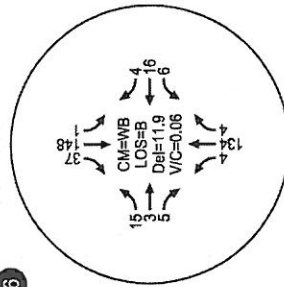
SW Pendleton St /  
SW 47th Ave

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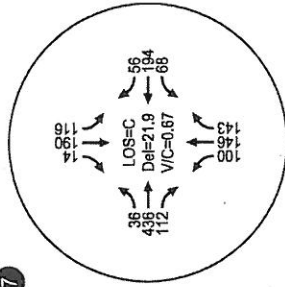
SW Pendleton St /  
SW 45th Ave

6



SW Vermont St /  
SW 45th Ave

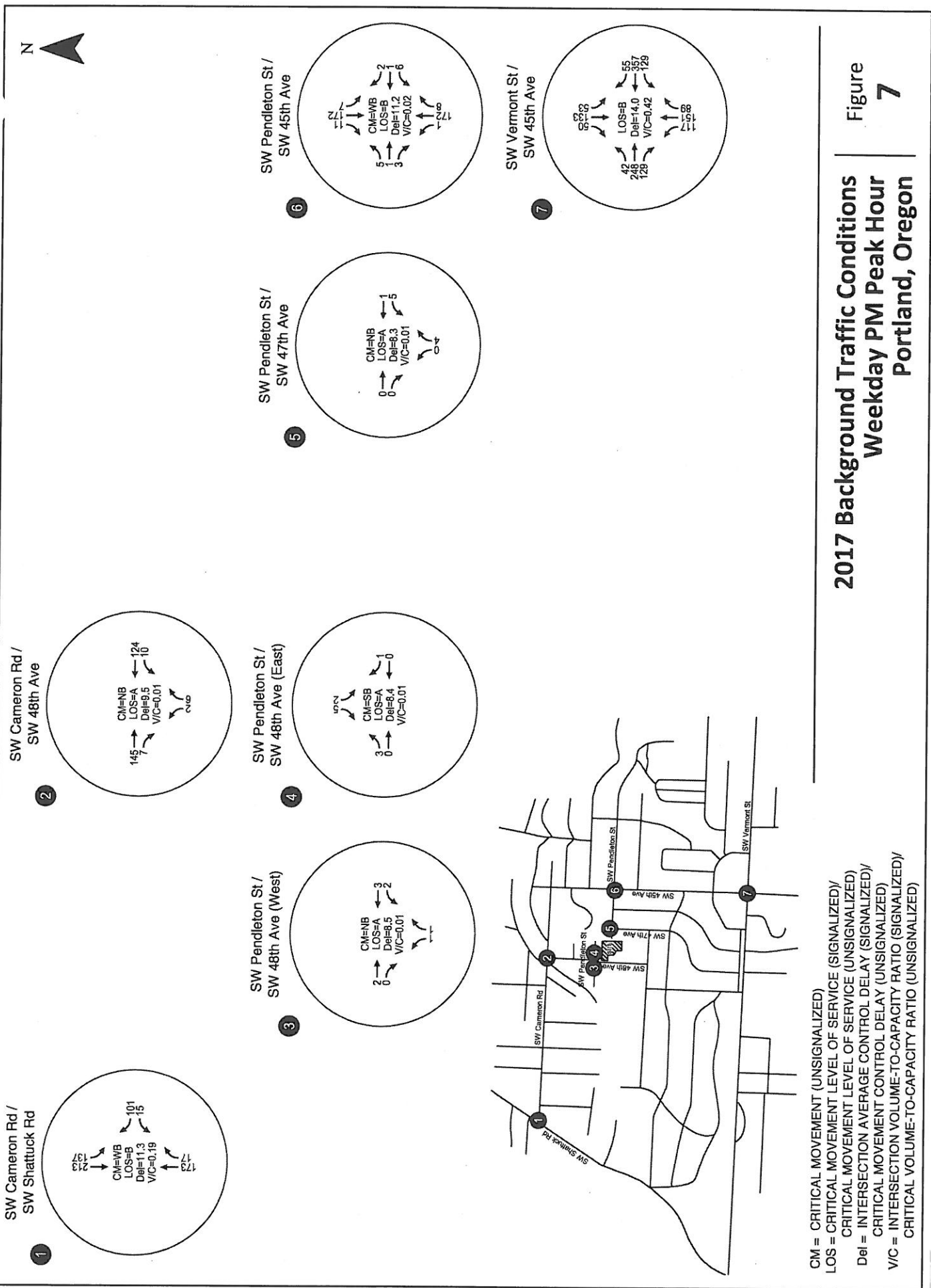
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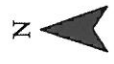
2017 Background Traffic Conditions  
Weekday AM Peak Hour  
Portland, Oregon

Figure  
6



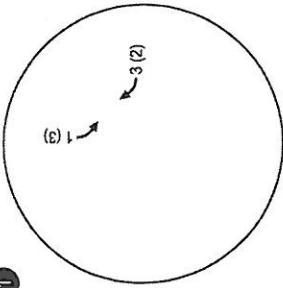
2017 Background Traffic Conditions  
Weekday PM Peak Hour  
Portland, Oregon

Figure  
7



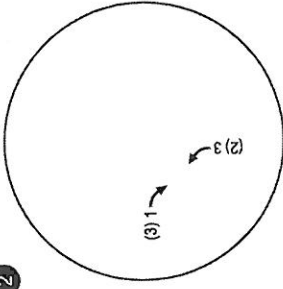
SW Cameron Rd / SW Shattuck Rd

1



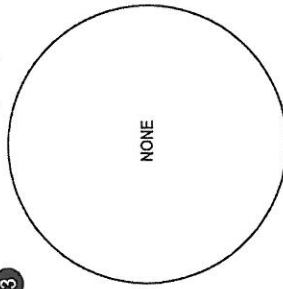
SW Cameron Rd / SW 48th Ave

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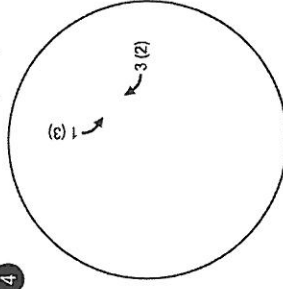
SW Pendleton St / SW 48th Ave (West)

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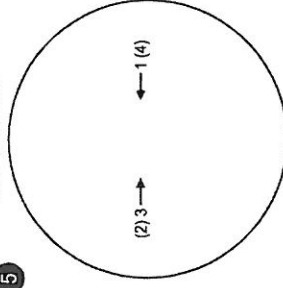
SW Pendleton St / SW 48th Ave (East)

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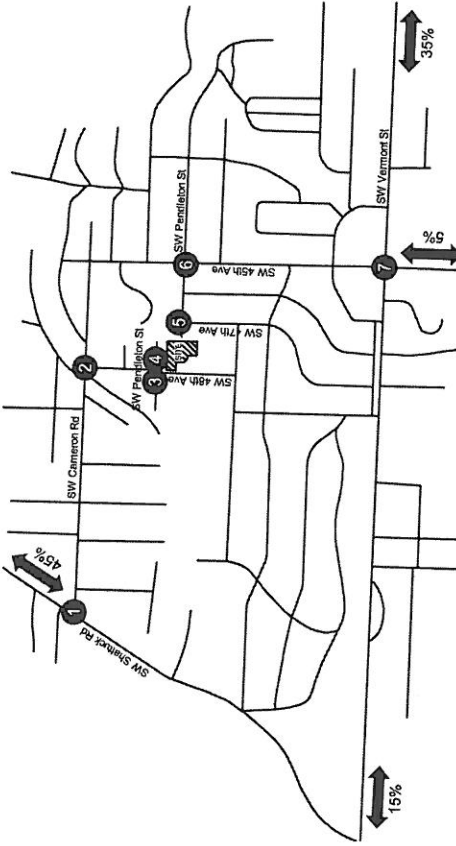
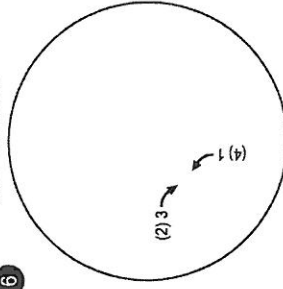
SW Pendleton St / SW 47th Ave

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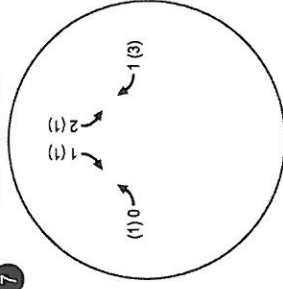
SW Pendleton St / SW 45th Ave

6



SW Vermont St / SW 45th Ave

7

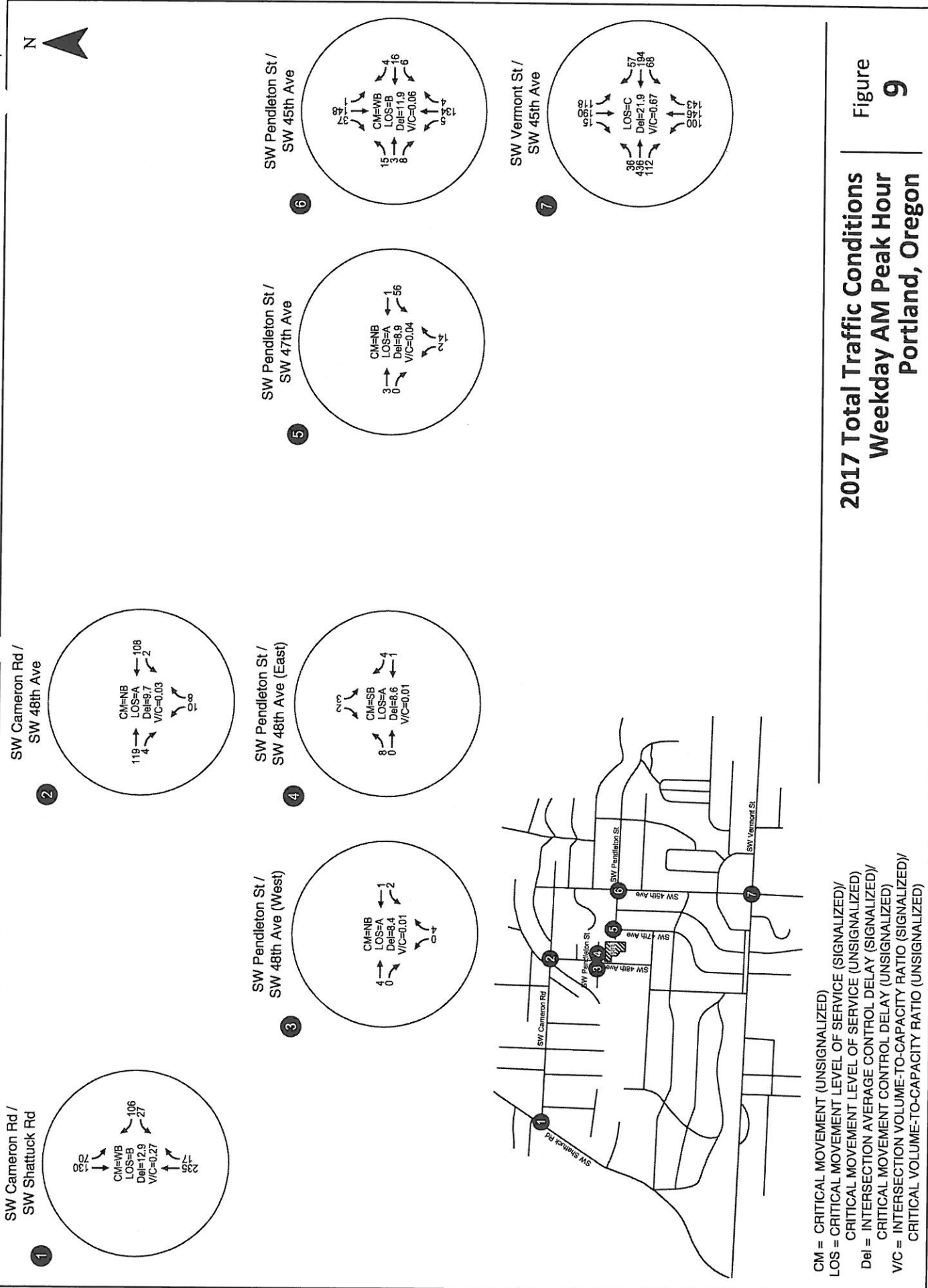


AM TRIPS (PM TRIPS)

Site-Generated Trips  
Weekday AM and PM Peak Hours  
Portland, Oregon

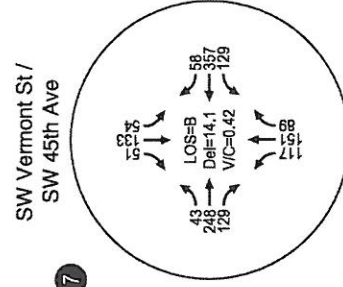
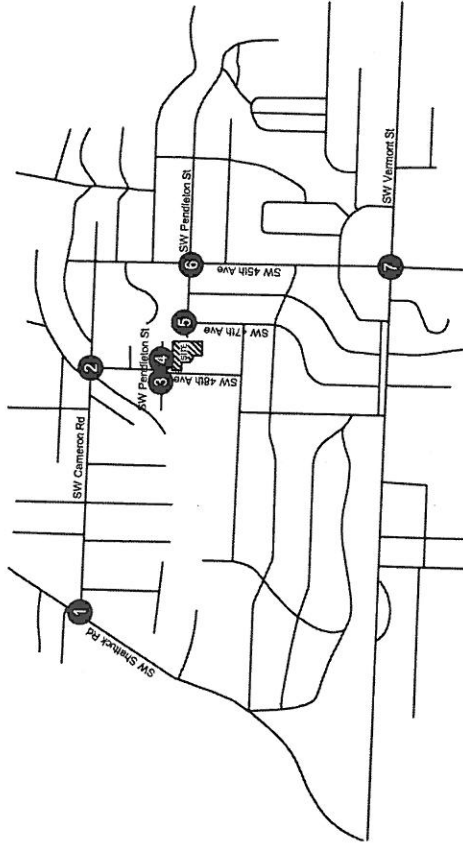
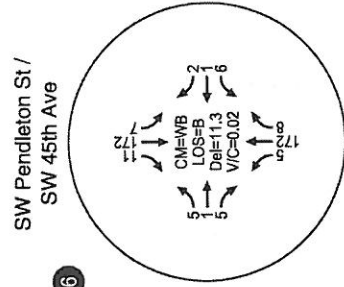
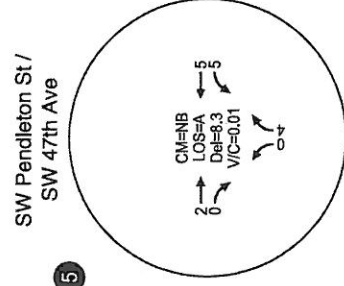
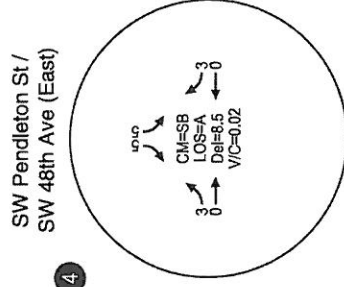
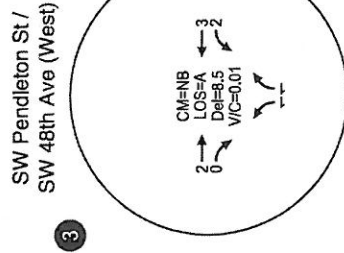
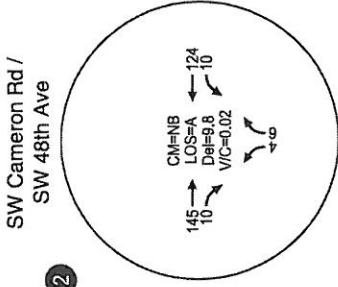
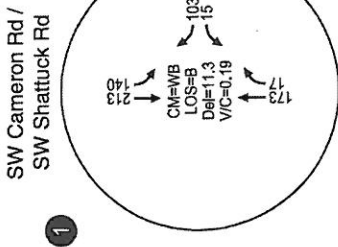
Figure  
8





2017 Total Traffic Conditions  
 Weekday AM Peak Hour  
 Portland, Oregon

Figure 9



CM = CRITICAL MOVEMENT (UNSIGNALIZED)  
 LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)  
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2017 Total Traffic Conditions  
 Weekday PM Peak Hour  
 Portland, Oregon

Figure 10

## POTENTIAL CHANGES IN NEIGHBORHOOD TRAFFIC PATTERNS

To address City connectivity goals, Everett Homes will be connecting the eastern and western termini of SW Pendleton via a new north-south street. This street will provide pedestrians, cyclists and drivers another connection between SW 45<sup>th</sup> Avenue and SW Cameron Road. Although the connection will be somewhat circuitous, it is reasonable to assume that some existing traffic could use this new route as an alternative connection between SW Cameron Road and SW 45<sup>th</sup> Avenue.

To account for potential traffic diversion to this new route, we conservatively assumed that up to 25 percent of the existing traffic on SW Cameron Road and SW 45<sup>th</sup> Avenue could shift to SW Pendleton Street and SW 48<sup>th</sup> Avenue. Table 5 displays the estimated number of vehicle trips per hour (vph) that could shift to the new route.

**Table 5. Potential Diverted Through Traffic on SW Cameron and SW 45<sup>th</sup> Avenue**

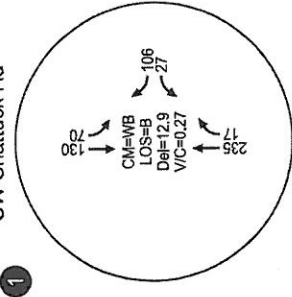
Direction	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Existing Through Traffic Volumes	Potential Diverted Traffic Volumes	Existing Through Traffic Volumes	Potential Diverted Traffic Volumes
Eastbound SW Cameron Rd volumes at SW 48 <sup>th</sup> Avenue	108 vph	27 vph	138 vph	35 vph
Westbound SW Cameron Rd volumes at SW 48 <sup>th</sup> Avenue	103 vph	26 vph	115 vph	29 vph
Combined Eastbound and Westbound	211 vph	53 vph	253 vph	64 vph

In addition to the through traffic, we also assumed that a portion of the existing weekday AM traffic on SW 45<sup>th</sup> Avenue that turns onto SW Pendleton and uses SW 47<sup>th</sup> Avenue to access the school would also divert to this new route. During the weekday AM peak hour, we assumed approximately one-third of the southbound right-turns and one-third of the eastbound left-turns at SW Pendleton/SW 45<sup>th</sup> would divert to this new route. This would result in 10 vehicles southbound on SW 48<sup>th</sup> Avenue to access SW 47<sup>th</sup> Avenue south of Pendleton and 5 vehicles northbound on the same route.

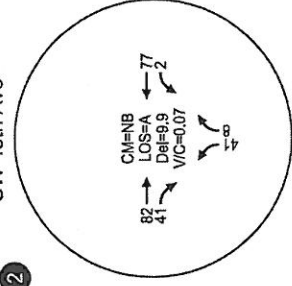
Figures 11 and 12 show the resulting total traffic volumes with the diversion and the resultant change in intersection operations. As shown, even with the potential diversion, each of the study intersections is forecast to continue operating acceptably. *It should be noted that the scenario reflected in Table 5 and Figures 11 and 12 represents an overly conservative approach to potential diversion to ensure no capacity issues would entail; the likely diversion of traffic onto this more circuitous route will likely be far less than reported in the table and figures.*



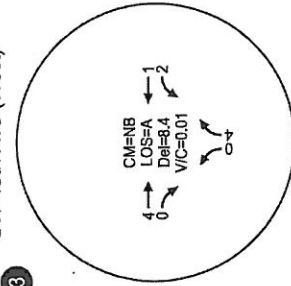
SW Cameron Rd /  
SW Shattuck Rd



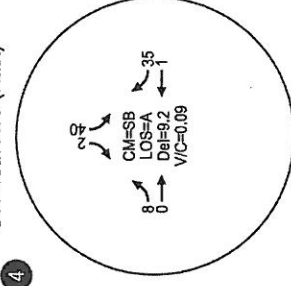
SW Cameron Rd /  
SW 48th Ave



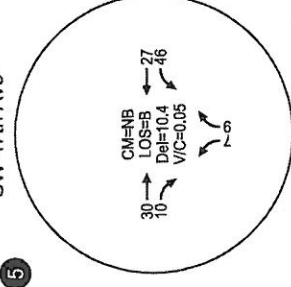
SW Pendleton St /  
SW 48th Ave (West)



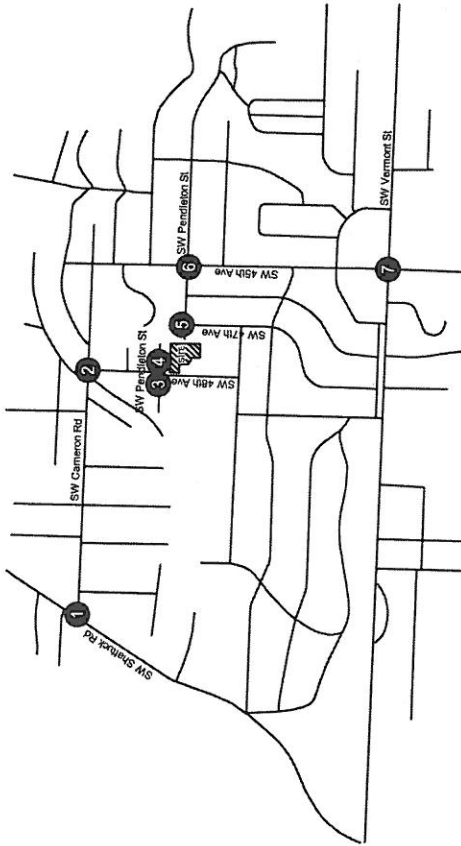
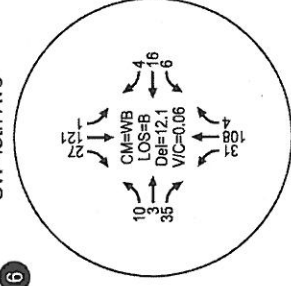
SW Pendleton St /  
SW 48th Ave (East)



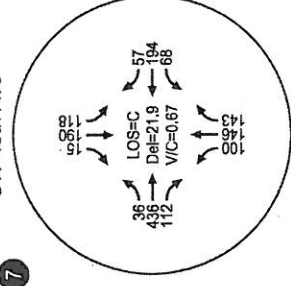
SW Pendleton St /  
SW 47th Ave



SW Pendleton St /  
SW 45th Ave



SW Vermont St /  
SW 45th Ave

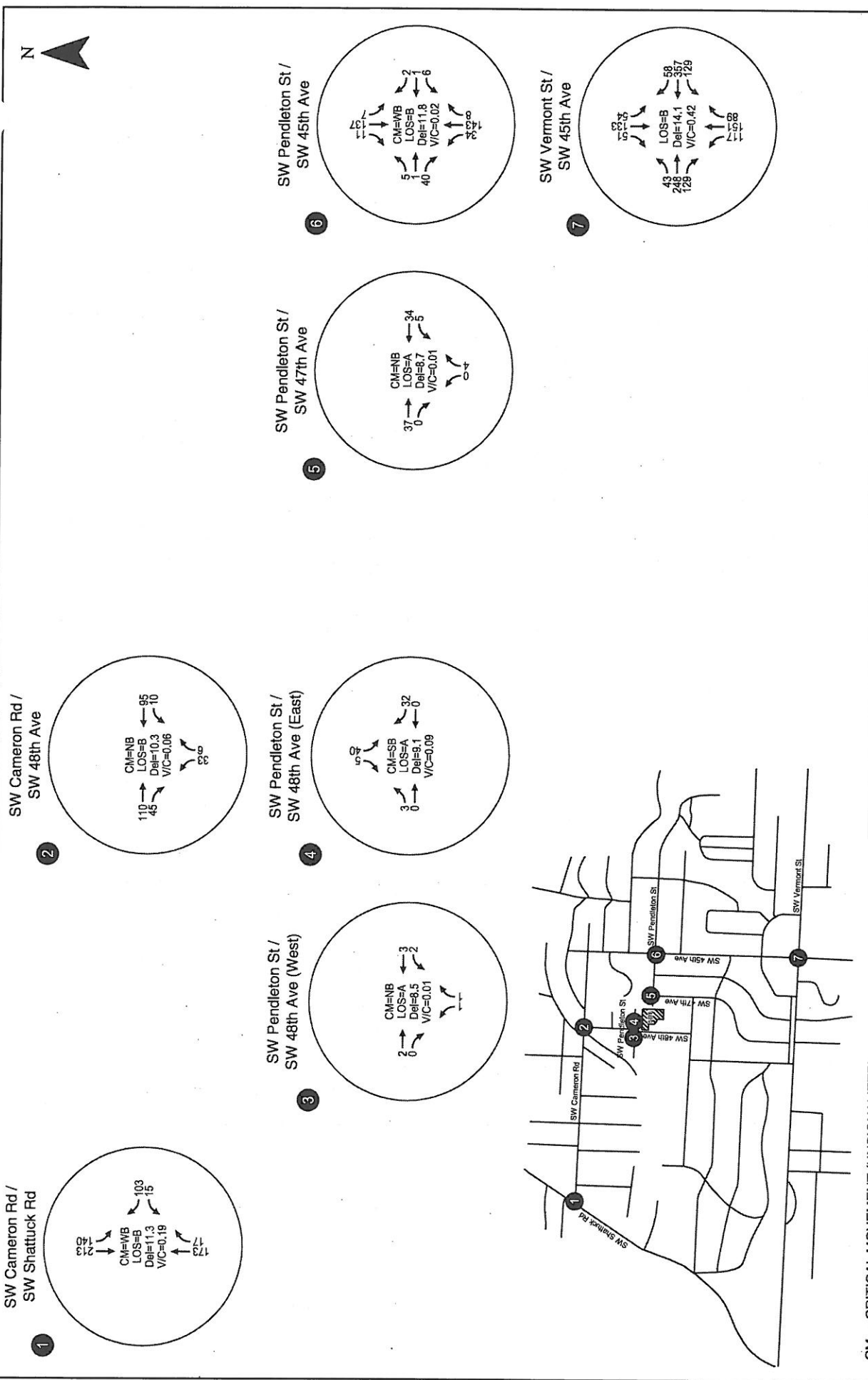


- CM = CRITICAL MOVEMENT (UNSIGNALIZED)
- LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/ CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
- Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/ CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
- V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO (SIGNALIZED)/ CRITICAL VOLUME-TO-CAPACITY RATIO (UNSIGNALIZED)

## 2017 Total Traffic Conditions + Diverted Traffic Weekday AM Peak Hour Portland, Oregon

Figure  
**11**





**2017 Total Traffic Conditions + Diverted Traffic Weekday PM Peak Hour Portland, Oregon**

**Figure 12**

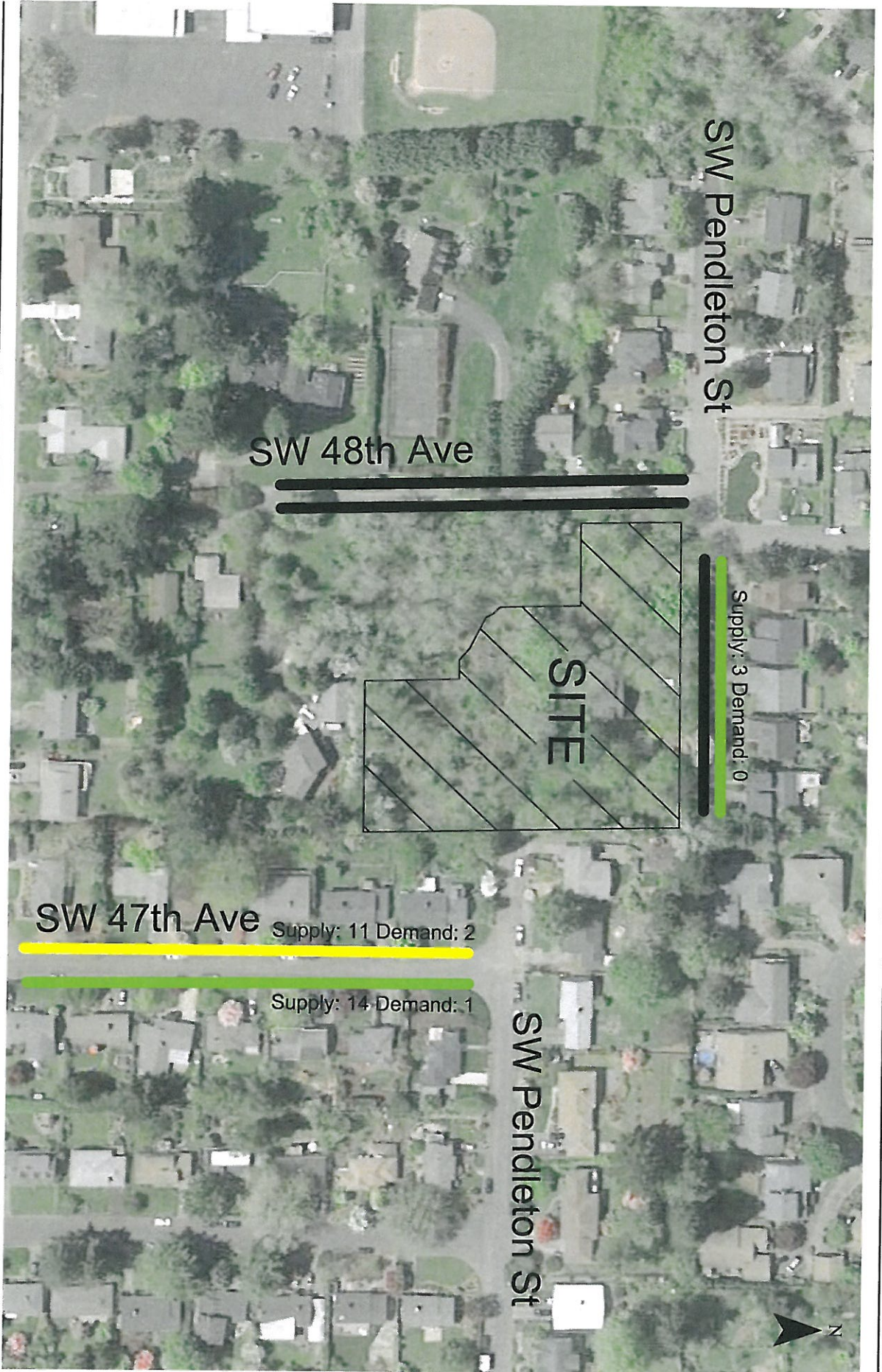
CM = CRITICAL MOVEMENT (UNSIGNALIZED)  
 LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/  
 CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)  
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/  
 CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)  
 V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO (SIGNALIZED)/  
 CRITICAL VOLUME-TO-CAPACITY RATIO (UNSIGNALIZED)

## PARKING IMPACTS

To estimate the potential impacts on the availability of on-street parking in the vicinity of the subdivision, we recorded existing on-street parking demand on an hourly basis through the course of a typical weekday (i.e., from 6 AM to 7 PM) in March 2016 when school was in-session. This data was measured on the following streets:

- SW Pendleton Street east of SW 48<sup>th</sup> Avenue (three on-street spaces provided);
- SW 48<sup>th</sup> Avenue south of SW Pendleton Street (no existing on-street supply provided); and,
- SW 47<sup>th</sup> Avenue south of SW Pendleton Street (25 on-street spaces measured).

As shown in Exhibit 1, the existing parking demand is minimal today with the peak hour for parking demand occurring at 6 AM. During this period three vehicles were measured along SW 47<sup>th</sup> Avenue south of SW Pendleton Street. This is illustrated in Figure 13. As shown in both the figure and exhibit, 28 on-street parking spaces are provided today adjacent to the subdivision; only three of those spaces were utilized (11%). As part of the development, on-site parking will be provided for each home via a single car garage (some may have a double car garage) and a driveway that accommodates a minimum of one vehicle. Any additional parking demand associated with the new subdivision can be more than adequately accommodated under typical weekday conditions. Therefore, no on-street parking impacts are anticipated beyond the site frontage as part of the proposed subdivision. *Parking data are located in Appendix C.*



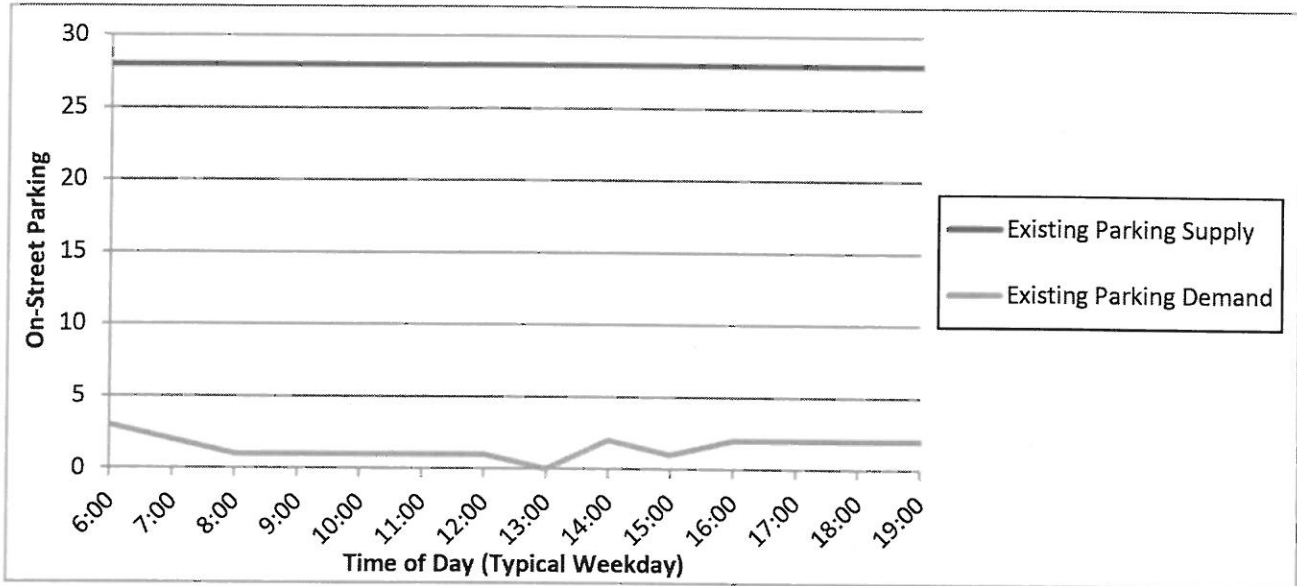
Weekday On-street Parking Occupancy

6:00 - 7:00 AM  
Portland, Oregon

Figure  
**13**







**Exhibit 1. On-street Parking Supply and Demand\***

\* Values shown reflects on-street parking observed along SW Pendleton Street east of SW 48<sup>th</sup> Avenue (three on-street spaces provided); SW 48<sup>th</sup> Avenue south of SW Pendleton Street (no existing on-street supply provided); and, SW 47<sup>th</sup> Avenue south of SW Pendleton Street (25 on-street spaces measured)

**SAFETY CONSIDERATIONS**

Safety considerations were assessed considering review of crash patterns at the study intersections, sight distance and frontage improvements, as well as traffic control considerations as described below.

**Site Frontage Improvements and Sight Distance**

The proposed site development includes frontage improvements along SW Pendleton Street, SW Pendleton Street, and the new north-south local street in-between. The City of Portland requires that intersection sight distance requirements outlined in *A Policy on Geometric Design of Highways and Streets, 6<sup>th</sup> Edition* (published by the American Association of State Highway and Transportation Officials, AASHTO) be satisfied. The civil engineering design plans provided by OTAK detail the sight distance triangles provided along the site frontage.

Any future landscaping, above-ground utilities, and site signage along the site frontage should be located and maintained such adequate intersection sight distance is provided.

**Traffic Control Considerations**

The intersection of SW Pendleton Street/SW 48<sup>th</sup> Avenue (East) is currently uncontrolled. Given the proposed connection of SW Pendleton Street through the site to the east, the City of Portland may choose to require the proposed development to install traffic control at the SW Pendleton Street/SW 48<sup>th</sup> Avenue (East) intersection; potentially in the form of a southbound yield sign on SW 48<sup>th</sup> Avenue.

## CONCLUSIONS

Per the analysis outlined in this report, the multimodal transportation system is capable of supporting the proposed Everett Homes subdivision. City Planning and Zoning Code Chapter 33 Section 641.020 identifies approval criterion as follows:

*The transportation system must be capable of safely supporting the proposed development in addition to the existing uses in the area. Evaluation factors include: street capacity and level-of-service; vehicle access and loading; on-street parking impacts; the availability of transit service and facilities and connections to transit; impacts on the immediate and adjacent neighborhoods; and safety for all modes.*

As documented in this report, findings relevant to the approval criterion are outlined below.

- Street capacity and level-of-service:
  - The study intersections are expected to satisfy the city's level-of-service criteria during the weekday AM and PM peak hour before and after build-out of the proposed subdivision.
- Vehicle access and loading:
  - Both SW 48<sup>th</sup> Avenue and SW Pendleton Street are designated as Local Service Truck Streets and can accommodate typical limited residential loading needs.
  - Individual driveways are provided for each of the 11 proposed homes.
- On-street parking impacts:
  - Each of the proposed homes will have an individual site driveway parking area.
  - Peak on-street parking demand in the area was observed and uses approximately 11% of the available parking capacity.
  - The proposed subdivision is not expected to substantially impact parking for other residents, as there is an ample parking supply provided on-site and on the surrounding streets.
- Availability of transit service and facilities and connections to transit:
  - Transit services in the site vicinity are adequate to support the proposed subdivision.
- Impacts on the immediate and adjacent neighborhoods:
  - The proposed development will result in 8 weekday AM peak hour trips and 11 weekday PM peak hour trips.



- Increased street connectivity provided by the new segment of SW Pendleton Street within the proposed subdivision could result in some traffic diversion between SW Cameron Road and SW 45<sup>th</sup> Avenue and the additional traffic volumes can be readily accommodated through capacity available at the study intersections.
  - The proposed subdivision is consistent with the pedestrian designations and facilities of the surrounding streets.
  - The proposed subdivision is consistent with the bicycle designations and facilities on the surrounding streets.
  - The adjacent street system designations are consistent with the proposed subdivision.
- Safety for all modes
    - The proposed site development includes frontage improvements with sidewalks along SW 48<sup>th</sup> Street, SW Pendleton Street, and the new north-south local street connecting the two existing termini of SW Pendleton Street.
    - Review of crash data did not indicate any safety-related mitigation is needed at the off-site intersections.
    - Given the proposed connection of SW Pendleton Street through the site to the east, the City of Portland may choose to require the proposed development to install traffic control at the SW Pendleton Street/SW 48<sup>th</sup> Avenue (East) intersection; potentially in the form of a southbound yield sign on SW 48<sup>th</sup> Avenue.
    - We recommend that any future landscaping, above-ground utilities, and site signage along the site frontage be located and maintained such adequate intersection sight distance is provided.

Please let us know if you need any additional information to facilitate your review of the proposed subdivision's impacts on transportation.

## REFERENCES

1. City of Portland. *City of Portland Transportation System Plan*. 2007.
2. Transportation Research Board. *Highway Capacity Manual*. 2000.
3. Institute of Transportation Engineers. *Trip Generation*. 9<sup>th</sup> Edition. 2012.

## APPENDICES

- A. Turning Movement Counts
- B. Level of Service Worksheets
- C. Parking Data
- D. Crash Data