

# Chapter 4

## TRANSPORTATION

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**4.000        TRANSPORTATION**

**4A            GENERAL STANDARDS**

**4A.010      General**

The intent of this chapter is to encourage the uniform development of an integrated and accessible public street system that will support present and future multi-modal transportation.

Through the implementation of these standards, streets are built as transportation facilities as well as public spaces, contributing positively to the character of an area. These standards help create an efficient multi-modal transportation system with minimal environmental impact to the community.

These standards balance the safety and mobility of motor vehicles, bicyclists, pedestrians and transit riders. The features in the standards are intended to: maintain safe motor vehicle speeds through narrow street widths and street edge features for friction; provide safe pedestrian crossings through narrow lane widths, crossing islands, and curb bulb-outs; provide inviting space for pedestrians on wide sidewalks with buffers from motor vehicle traffic; provide adequate width, signs and markings for safe on-street bicycle travel, and; create inviting public space through landscaping and other street edge treatments.

This chapter provides minimum development standards supplementing the applicable standards as set forth.

Deviations as defined in Chapter 1 shall be considered by the City Engineer as outlined in [Chapter 1](#), Section 1.050. A request for deviation increasing the 10' travel lane width for Arterial and Major Collector streets shall be based upon the following criteria:

- High frequency transit route as defined by 15 minute transit service frequency on any given day.
- High frequency truck traffic where trucks compose 5 percent or more of the total daily traffic.
- The roadway alignment includes a unique curve of 200 foot radius or less.
- The geometry of the roadway includes a skewed intersection.

## **4B STREETS**

### **4B.010 General**

Street design must provide for the maximum loading conditions anticipated. The width and grade of the pavement must conform to specific standards set forth herein for safety and uniformity.

### **4B.020 Design Standards**

The design of streets and roads will depend upon their type and usage. The design elements of city streets will conform to City standards as set forth herein.

The layout of streets will provide for the continuation of existing streets in adjoining subdivisions or of their proper projection when adjoining property is not subdivided.

- A. Alignment. Alignment of major arterials, minor arterials, and collectors will conform as nearly as possible with that shown in the [Comprehensive Plan](#).
- B. Grade. Street grade should conform closely to the natural contour of the land. In some cases a different grade may be required by the Public Works Director. The minimum allowable grade will be 0.5 percent. The maximum allowable grade will be 8 to 15 percent, depending upon the street classification.
- C. Width. The pavement and right-of-way width depend upon the street classification. The table of [Street Design Standards](#) shows the minimum widths allowed.

Street widths will be measured as shown on Standard Plans for each street classification.

- D. The General Notes on the following page will be included on any plans dealing with street design in addition to all applicable requirements.

### **4B.030 Functional Classification**

City streets are divided into Arterial, Major Collector, Neighborhood Collector, and local access streets in accordance with regional transportation needs and the functional use each serves.

Areas of the city zoned for commercial land use will use major commercial collector street standards for new street development. All streets will be classified by the City Engineer.

In the Chambers Basin R-4CB zone, all streets shall conform to the local 'full-dispersion' street standard.

#### GENERAL NOTES (STREET CONSTRUCTION)

1. All workmanship and materials will be in accordance with City of Olympia Standards, Special Provisions, and the most current edition of the [State of Washington Standard Specifications for Road, Bridge and Municipal Construction](#).
2. The contractor will be responsible for all traffic control in accordance with the [U.S. Department of Transportation Manual on Uniform Traffic Control Devices \(MUTCD\)](#). Prior to disruption of any traffic, traffic control plans will be prepared and submitted to the City for approval. No work will commence until all approved traffic control is in place.
3. All curb, curb and gutter, street grades, sidewalk grades, and any other vertical and/or horizontal alignment will be staked by engineering or surveying firms capable of performing such work.
4. Where new asphalt joins existing, the existing asphalt will be cut to a neat vertical edge and tacked with Asphalt Emulsion Type CSS-1 in accordance with the standard specifications. The new asphalt will be feathered back over existing asphalt to provide for a seal at the saw cut location and the joint sealed with Grade AR-4000W paving asphalt.
5. Compaction of subgrade, rock, and asphalt will be in accordance with the standard specifications.
6. All joint (contraction, construction, isolation, etc.) layout plans shall be approved one week before pouring concrete.
7. Form and subgrade inspection by the City is required before pouring concrete. Twenty-four hours' notice is required for form inspection.
8. Testing and sampling frequencies will be as described in these Standards.
9. The City manufactures and installs street name and regulatory signs at the contractor's/developer's expense. Signs will be requested at the time construction begins.

**Table 1: Street Classification and Number of Lanes**

Region Section	Road Name	From	To	Class	Required Lanes (1)	Map 6-3 Designation
DT	14 <sup>th</sup> Avenue	Capitol Way	I-5	Arterial	4/5	Existing Arterial
DT	4 <sup>th</sup> Avenue	Olympic Way	Water Street	Arterial	4/5	Existing Arterial
DT	4 <sup>th</sup> Avenue	Water Street	Chestnut Street	Arterial	2	Existing Arterial
NS	4 <sup>th</sup> Avenue	Chestnut Street	Pacific Avenue	Arterial	3	Existing Arterial
NS	4 <sup>th</sup> Avenue	Pacific Avenue	Phoenix Street	Arterial	5	Existing Arterial
DT	Adams Street	State Avenue	8 <sup>th</sup> Street	Arterial	2	Existing Arterial
WS	Black Lake Boulevard	US 101	21 <sup>st</sup> Avenue	Arterial	5	Existing Arterial
WS	Black Lake Boulevard	21 <sup>st</sup> Avenue	South City Limits	Arterial	4/5	Existing Arterial
WS	Black Lake Boulevard	Cooper Point Road	US 101	Arterial	5	Widening of Existing Arterial
WS	Black Lake Boulevard	4 <sup>th</sup> Avenue	Cooper Point Road	Arterial	4/5	Existing Arterial
DT	Boston Harbor Road	North City Limits	Ames Road	Arterial	2	Existing Major Arterial
SS	Boulevard Road	18 <sup>th</sup> Avenue	22 <sup>nd</sup> Avenue	Arterial	2/3	Widening of Existing Arterial
SS	Capitol Boulevard	Capital Way	Carlyon Avenue	Arterial	4	Existing Arterial
DT	Capitol Way	Corky Avenue	Capitol Boulevard	Arterial	4	Existing Arterial
WS	Cooper Point Road	Conger Avenue	Evergreen Park Drive	Arterial	5	Existing Arterial
WS	Cooper Point Road	Evergreen Park Drive	US 101	Arterial	5	Widening of Existing Arterial
WS	Cooper Point Road	28 <sup>th</sup> Street	Conger Avenue	Arterial	2/3	Widening of Existing Arterial
WS	Division Street	14 <sup>th</sup> Avenue	Garfield Avenue	Arterial	2/3	Existing Arterial
WS	Division Street	Garfield Avenue	4 <sup>th</sup> Avenue	Arterial	4/5	Existing Arterial
NS	East Bay Drive	Ames Road	San Francisco Avenue	Arterial	2/3	Existing Arterial
NS	East Bay Drive	San Francisco Avenue	State Avenue	Arterial	3	Existing Arterial
WS	Harrison Avenue	Cushing Street	Olympic Way	Arterial	4/5	Existing Arterial
WS	Harrison Avenue	Cooper Point Road	Cushing Street	Arterial	4/5	Existing Arterial
DT	Henderson Boulevard	Plum Street	I-5	Arterial	4/5	Existing Arterial
SS	Henderson Boulevard	I-5	North Street	Arterial	2/3	Existing Arterial
DT	Jefferson Street	8 <sup>th</sup> Avenue	14 <sup>th</sup> Avenue	Arterial	4/5	Existing Arterial
NE	Martin Way	Phoenix Street	Devoe Street	Arterial	5	Existing Arterial /Future Turn Lane
NE	Martin Way	Devoe Street	Lilly Road	Arterial	4	Addition RW for Median Island
NE	Martin Way	Lilly Road	College Street	Arterial	5	
WS	Harrison Avenue	West City Limits	Cooper Point Road	Arterial	4/5	Widening of Existing Arterial
WS	Mud Bay Road	West UGB	West City Limits	Arterial	4/5	Widening of Existing Arterial
WS	Olympic Way	4 <sup>th</sup> Avenue Bridge	Harrison Avenue	Arterial	4	Existing Arterial
WS	Yauger Way Extension	SR 101/Black Lake Boulevard	Capital Mall Drive	Arterial	2/3	Future Arterial
NE	Pacific Avenue	State Avenue	I-5 Overpass	Arterial	4/5	Existing Arterial
SS	Pacific Avenue	I-5	East City Limits	Arterial	4/5	Existing Arterial
SS	Pacific Avenue	East City Limits	East UGB	Arterial	4/5	Existing Arterial
DT	Plum Street	State Avenue	Henderson Boulevard	Arterial	4/5	(1) Existing Arterial
NE	Sleater-Kinney Road	I-5	Martin Way	Arterial	4/5	Existing Arterial
DT	State Avenue	Wilson Street	Water Street	Arterial	2	Existing Arterial, Potential HOV
DT	Union Avenue	Capitol Way	Plum Street	Arterial	4/5	Existing Arterial
DT	Union Avenue	Plum Street	Eastside Street	Arterial	4/5	Existing Arterial
DT	Water Street	State Avenue	4 <sup>th</sup> Avenue	Arterial	3	Existing Arterial
SS	Yelm Highway	Henderson Boulevard	Rich Road	Arterial	4/5	Existing Arterial
NE	Boulevard Road	Pacific Avenue	I-5 Overpass	Major Collector	2/3	Major Collector Medians
SS	Boulevard Road	22 <sup>nd</sup> Avenue	40 <sup>th</sup> Avenue	Major Collector	2/3	Major Collector Medians
SS	Boulevard Road	40 <sup>th</sup> Avenue	Yelm Highway	Major Collector	2/3	Major Collector Medians

SS	Boulevard Road	I-5 Overpass	Fones Road	Major Collector	2/3	Major Collector Medians
DT	11 <sup>th</sup> Avenue	Capitol Way	Jefferson Street	Major Collector	2	Existing Major Collector w/ Center Median
NE	12 <sup>th</sup> Avenue	Wilson Street	Fenske Drive	Major Collector	2/3	Existing Major Collector
NE	12 <sup>th</sup> Avenue	South Bay Road	City Limits	Major Collector	2/3	Additional RW for New Major Collector
NE	12 <sup>th</sup> Avenue	PSP Hospital	Sleater-Kinney Road	Major Collector	2/3	Additional RW for New Major Collector
WS	14 <sup>th</sup> Avenue	Kaiser Road	Division Street	Major Collector	2/3	Existing Major Collector
SS	18 <sup>th</sup> Avenue	Wilson Street	Boulevard Road	Major Collector	2/3	Existing Major Collector
WS	20 <sup>th</sup> Avenue	Road Sixty-Five	Crestline Boulevard	Major Collector	2/3	Existing Major Collector
WS	20 <sup>th</sup> Avenue	Kaiser Road	Road Sixty-Five	Major Collector	2/3	Future Major Collector
WS	21 <sup>st</sup> Avenue	Black Lake Boulevard	R.W. Johnson Boulevard	Major Collector	2/3	(2) Existing Major Collector
SS	22 <sup>nd</sup> Avenue	Eastside Street	Boulevard Road	Major Collector	2/3	Existing Major Collector
NE	26 <sup>th</sup> Avenue	South Bay Road	Pleasant Glade Road	Major Collector	2/3	Existing Major Collector
NE	26 <sup>th</sup> Avenue	Gull Harbor Road	South Bay Road	Major Collector	2/3	Existing Major Collector
WS	28 <sup>th</sup> Avenue	Division Street	West UGB	Major Collector	2/3	Existing Major Collector
WS	4 <sup>th</sup> Avenue	Black Lake Boulevard	Olympic Way	Major Collector	2	Existing Major Collector
DT	5 <sup>th</sup> Avenue	4 <sup>th</sup> Avenue/Olympic Way	Water Street	Major Collector	4	Existing Major Collector
NS	5 <sup>th</sup> Avenue	Water Street	Eastside Street	Major Collector	2/3	Existing Major Collector
WS	7 <sup>th</sup> Avenue	Kaiser Road	McPhee Road	Major Collector	4	Existing Major Collector
DT	8 <sup>th</sup> Avenue	Capitol Way	Eastside Street	Major Collector	2/3	Existing Major Collector
WS	9 <sup>th</sup> Avenue	Black Lake Boulevard	Decatur Road	Major Collector	2/3	Existing Major Collector
NE	Ames Road	East Bay Drive	North City Limits	Major Collector	2	Existing Major Collector
NE	Bethel Street	26 <sup>th</sup> Avenue	San Francisco Avenue	Major Collector	2	Existing Major Collector
SS	Cain Road	22 <sup>nd</sup> Avenue	Log Cabin Road	Major Collector	2/3	Existing Major Collector
WS	Capital Mall Drive	McPhee Road	Black Lake Boulevard	Major Collector	4	Existing Major Collector
SS	Carlyon Avenue	Capitol Boulevard	Henderson Boulevard	Major Collector	2/3	Existing Major Collector
WS	Carriage Loop	Cooper Point Road	Carriage Street	Major Collector	2/3	Existing Major Collector
WS	Carriage Street	Carriage Loop	Caton Way	Major Collector	2/3	Existing Major Collector
NE	Central Street	Bigelow Avenue	11 <sup>th</sup> Avenue	Major Collector	2	Existing Major Collector
WS	Conger Avenue	Cooper Point Road	Division Street	Major Collector	2/3	Existing Major Collector
WS	Cooper Point Road	North UGB	28 <sup>th</sup> Street	Major Collector	2/3	Existing Major Collector
WS	Crestline Boulevard	Elliot Avenue	Raft Avenue	Major Collector	2	Existing Major Collector
WS	Decatur Street	Harrison Avenue	9 <sup>th</sup> Avenue	Major Collector	2	Existing Major Collector
WS	Decatur Street	9 <sup>th</sup> Avenue	1700 Block	Major Collector	2	Existing Major Collector
WS	Decatur Street Connection	Decatur Street	Caton Way	Major Collector	2/3	Future Major Collector

WS	Deschutes Parkway	5 <sup>th</sup> Avenue	South City Limits	Major Collector	2/3	Major Collector
WS	Division Street	28 <sup>th</sup> Avenue	14 <sup>th</sup> Avenue	Major Collector	2/3	Existing Major Collector
SS	Eastside Street	State Avenue	22 <sup>nd</sup> Avenue	Major Collector	2/3	Existing Major Collector
SS	14 <sup>th</sup> Avenue	Elizabeth Street	East City Limits	Major Collector	2/3	Existing Major Collector/Future Left-Turn Needs
SS	Eskridge Boulevard	O'Farrell Avenue	Cain Road	Major Collector	2/3	Existing Major Collector
WS	Evergreen Park Drive	Cooper Point Road	Lakeridge Drive	Major Collector	2/3	Future Major Collector
NS	Fir Street	Legion Way	Pine Street	Major Collector	2	Future Major Collector
SS	Fones Road	1400 Block Fones Road	18 <sup>th</sup> Avenue	Major Collector	3	Widening of Existing Major Collector
SS	18 <sup>th</sup> Avenue	Hoffman Road	Fones Road	Major Collector	3	Existing Major Collector
SS	Elizabeth Street	18 <sup>th</sup> Avenue	14 <sup>th</sup> Avenue	Major Collector	3	Existing Major Collector
SS	18 <sup>th</sup> Avenue	Fones Road	Elizabeth Street	Major Collector	2/3	Existing Major Collector
SS	Fones Road	Pacific Avenue	1400 Block Fones Road	Major Collector	4/5	Widening of Existing Major Collector
SS	18 <sup>th</sup> Avenue	Boulevard Road	Hoffman Road	Major Collector	2/3	Major Collector
NE	Friendly Grove Road	North UGB	26 <sup>th</sup> Avenue	Major Collector	2	Existing Major Collector
NE	Friendly Grove Road	26 <sup>th</sup> Avenue	Miller Avenue	Major Collector	2	Existing Major Collector
NE	Gull Harbor Road	North UGB	North City Limits	Major Collector	2/3	Existing Major Collector
SS	Henderson Boulevard	North Street	Yelm Highway	Major Collector	2/3	Existing Major Collector
SS	Herman Road	Wiggins Road	East City Limits	Major Collector	2/3	Future Major Collector Boulevard
SS	Hoffman Road	18 <sup>th</sup> Avenue	Morse-Merrymann Road	Major Collector	2/3	Existing Major Collector
SS	Hoffman Road	Morse-Merrymann Road	Log Cabin Road Connection	Major Collector	2/3	Future Major Collector
SS	Hoffman Road Realignment	Fones Road/Hoffman Road	Fones Road/Elizabeth Avenue	Major Collector	2/3	Future Major Collector
DT	Jefferson Street	14 <sup>th</sup> Avenue	Maple Park	Major Collector	2/3	Existing Major Collector
WS	Kaiser Road	Mud Bay Road	7 <sup>th</sup> Avenue	Major Collector	2/3	Future Major Collector
WS	Kaiser Road	Evergreen College Parkway	Cooper Point Road	Major Collector	2/3	Existing Major Collector
WS	Kaiser Road	North UGB	Mud Bay Road	Major Collector	2/3	Existing Major Collector
WS	Kaiser Road	7 <sup>th</sup> Avenue	South to City Limits	Major Collector	2/3	Future Major Collector
WS	Lakeridge Drive	Deschutes Parkway	Evergreen Park Drive	Major Collector	2/3	Future Major Collector
DT	Legion Way	Water Street	Plum Street	Major Collector	2/3	Existing Major Collector
NS	Legion Way	Plum Street	Fir Street	Major Collector	2	Existing Major Collector
NE	Lilly Road	North UGB	15 <sup>th</sup> Avenue	Major Collector	2/3	Existing Major Collector
NE	Lilly Road	15 <sup>th</sup> Avenue	Martin Way	Major Collector	4	Existing Major Collector
NE	Lilly Road	Martin Way	I-5 Overpass	Major Collector	4/5	Existing Major Collector
SS	Lilly Road	I-5	Pacific Avenue	Major Collector	4/5	Existing Major Collector
SS	Log Cabin Road	Cain Road	Boulevard Road	Major Collector	2/3	Existing Major Collector



SS	Log Cabin Road Connections	Boulevard Road	Wiggins Road / Herman Road	Major Collector	2/3	Future Major Collector Boulevard
DT	Maple Park	Capitol Way	Jefferson Street	Major Collector	2/3	Existing Major Collector/Median
WS	McPhee Road	Mud Bay Road	7 <sup>th</sup> Avenue / Capital Mall	Major Collector	2/3	Existing Major Collector/Median
NE	Miller Avenue	Bethel Street	Friendly Grove Road	Major Collector	2	Existing Major Collector
SS	Morse-Merryman Road	Boulevard Road	Wiggins Road	Major Collector	2/3	Existing Major Collector
WS	Mottman Road	R.W. Johnson Boulevard	Crosby Boulevard	Major Collector	2/3	Existing Major Collector/Future Left-Turn Needs
SS	North Street	West City Limits	Cain Road	Major Collector	2/3	Existing Major Collector/Future Left-Turn Needs
SS	O'Farrell Avenue	Capitol Boulevard	Eskridge Boulevard	Major Collector	2	Existing Major Collector
NS	Olympia Avenue	East Bay Drive	Chestnut Street	Major Collector	2/3	Existing Major Collector
NS	Phoenix Street	South Bay Road	Pacific Avenue	Major Collector	2/3	Existing Major Collector
NE	Pine Avenue	Puget Street	Wilson Street	Major Collector	2	Existing Major Collector
NE	Puget Street	San Francisco Avenue	State Avenue	Major Collector	2/3	Existing Major Collector
WS	Raft Avenue	Crestline Boulevard	Schneider Hill Road	Major Collector	2	Existing Major Collector
WS	Road Sixty-Five	20 <sup>th</sup> Avenue	14 <sup>th</sup> Avenue	Major Collector	2	Existing Major Collector
WS	Road Sixty-Five Connector	28 <sup>th</sup> Avenue	Road Sixty-Five	Major Collector	2/3	Future Major Collector
WS	Rogers Street	Bowman Avenue	4 <sup>th</sup> Avenue	Neighborhood Collector	2	Existing Neighborhood Collector
WS	R.W. Johnson Boulevard	Mottman Road	21 <sup>st</sup> Avenue	Major Collector	2/3	Existing Major Collector
NE	San Francisco Avenue	East Bay Drive	Bethel Street	Major Collector	2/3	Existing Major Collector
WS	Schneider Hill Road	West Bay Drive	Raft Avenue	Major Collector	2	Existing Major Collector
NE	Sleater-Kinney Road	North UGB	6 <sup>th</sup> Avenue	Major Collector	2/3	Existing Major Collector/Future Left-Turn Needs
NS	Sleater-Kinney Road	6 <sup>th</sup> Avenue	Martin Way	Major Collector	4/5	Existing Major Collector
NE	South Bay Road	Steele Street	North UGB	Major Collector	2	Existing Major Collector
NE	State Avenue	Pacific Avenue	Steele Street	Major Collector	2	Existing Major Collector
WS	West Bay Drive	Harrison Avenue	Schneider Hill Road	Major Collector	2/3	Existing Major Collector Modified
SS	Wheeler Street	Eastside Street	Boulevard Road	Major Collector	2	Existing Major Collector
SS	Wiggins Road	27 <sup>th</sup> Avenue	Yelm Highway	Major Collector	2/3	Existing Major Collector
SS	27 <sup>th</sup> Avenue	Wiggins Road	Hoffman Road	Major Collector	2/3	Existing Major Collector
NE	Wilson Street	12 <sup>th</sup> Avenue	Pine Avenue	Major Collector	2	Existing Major Collector
SS	Wilson Street	18 <sup>th</sup> Avenue	22 <sup>nd</sup> Avenue	Major Collector	2/3	Existing Major Collector
WS	Yauger Way	Mud Bay Road	7 <sup>th</sup> Avenue / Capital Mall	Major Collector	2/3	Future Major Collector
(1) If 2/3 or 4/5 lanes are indicated, left-turn channelization may be required for vehicle capacity or safety needs.						
(2) These roadways exceed the standard pavement criteria and require a pavement design based on the Industrial Collectors' standard.						

Functional Classification Map 6-3  
See the [City of Olympia Comprehensive Plan](#).

**Table 2: Street Design Standards**

Design Standards	Functional Classification											
	Arterial Blvd	Arterial	Major Industrial Collector	Major Commercial Collector Blvd	Major Commercial Collector	Major Collector Blvd	Major Collector	Neighborhood Collector Blvd	Neighborhood Collector	Local Access	Alleys	
											Com.	Res
Minimum Structural Design	See Standard Drawing 4-6A											
ADT	14,000-40,000	14,000-40,000	3,000-14,000	3,000-14,000	3,000-14,000	3,000-14,000	3,000-14,000	500-3,000	500-3,000	0-500	N/A	N/A
Sidewalks	8' both sides (1)(10)	8' both sides (1)(10)	6' both sides (1)	10' Both sides (10)	10' Both sides (10)	6' both sides	6' both sides	5' both sides	5' both sides	5' both sides	None	None
Planting Strips (4)	10' between curb & walk both sides ----- 14' center median	10' between curb & walk both sides	6' between curb & walk both sides	2-lane = 10' median --- 4-lane = 14' median	4-ft in sidewalk adjacent to curb	8' between curb & walk both sides ----- 14' center median	8' between curb & walk both sides	8' between curb & walk both sides (2) ----- 10' median	8' between curb & walk both sides (2)	8' between curb & walk both sides (2)	None	None
Street Tree Spacing (5)	40' on center	40' on center	40' on center	40' on center (9)(10)	40' on center (9)(10)	40' on center	40' on center	40' on center	40' on center	40' on center	None	None
Parking Lanes	None	None	None	7' both sides	7' both sides	None	None	None	6' one side	6' one side (6)	None	None
Curbs	Curb both sides	Curb both sides	Curb both sides	Curb both sides	Curb both sides	Curb both sides	Curb both sides	Curb both sides	Curb both sides	Curb both sides	None	None
Lane Widths	All Arterials and Major Collectors will use 10-foot travel lanes, 5-foot bike lanes and 11-foot center turn lanes. On high frequency bus routes and truck routes, upon evaluation, the City Engineer may require different lane width dimensions to address safety concerns. Street widths will be measured as shown on Standard Plans for each street classification.							2 lane - 1'-6"	1 lane-10' 1 lane-9'	1 lane-12'	12	Two-36" ribs
R-O-W	2 lanes - 88' 3 lanes - 88' 4 lanes - 104' 5 lanes - 104'	2 lanes - 68' 3 lanes - 79' 4 lanes - 88' 5 lanes - 99'	2 lanes - 56' 3 lanes - 67' 4 lanes - 76' 5 lanes - 87'	2 lanes - 80' 3 lanes - 84' 4 lanes - 104' (3)	2 lanes - 68' 3 lanes - 79' 4 lanes - 88' (3)	2 lanes - 80' 3 lanes - 80' 3 lanes - 96' (3)	2 lanes - 60' 3 lanes - 71' 4 lanes - 80' (3)	2 lanes - 74' 2 lanes w/ swale - 70'	2 lanes - 55' - 65' w/ class II and III 2 lanes w/ swale - 51' - 61' w/ class II and III	1 lane - 48' 1 lane w/ swale - 44'	12	12 No dead ends
Intersect-ion Radii	35' turning radius (7)	35' turning radius (7)	35' turning radius (7)	35' turning radius (7)	35' turning radius (7)	35' turning radius (7)	35' turning radius (7)	25' curb radius (7a)	25' curb radius (7a)	30' curb radius (7a)	N/A	N/A
Cul-de-sac Radii	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	47' w/ 17' landscaped island	N/A	N/A
Pedestrian Bulb-outs	Curb bulb-outs required on all Arterials, Major Collectors, and Neighborhood Collectors where on-street parking exists. Downtown is defined as the area bounded by: Budd Inlet on the north; Budd Inlet and Capitol Lake on the west; along 11 <sup>th</sup> Avenue extending between Capitol Lake and Jefferson Street; along Jefferson Street, 11 <sup>th</sup> Avenue to Union Avenue; along Union Avenue, from Jefferson Street to Eastside Street; along Eastside Street on the east from Union Avenue to Olympia Avenue; and along Olympia Avenue in a westerly direction reconnecting with Budd Inlet on the north, including properties owned by the Port of Olympia.											
Grades	0.5-8%	0.5-8%	0.5-8%	0.5-10%	0.5-10%	0.5-10%	0.5-10%	0.5-12%	0.5-12%	0.5-15%	0.5-15%	0.5-15%
Maximum Design Speeds	35 mph	35 mph	30 mph	25 mph	25 mph	30 mph	30 mph	25 mph	25 mph	20 mph	10 mph	10 mph
Site Access	See Access Points and Intersection Criteria Guidelines							20' from inter-section	20' from inter-section	20' from inter-section	N/A	N/A
Street Lighting	Highmast ornament	Highmast ornament	Highmast ornament	Highmast ornament	Highmast ornament	Highmast ornament	Highmast ornament	Highmast ornament	Highmast ornament	Ped Scale	N/A	N/A
Access Width	See Access Points and Intersection Criteria Guidelines	10' at PL 15' at PL Curb	10' at PL 15' at PL Curb		10' at PL 15' at PL Curb	N/A	N/A					
Bicycle Facilities	Arterials and Major Collectors and selected neighborhood collectors will have Class II or Class III bicycle facilities as designated on the <a href="#">Bicycle Facilities Map</a> (Appendix 5 of this Chapter), with some exceptions, shown on the map.							Class II or III as designated on bike map	Class II or III as designated on bike map	Class II or III as designated on bike map	N/A	N/A

See Notes (1) through (10) on the following page.

- (1) Sidewalk width will be 10 feet in the Central Business District or where the extensions of existing frontage improvements are being extended and the sidewalk width is 10'.
- (2) Swale will only be used as an alternative design based on environmental standards. When swale required, swale width = 12' between curb and sidewalk, 6' tree easement opposite side of swale.
- (3) The need for left-turn channelization will be evaluated at intersections and access points.
- (4) Unless otherwise agreed upon by the City of Olympia, maintenance of street trees, turf or other landscaping within the planting strips is the responsibility of the adjacent landowner.
- (5) Street trees required. Exact spacing and species to be determined by Urban Forester. Spacing is approximate - exact spacing will depend on locations of streetlights, fire hydrants, driveways, sign clearance triangles, etc.
- (6) Block faces that are greater than 350 feet require parking bulb-outs at both street ends to define parking with a 100 foot No Parking Zone center block.
- (7) Turning radius dimensions represent the vehicle turning path. The smallest curb radius should be used while maintaining the specified turning radius. Lane width and the presence of a bike lane and parking lane affect a vehicle's turning path and allow a smaller radius to be used. All curb radii shall be designed to accommodate a bus, garbage and fire truck turning path. On streets with more than one lane in that direction of travel, large vehicles may encroach into no more than one-half of the adjacent travel lane to complete the turn. On Arterials and Major Collectors, encroachment into oncoming travel lanes is unacceptable. The minimum curb radius is 15 feet.
- (7a) At the intersection of two classes of streets, the radius for the higher class of street is used. Where larger truck types are anticipated, further engineering design will be required to determine an adequate radius.
- (8) Parking may be required on a case-by-case analysis of neighborhood parking needs.
- (9) Street trees in sidewalk section of Major Commercial Collector will require street tree frames and grates per Standard Detail 4-49.
- (10) Awnings shall conform to OMC 12-24.020 "Awnings."

**Table 3: Street Characteristics**

Street Characteristics	Arterial Street	Major Collector	Neighborhood Collector	Local Access Street
Types of Traffic Served	Regional and City-wide	Sub-regional, feed Arterial traffic	Subarea and local traffic, feed Major Collector traffic	Local traffic, feed Neighborhood/Major Collector or Arterial Traffic
Traffic Volumes	14,000 - 40,000 Average Daily Traffic	3,000 - 14,000 Average Daily Traffic	500 - 3,000 Average Daily Traffic	0 - 500 Average Daily Traffic
Percent Local Traffic	0 - 15% of origins and destinations are within a one mile radius of the street	0 - 30% of origins and destinations are within a one mile radius of the street	70% - 100% of origins and destinations are within a one mile radius of the street	80% - 100% of origins and destinations within a one mile radius of the street
Average Travel Length	10 to maximum miles	2 to 15 miles	1 to 2 miles	Minimum to 2 miles
Street Spacing	1 - 2 miles	½ - ¾ mile	1000' - 1500'	350' - 500' (2 blocks)
Intersection Spacing (1)	500' - 750' (2-3 blocks)	350' - 500' (2 blocks)	250' - 350- (1 block)	250' - 350- (1 block)
Design Speed	30 - 35 mph	25 - 35 mph	25 mph	20 - 25 mph
On-Street Parking	No - except where parking exists and where exempt. Existing parking may be removed for other Transportation needs. Where parking exists, intersection bulb-outs are required.	No - except where parking exists and where exempt. Existing parking may be removed for other Transportation needs. Where parking exists, intersection bulb-outs are required.	Yes - with bulb-outs at intersections.	Yes - one side with parking bulb-outs to define parking areas.
Driveway Access	No	No - except for existing developments	Yes	Yes
Bike Lanes (Class II or Class III)	Yes - See Bicycle Facilities Map for specifics and exceptions.	Yes - See Bicycle Facilities Map for specifics and exceptions.	Some - See <a href="#">Bicycle Facilities Map</a> for specifics and exceptions	No
Planting Strips (between sidewalk and curb)	Yes	Yes	Yes	Yes
Sidewalks	Yes	Yes	Yes	Yes
Traffic Calming	No	As needed	Yes - if problem is anticipated or determined through an engineering study.	Yes - if problem is anticipated or determined through an engineering study.
Transit Shelters	Every ½ mile	Every ½ mile	None	None
Transit Pullouts	Every ½ mile	Every ½ mile	None	None

(1) These intersection spacing requirements will not be used as criteria/justification to close existing streets

#### **4B.040 Naming**

Streets and roads will be named according to specific criteria. The City is divided into four quadrants by Capitol Way (east or west) and 4th Avenue/ Martin Way (north or south). “Avenues” run east-west and are numbered with the exception of certain long-standing historical names. “Streets” run north-south and are named. “Drives” are irregular or diagonal streets over two grid blocks in length not conforming to the grid pattern. “Places” will be a north-south street parallel to but between streets. “Ways” will be an east-west street parallel to but between avenues. “Courts” will be a cul-de-sac that cannot be extended. Courts are to be named or numbered and carry name or the number of the preceding street or avenue. “Loops” will be small loop-type streets to carry the name of the street from which they originate. “Lanes” will be private streets.

An address number will be assigned to all new buildings at the time the building permit is issued. It is then the owner’s responsibility to see that the house numbers are placed clearly and visibly at the main entrance to the property or at the principal place of ingress.

The developer must check with the Public Works Department regarding the naming of streets. This should be done at the time the preliminary plat is submitted and again upon approval of the final plat. The Public Works Department will ensure that the name assigned to a new street is consistent with policies of the City.

#### **4B.050 Signing and Striping**

Street signs are defined as any regulatory, warning, or guide signs. The developer is responsible for providing all street signs. Street signs will comply with the latest edition of the [U.S. Department of Transportation Manual on Uniform Traffic Control Devices \(MUTCD\)](#).

Pavement markings and street signs, including posts and hardware, will be designed, furnished, installed, and paid for by the developer under the City’s direction. The design and installation of all street signs, pavement markings, and associated hardware, will conform to the City of Olympia Special Provisions and the Washington State Department of Transportation Standard Specifications, in effect at the time of approval for construction, to establish and maintain uniformity.

Plastic pavement markings (preformed tape or sprayed application) shall be used for all transverse, long line, and symbol markings unless otherwise approved by the City Engineer.

Street name signs will display street names, district designation, and grid numbers.

Mast arm street name signs will be pursuant to Standard Drawing 4-37. Post-mounted signs will be pursuant to Standard Drawing 4-45.

#### **4B.060 Right-of-Way**

Right-of-way is determined by the functional classification of a street. See [Table 1](#). See Drawing Details 4-2A through 4-2L for specific widths. See [Table 2 Street Design Standards](#) for radius requirements at cul-de-sac “bulb.” Right-of-way at “bulb” will be increased accordingly.

Right-of-way requirements may be increased if additional lanes, pockets, transit lanes, bus loading zones, operational speed, bike lanes, utilities, schools, or other factors are required as determined by the Director or Public Works.

Right-of-way will be conveyed to the City on a recorded plat or by a right-of-way dedication or separate instrument.

#### **4B.070 Private Streets**

Acceptance as Public Streets. Acceptance of private streets as public streets will be considered only if the streets meet all applicable public street standards, including right-of-way widths.

#### **4B.080 Streetside (Frontage) Improvements**

- A. All commercial and residential (including multi-family) development, plats, and short plats will install street improvements at the time of construction as required by the Department of Community Planning and Development. Such improvements may include curb and gutter; sidewalk; transit stops, pads, and shelters; street storm drainage; street lighting system; traffic signal modification, relocation, or installation; street trees; utility relocation or installation; undergrounding of franchised utilities; landscaping and irrigation; and street widening, all pursuant to these Standards. Plans will be prepared and signed by a licensed civil engineer registered in the State of Washington.

- B. At a minimum, all streetside improvements will be made across the full frontage of the property being developed from centerline to right-of-way line.

Full structural street cross section will be constructed throughout the entire length, including the transition taper. No cross-section taper will be allowed.

- C. Exceptions, see [Section 2.070](#), Improvement Deferrals.

- D. When streetside improvements are required:

1. Half-street pavement reconstruction will be required when the existing pavement rating is at or below 40, based on the City of Olympia Pavement Management System; crown slope is greater than 3 percent; is light bituminous pavement; and/or was built with no base structure. Section pavement coring and/or subsurface investigation will be required to determine base condition.
2. Half-street asphalt overlay (2-inch minimum) will be required when the existing pavement rating is at or below 60 based on the City of Olympia Pavement Management System. Pre-leveling may be required to create a uniform 2 percent crown slope.

#### **4B.085 StreetSide (Frontage) Improvements West Bay Drive**

Frontage improvements specific to West Bay Drive will conform to the descriptions contained in Table 4.

**Table 4: West Bay Drive Streetside Improvements**

West Bay Drive Street Section		Westside of Right-of-Way	Eastside of Right-of-Way
From	To		
Roundabouts	Southern Park Border	Maintain existing sidewalk location and re-stripe centerline east to provide bicycle lanes north and southbound. (Standard Drawing 4-2G1.)	Maintain existing sidewalk location and re-stripe centerline east to provide bicycle lanes north and southbound. (Standard Drawing 4-2G1.) Existing on-street parking will be removed.
Southern Park Boundary	Garfield Nature Trail	Maintain existing sidewalk location and re-stripe centerline east to provide bicycle lanes north and southbound. (Standard Drawing 4-2G2.)	Maintain existing sidewalk on the east side of ROW. Re-stripe centerline east to provide bicycle lanes north and southbound. Provide on-street pocket parking/planter. (Standard Drawing 4-2G2.)
Garfield Nature Trail	Brawne Avenue	Maintain existing sidewalk location and re-stripe centerline east to provide bicycle lanes north and southbound. (Standard Drawing 4-2G3.)	Maintain existing sidewalk on the eastside of ROW. Re-stripe centerline east to provide bicycle lanes north and southbound. Bicycle lanes will remain next to the vehicle travel lanes. Sidewalks can be either at street level or below grade. (Standard Drawing 4-2G3.)
Brawne Avenue	Park Property North Border	Variable retaining wall, sidewalk and planter strip. (Standard Drawing 4-2G4.)	The railroad right-of-way will be used for combined trail-sidewalk facility wherever practical and safe. Park trail and sidewalk will be combined in a 10-foot multi-use facility. (Standard Drawing 4-2G4.)
Park Property North Border	Schneider Hill Base	Variable retaining wall, sidewalk and planter strip. (Standard Drawing 4-2G5.)	Bicycle lanes will remain next to the vehicle travel lanes. Sidewalk will be below street grade. If land use remains industrial, trail will be incorporated into the sidewalk. (Standard Drawing 4-2G5.)
Schneider Hill Base	Schneider Hill Top	Standard Drawing 4-2G6	Standard Drawing 4-2G6.
Schneider Hill Base	West Bay Marina	Drainage swale without curbing. (Standard Drawing 4-2G7.)	Pocket parking intermixed within planter strip. (Standard Drawing 4-2G7.)

**4B.090 Streetside (Frontage) Improvements Boulevard Road (Standard Drawing 4-2G8)**

**Table 5: Boulevard Road Street Frontage Improvements**

From	To	Lanes
Yelm Highway	45 <sup>th</sup> Avenue	2
45 <sup>th</sup> Avenue	Boulevard Heights Loop	3
Boulevard Heights Loop	Boulevard Park Court	2
42 <sup>nd</sup> Avenue	41 <sup>st</sup> Way (North Leg)	2
Cedar Park Loop (South Leg)	Cedar Park Loop (North Leg)	3
Cedar Park Loop (North of North Leg)	Log Cabin Road	2
Log Cabin Road	Morse Merryman Road (North Leg)	2
31 <sup>st</sup> Avenue (South Leg)	31 <sup>st</sup> Avenue (North Leg)	2
30 <sup>th</sup> Avenue (South Leg)	31 <sup>st</sup> Avenue (North Leg)	3
31 <sup>st</sup> Avenue (North of North Leg)	28 <sup>th</sup> Avenue (South of South Leg)	2
28 <sup>th</sup> Avenue (South Leg)	28 <sup>th</sup> Avenue (North Leg)	3
Fox Avenue (North Leg)	Swecker Avenue (South of South Leg)	2
Swecker Avenue (South Leg)	Not applicable	3
Briar Lea Loop (South Leg)	Not applicable	3
24 <sup>th</sup> Avenue (South Leg)	24 <sup>th</sup> Avenue (North Leg)	3
18 <sup>th</sup> Avenue	16 <sup>th</sup> Avenue	2
Lincoln Avenue (South Leg)	Not applicable	2
15 <sup>th</sup> Avenue (South Leg)	Not applicable	2
Wheeler Avenue (North Leg)	Not applicable	2
9 <sup>th</sup> Avenue (North Leg)	Not applicable	2
7 <sup>th</sup> Avenue (South Leg)	Not applicable	2
The City Engineer will determine locations for median breaks and exclusive left-turn needs.		



## 4B.095 Streetside (Frontage) Improvements East Downtown

**Table 6: East Downtown Streetside Improvements**

Street Section	Improvements
Cherry Street from 4 <sup>th</sup> Avenue to State Avenue	<ul style="list-style-type: none"> <li>• Widen sidewalks to 12 feet</li> <li>• Restripe street to a 16-foot one-way lane</li> <li>• Maintain parking on both sides</li> <li>• Raised mid-block crossing</li> <li>• Bulb-outs on corners of 4<sup>th</sup> Avenue and State Avenue where on street parking exists</li> <li>• Stamped colored concrete at crosswalks</li> <li>• Underground utilities</li> </ul>
Chestnut Street from 4 <sup>th</sup> Avenue to State Avenue	<ul style="list-style-type: none"> <li>• Widen sidewalks to 12 feet</li> <li>• Restripe street to a 16-foot one-way lane</li> <li>• Maintain parking on both sides</li> <li>• Raised mid-block crossing</li> <li>• Bulb-outs on corners of 4<sup>th</sup> Avenue and State Avenue where on-street parking exists</li> <li>• Stamped colored concrete at crosswalks</li> <li>• Underground utilities</li> </ul>
4 <sup>th</sup> Avenue from Jefferson Street to Plum Street	<ul style="list-style-type: none"> <li>• Remove vehicle travel lane, Jefferson to Chestnut (leaving two eastbound lanes), use space for wider parking lanes and bike lane</li> <li>• Widen parking lanes to 9 feet</li> <li>• Add bike lane on south side of street from Jefferson to Chestnut</li> <li>• Rebuild sidewalk, Jefferson to Cherry, retain existing width</li> <li>• Add bulb-outs at all corners where on-street parking exists, and extend length of bulb-outs along block faces up to established parking stall</li> <li>• Assumes no undergrounding of utilities nor resurfacing, only patching</li> </ul>
State Avenue from Plum Street to Jefferson Street	<ul style="list-style-type: none"> <li>• While maintaining south curb line and parking lane, restripe street for two 11-foot travel lanes and a bike lane on the north side</li> <li>• Bike lane would extend from Plum to Cherry (no widening required)</li> <li>• Relocate 10-foot sidewalk on north side to north edge of right-of-way, provide varying sized planter strip adjacent to relocated parking lane and new bike lane</li> <li>• On south side near corner of Plum, widen planter to shadow parking</li> <li>• Add bulb-outs on south side at Cherry and at Chestnut where on-street parking exists</li> <li>• Widening for bike lane from Cherry to Franklin, with widening</li> </ul>
Legion Way from Cherry Street to Plum Street	<ul style="list-style-type: none"> <li>• Remove travel lane east bound, preserving right turn at Plum</li> <li>• Use space for wider sidewalks and bulb-outs at corners and mid-block</li> <li>• Widen sidewalks by approximately 5 feet on north and south sides of street</li> <li>• Add bulb-outs at corners where on-street parking exists</li> <li>• Add mid-block bulb-outs approximately 60 feet long to accommodate larger street trees</li> <li>• Remove 1-2 parking stalls for each of 4 mid-block bulb-outs</li> <li>• Install large canopy street trees at corners and mid-block</li> </ul>
Legion Way from Cherry Street to Washington Street	<ul style="list-style-type: none"> <li>• Standard street trees in grates</li> <li>• Bulb-outs on corners where on-street parking exists</li> <li>• Maintain sidewalk width</li> </ul>
Plum Street and State Street intersection	<ul style="list-style-type: none"> <li>• Textured colored concrete in the crosswalks</li> <li>• Downtown gateway or entrance signage</li> </ul>

## 4B.110 Half Street

A half street is an otherwise acceptable roadway section modified to conform to limited right-of-way on the boundary of property subject to development. See definition in [Chapter 2](#).

A half street may be permitted, subject to approval by the Public Works Department when:

1. There is reasonable assurance of obtaining the prescribed additional right-of-way from the adjoining property suitable for completion of a full-section roadway; and
2. Such alignment is consistent with or will establish a reasonable circulation pattern; and
3. The right-of-way width of the half street will equal at least 30 feet, or 50 percent of the required right-of-way, whichever is greater; and
4. The traveled way will be surfaced the same as the designated street classification to a width not less than 20 feet; and
5. The half street will be graded consistent with the centerline of the ultimate roadway section; and
6. Property line edge of street will be finished with permanent concrete curb, or curb and gutter to ensure proper drainage, bank stability, and traffic safety.
7. The full street cross-section will be constructed when left-turn channelization, additional vehicle lanes, or medians are required. See [Table 2](#) for design criteria.

#### **4B.120 Medians**

A median will be in addition to, not part of, the specified roadway width except on a road classed as a boulevard. Medians will be designed so as not to limit turning radius or sight distance at intersections. Landscaping and irrigation will be installed when directed by the Public Works Director.

For additional guidance on design standards for medians, refer to [Section 4I, Access Points and Intersection Criteria](#).

#### **4B.130 Intersections**

- A. Traffic control will be as specified in the current edition of the [Manual on Uniform Traffic Control Devices \(MUTCD\)](#) or as modified by the Public Works Director as a result of appropriate traffic engineering studies.

- B. Street intersections will be laid out so as to intersect as nearly as possible at right angles. Sharp-angled intersections will be avoided. For reasons of traffic safety, a “T” intersection (three-legged) is preferable to a crossroad (four-legged) intersection for local access streets. For safe design, the following types of intersection features should be avoided:
1. Intersection with more than four intersecting streets.
  2. “Y”-type intersections where streets meet at acute angles.
  3. Intersections adjacent to bridges and other sight obstructions.
  4. In no case will the angle of intersection be less than 60 degrees or greater than 120 degrees. The preferred angle of an intersection is 90 degrees.
- C. Spacing between adjacent intersecting streets, whether crossing or “T” should be as follows in Table 7.

**Table 7: Centerline Offsets**

When highest classification involved is:	Centerline offset should be:	
	<i>Desirable</i>	<i>Minimum</i>
Arterial	500-750 feet	350 feet
Major Collector	350-500 feet	200 feet
Neighborhood Collector	250-350 feet	150 feet
Local Access	250-350 feet	150 feet

“Desirable” conditions shall be applied when sufficient space or street frontage is available.

When different class streets intersect, the higher standard will apply on curb radii. Deviations to this may be allowed by the City Engineer per [Section 1.050](#).

- D. On sloping approaches at an intersection, landings will be provided with grade not to exceed a 1-foot difference in elevation for a distance of 30 feet approaching any arterial or 20 feet approaching a collector or local access street, measured from the nearest right-of-way line (extended) of intersecting street.

## 4B.140 Driveways

### A. General

1. Details of driveway sections are located at the end of this chapter and in the Driveway and Intersection Guidelines.
2. All abandoned driveway areas on the same frontage will be removed and the curb, gutter and sidewalk, or shoulder and ditch section will be properly restored.
3. All driveways will be constructed of Portland Cement Concrete and will be subject to the same testing and inspection requirements as curb, gutter, and sidewalk construction.
4. Joint-use driveways serving two adjacent parcels may be built on their common boundary upon formal written agreement by both property owners and approval of the City. The agreement will be a recorded easement for both parcels of land specifying joint usage.
5. Grade breaks, including the tie to the roadway will be constructed as smooth vertical curves. The maximum change in driveway grade will be 8 percent within any 10 feet of distance on a crest and 12 percent within any 10 feet of distance in a sag vertical curve.
6. No commercial driveway will be approved where backing onto the sidewalk or street will occur.

### B. Arterial and Collector Streets

1. See the Driveway and Intersection Criteria Guidelines for arterial street driveway and access control design criteria.
2. Within the limitations set forth above, access to arterial and collector streets within the City will be limited to one driveway for each tract of property separately owned. Properties contiguous to each other and owned by the same person are considered to be one tract.
3. Driveways giving direct access onto arterial and collector streets may be denied if alternate access is available. Deviations of these standards may be permitted by the City Engineer per [Section 1.050](#).

### 3.4B.150 Sight Obstruction

The following sight clearance requirements take into account the proportional relationship between speed and stopping distance.

The sight distance area is a clear view triangle formed on all intersections by extending two lines of specified length (A) and (B) as shown in [Table 9: Uncontrolled Intersection Sight Distance](#), from the center of the intersecting streets along the centerlines of both streets and connecting those endpoints to form the hypotenuse of the triangle. See Standard Drawing 4-1. The area within the triangle will be subject to said restrictions to maintain a clear view on the intersection approaches.

Sight Distance Triangle:

- A. Stop or Yield Controlled Intersection. Providing adequate sight distance from a street or driveway is one of the most important Standards in ensuring a safe street and driveway operation. The Intersection Sight Distance criteria given in the table below is based on Exhibit 9-55 of [A Policy on Geometric Design of Highways and Streets published by AASHTO \(2004\)](#). This table applies to intersection and driveways with an ADT greater than 20. For driveways with an ADT of 20 or less, the Stopping Sight Distance on page 112 of this AASHTO publication can be used.

**Table 8: Intersection Sight Distance**

Operating Speed	Intersection Sight Distance		Stopping Sight Distance
	2 Lanes	4+ Lanes	
20 mph	225 feet	240 feet	115 feet
25 mph	280 feet	295 feet	155 feet
30 mph	335 feet	355 feet	200 feet
35 mph	390 feet	415 feet	250 feet

Other factors, such as vertical and horizontal curves and roadway grades, also need to be taken into account. Such factors can require necessary modification to the intersection sight distance given in the above table.

Sight distance measured from a point on the minor road or driveway 15 feet from the edge (extended) of the major road pavement (or nearest traffic lane if parking is permitted) and measured from a height of eye at 3.5 feet on the minor road to height of object 2.0 feet on the major road.

B. Uncontrolled Intersection.

**Table 9: Uncontrolled Intersection Sight Distance**

Speed Limit	Sight Distance	
	(A) Major Street	(B) Minor Street
20 mph	90 feet	90 feet
25 mph	115 feet	115 feet
30 mph	140 feet	140 feet
35 mph	165 feet	165 feet

C. The vertical clearance area within the sight distance triangle will be free from obstructions to a motor vehicle operator’s view between a height of 2.5 feet and 10 feet above the existing surface of the street. See [Standard Drawing 4-29](#).

D. Exclusions. Sight obstructions that may be excluded from these requirements include fences in conformance with this chapter, utility poles, regulatory signs, trees trimmed from the base to a height of 10 feet above the street, places where the contour of the ground is such that there can be no cross visibility at the intersection, saplings or plant species of open growth habits and not in the form of a hedge that are so planted and trimmed as to leave at all seasons a clear and unobstructed cross view, buildings constructed in conformance with the provisions of appropriate zoning regulations and preexisting buildings.

**4B.160 Surfacing Requirements**

The following are the surfacing requirements for each application listed.

A. Asphalt Pavements. The minimum pavement sections listed in [Standard Drawing 4-6A](#) are in lieu of pavement design and are based on subgrade California Bearing Ratio (CBR) value of 3. Alternate structures will be accepted based on soil tests to determine the actual CBR value and completion of Worksheet 4-6B in [Chapter 4 drawings](#). Soil tests and a completed worksheet for each road classification will accompany plans submitted if other than the structures shown below and pavement sections in Detail 4-6A are used.

One soil sample per each 250 LF of centerline with three minimum per project representative of the roadway subgrade will be taken to determine a statistical representation of the existing soil conditions.

Soil tests will be performed by an engineering firm specializing in soils analysis.

The soils report, signed and stamped by a professional engineer licensed by the State of Washington, will be based on actual soils tests and submitted with the plans. All depths indicated are a minimum compacted depth.

Existing pavement restoration for utility or street widening projects requiring restoration of existing pavement, additional information, and design will be required to ensure pavement meets restoration requirements shown in [Table 10: Pavement Restoration Requirements](#). The information required may include: (1) pavement cores representative of typical pavement sections; and (2) statement of existing pavement condition and discussion of how it will “match up” to the new pavement section.

For asphalt concrete paving requirements, see [Section 4B.175](#).

#### B. Sidewalks

Surfacing: 4-inch commercial concrete  
Base: 2-inch crushed surfacing top course or well-graded sand  
Surfacing: Asphalt - Asphalt sidewalks will not be permitted unless otherwise approved by the City Engineer

Alternate:

Surfacing: 4-inch porous concrete  
Base: 4-inch ballast and underdrain system per Standard Drawing 4-9C

Porous concrete materials shall only be used as approved by the City Engineer in locations where topography and soil conditions are appropriate.

#### C. Driveway

Surfacing: 9-inch commercial concrete  
Base: 2-inch crushed surfacing top course or well-graded sand

#### D. Class I Bikeway

Surfacing: 4-inch commercial concrete  
Base: 2-inch crushed surfacing top course

Alternate:

Surfacing: 2 ½ inch Class B asphalt concrete  
Base: 4-inch ballast

Alternate:

Surfacing: 4-inch pervious concrete  
Base: 4-inch ballast and underdrain system per Standard Drawing 4-9C

Pervious concrete materials shall only be used as approved at time of construction by the City Engineer in locations where topography and soil conditions are appropriate.

#### **4B.170 Temporary Street Patching**

Temporary restoration of trenches will be accomplished by using 2-inch Class B asphalt concrete pavement when available or 2-inch medium curing (MC-250) liquid asphalt (cold mix), UPM, 2-inch asphalt treated base (ATB), or steel plates. Asphalt ramps shall be established for steel plate edges facing traffic.

ATB used for temporary restoration may be dumped directly into the trench, bladed and rolled. After rolling, the trench must be filled flush with asphalt concrete pavement to provide a smooth-riding surface.

Prior to beginning street trenching work, the contractor will ensure that temporary patching material is stockpiled at the project site, both for completing and maintaining the temporary patching.

All temporary patches will be maintained by the contractor and will be made permanent within three (3) working days. Patches that are not properly maintained will be identified by the City Construction Inspector and repaired by the City at the developer's/contractor's/private utility's expense.

#### **4B.175 Pavement Restoration**

- A. Introduction. Trench cuts in roadways greatly degrade the condition of the pavement, as well as reduce the design life. The most significant damage can be seen in newer pavements. A restored trench cut in a newly paved road lowers the Pavement Management System (PMS) rating 30 points (on a scale of 0 to 100). It is the goal of pavement restoration to have a pavement in better or as good as pre-trench cut condition. This can be achieved through prevention of trench cuts through utility coordination, and high-quality pavement restoration.
- B. Lane width restoration requirements. For longitudinal utility trench cuts in pavements over five years old, a minimum 2-inch overlay or full-depth pavement reconstruction is required for the following widths:



1. One-lane overlay or reconstruction: when trench cut or patch is within one travel lane.
  2. Two-lane overlay or reconstruction: when trench cut or patch is within two travel lanes.
  3. Additional overlay or reconstruction: when the remaining pavement area to the edge of existing pavement on either side is less than one travel lane or pavement is less than five years old. No longitudinal joints will be allowed in the wheel path.
- C. Pavement restoration requirements. [Table 10: Pavement Restoration Requirements](#) describes pavement restoration requirements for various size projects and various existing pavement conditions.
- D. Transverse utility crossings. Transverse utility crossings must be bored or completed by another trenchless method. Bore pits must be restored pursuant to [Section 4B.175\(C\)](#).
- E. Trench cuts in new pavements. Trench cuts are not permitted in pavements that have been constructed or rehabilitated within five years. Rehabilitation includes all asphalt overlays. If there is no other option but to cut into a new pavement, the pavement must be restored pursuant to [Table 10: Pavement Restoration Requirements](#).
- F. Exemption from pavement restoration requirements and financial penalties. Utilities can appeal in writing directly to the Public Works Director for exemption from pavement restoration requirements and financial penalties associated with trenching in new pavements.

Utilities may be exempt from pavement financial penalties if there is no other viable alternative and under the following conditions:

1. If the City failed to give six months' notice of an upcoming roadway rehabilitation project either because of:
  - a. a change in property ownership, or
  - b. a change in the [City's Capital Facilities Plan](#), or
  - c. streets and roads associated with the [Street Repair Least-Cost Program](#).
2. An emergency project requiring immediate attention for the preservation of life or property.

**Table 10: Pavement Restoration Requirements**

Project Type	Existing Pavement Condition		
	New Pavements Less Than 5 Years Old	Pavements Greater Than 5 Years Old	Pavements Identified by the City to be Reconstructed Within 2 Years
<p><u>Large Projects</u> Consists of a project requiring a longitudinal trench cut through the paved roadway surface 50 linear feet or greater, or four or more transverse trench cuts per 300 linear feet of roadway.</p>	<p>Complete reconstruction, grind/inlay, or overlay of entire paved surface (all lanes). Pavement section based on pavement design.*</p>	<p>Grind/inlay, reconstruct, or overlay. Width per lane requirements in <a href="#">Section 4B.175</a>. Pavement section based on pavement design.</p>	<p>Depending on intended reconstruction strategy, could utilize lesser pavement restoration. Minimum restoration is patch pursuant to Standard Drawing 4-8.</p>
<p><u>Small Projects</u> Consists of a project requiring a longitudinal trench cut through the paved roadway surface less than 50 linear feet or less than four transverse trench cuts per 300 linear feet of roadway.</p>	<p>Patch pursuant to Standard Drawing 4-8. Trench restoration penalty assessed per square yard of trench as required by Standard Drawing 4-8.</p>	<p>Patch pursuant to Standard Drawing 4-8.</p>	<p>Depending on intended reconstruction strategy, could utilize lesser pavement restoration. Minimum restoration is patch pursuant to Standard Drawing 4-8.</p>
<p><u>Emergency Projects</u> A project that could not be foreseen requiring immediate attention for the preservation of life or property.</p>	<p>Grind/inlay, reconstruct, overlay, or patch (dependent on project size [see above]). Width pursuant to lane requirements in <a href="#">Section 4B.175</a>. Pavement section based on pavement design.</p>	<p>Grind/inlay, reconstruct, overlay, or patch (dependent on project size [see above]). Width pursuant to lane requirements in <a href="#">Section 4B.175</a>. Pavement section based on pavement design.</p>	<p>Depending on intended reconstruction strategy, could utilize lesser pavement restoration. Minimum restoration is patch pursuant to Standard Drawing 4-8.</p>
<p><u>Septic to Sewer Projects</u> Consists of a sewer main extension for a single property converting to a public sewer connection without an increase in ERUs.</p>	<p>Patch pursuant to Standard Drawing 4-8. Trench restoration penalty assessed per square yard of trench as required by Standard Drawing 4-8 unless the project is the result of a failed septic system.</p>	<p>Patch pursuant to Standard Drawing 4-8.</p>	<p>Patch pursuant to Standard Drawing 4-8.</p>
<p>* If it is determined by the Public Works Director that full paved surface restoration impacts are excessive (i.e., traffic congestion, business impacts), restoration can be reduced to trench restoration only and a fee-in-lieu equal to the cost of full paved surface restoration assessed.</p>			

## G. Construction Requirements

1. All trench and pavement cuts will be made uniformly by wheel or saw cutting. If edge of trench line degrades, ravel, or is non-uniform, additional saw cutting will be required prior to final patch or paving.
2. Tack will be applied to the existing pavement and edge of cut and will be emulsified asphalt grade CSS-1 as specified in the latest version of the [WSDOT/APWA Standard Specifications](#). Tack coat will be applied as specified in Section 5-04 of the latest version of the WSDOT/APWA Standard Specifications, except that longitudinal joints between successive layers of asphalt concrete will be displaced laterally a minimum of 12 inches unless otherwise approved by the Public Works Director. Fine and coarse aggregate will be in accordance with Section 9 03.8 of the latest version of the WSDOT/APWA Standard Specifications. Asphalt concrete over 3 inches thick will be placed in equal lifts not to exceed 3 inches each.
3. Grinding. Connection to existing asphalt at centerline, lane edges, and overlay ends shall be made by grinding. Feathering of asphalt is not acceptable without written approval from the Public Works Director. Grind can be a few inches off centerline to avoid existing striping.
4. Surface smoothness will be pursuant to Section 5-04 of the latest version of the [WSDOT/APWA Standard Specifications](#). The paving will be corrected by removal and repaving of the trench only.
5. Asphalt concrete pavement for wearing course will not be placed on any traveled way between October 1 and April 1 without written approval from the Public Works Director.
6. Asphalt for prime coat will not be applied when the ground temperature is lower than 50° F without written permission of the Public Works Director.
7. Asphalt concrete will not be placed on any wet surface, or when the average surface temperatures are less than those specified in the following table, or when weather conditions otherwise prevent the proper handling or finishing of the bituminous mixtures.

**Table 11: Surface Temperature Limitations**

Compacted Thickness (Feet)	Surface Temperature Limitations	
	Surface Course	Sub-Surface Courses
Less than 0.10	55° F	55° F
0.10 to 0.20	45° F	35° F
0.21 to 0.25	35° F	35° F

8. All joints on trenching or overlays will be sealed using crack sealant as specified in the latest version of the [WSDOT/APWA Standard Specifications](#) Section 9-04.10 (ASTM D-1190).
9. When trenching within the roadway shoulder(s), the shoulder should be restored to its original or better condition.
10. The final patch will be completed as soon as possible and will be completed within three days after first opening the trench. This time frame may be adjusted if delays are due to inclement paving weather or other adverse conditions that may exist. However, delaying of final patch or overlay work is allowable only subject to the Public Works Director's approval. The Public Works Director may deem it necessary to complete the work within the three-day time frame and not allow any time extension. If this occurs, the contractor will perform the necessary work as directed by the Public Works Director.

#### **4B.180 Trench Backfill**

All crushed surfacing materials will conform to Section 4-04 of the latest version of the [WSDOT/APWA Standard Specifications](#). The subgrade will be compacted to 95 percent maximum density, as described in Section 2-03 of the latest version of the WSDOT/APWA Standard Specifications.

All granular backfill material will conform to Section 9-03.19 of the [WSDOT/APWA Standard Specifications](#). Trench will be compacted to 95 percent maximum density, as described in Section 2-03 of the WSDOT/APWA Standard Specifications.

If the existing material is determined by the City to be suitable for backfill, the contractor may use the native material, except that the top 8 inches of trench will be 2-inch minus ballast. All trench backfill materials below the roadway and sub-base level will be compacted to 95 percent density.

When trench width is 18 inches or less and is within the traveled way, trench will be backfilled with control density fill (self-compacted flowable fill) Class B as defined by [Washington Aggregates and Concrete Association](#). The aggregate will be 3/8-inch minus.

Backfill compaction and placement will be performed in compliance with [WSDOT/APWA Standard Specifications](#).

Replacement of the asphalt concrete or Portland cement concrete pavement will conform to the latest version of the [WSDOT/APWA Standard Specifications](#).

#### **4B.190 Staking**

All surveying and staking will be performed by an engineering or surveying firm capable of performing such work. The engineer or surveyor directing such work will be licensed by the State of Washington.

A preconstruction meeting will be held with the City prior to commencing staking. All construction staking will be inspected by the City prior to construction.

The minimum staking of streets will be as follows:

- A. Stake centerline alignment every 25 feet (50 feet in tangent sections) with cuts and/or fills to subgrade.
- B. Stake top of ballast and top of crushed surfacing at centerline and edge of pavement every 25 feet.
- C. Stake top back of curb at a consistent offset for vertical and horizontal alignment.
- D. Staking will be maintained throughout construction.

#### **4B.195 Utility Coordination**

A. Introduction. Excavations in city streets disrupt and interfere with the public use of city streets and damage the pavement. The purpose of this section is to reduce this disruption, interference, and damage by promoting better coordination among utilities making excavations in city streets and between these utilities and the City. Better coordination will assist in minimizing the number of excavations being made wherever feasible and will ensure that excavations in city streets are, to the maximum extent possible, performed before, rather than after, the resurfacing of the streets.

##### **B. Requirements**

1. Any public or private utility owning, operating, or installing facilities in city streets, alleys, sidewalks, or any other public places that provide water, sewer, gas, electric, communication, video, or other utility service shall prepare and submit to the Public Works Director a utility master plan, in a format specified by the Director, that shows the location of the utility's existing facilities in city streets, alleys,

sidewalks, and other public places, and shows all of the utility's planned major utility work in city streets, alleys, sidewalks, and other public places. Utilities shall submit an initial utility master plan no later than 180 days after the effective date of the ordinance adopting this section. Thereafter, each utility shall submit semi-annually, on the first regular business day of January and July, a revised and updated utility master plan.

Utility master plans shall be submitted in the following format:

- a. One hard copy of the City of Olympia base map at 1:200 scale [base map provided by the City Utility Mapping Section, (360) 753-2670] showing street location, size, and type of proposed facilities.
- b. A digital copy base map in the City's latest version of AutoCAD, currently Release 13 format, showing the above requirements in a layer to be designated by the City. Digital-based maps will be made available by the City. If unable to provide a digital map or have a consulting firm perform the work, the utility can pay City mappers to perform this service.
- c. A hard copy list in a spreadsheet format as designated by the City.
- d. A digital copy list of MS Excel spreadsheet format as designated by the City.

The City will merge all information onto one master map and database (including all City projects) and make hard and digital copies available to any utility upon request.

As used in this subsection, the term "planned major utility work" refers to any and all future excavations planned by the utility when the utility master plan or update is submitted that will affect any city street, alley, sidewalk, or other public place.

2. The Public Works Director shall prepare a two-year repaving plan showing the street resurfacing planned by the City for the next two years. The two-year repaving plan shall be revised on a semi-annual basis. The Director shall make the City's two-year repaving plan available for public inspection. In addition, after determining the street resurfacing work that is proposed for each year, the Director shall send a notice of the proposed work to all utilities that have current utility master plans on file. A utility not having an updated utility master plan on file with the City may have their project permit delayed.

3. The [City of Olympia's Six-Year CFP](#) is updated annually and will be made available to utilities upon request.
4. The City and private utilities will notify adjacent property owners approximately six months prior to project construction to inform them of new pavement restoration requirements and encourage installation of new services and/or upgrades.
5. Prior to applying for an excavation permit, any person planning to excavate in the City's streets, alleys, sidewalks, or other public places shall review the utility master plans and the City's two-year repaving plan on file with the Director and shall coordinate, to the extent practicable, with the utility and street work shown on such plans to minimize damage to and avoid undue disruption and interference with the public use of such streets, alleys, sidewalks, or other public places.
6. Each utility will look for opportunities to combine projects and share trenches. The utilities will provide a reasonable assurance that other utilities have been contacted and given an opportunity to participate in the project.
7. Utilities/developers must show how they plan to serve properties adjacent to their proposed frontage improvements. This is to ensure all properties can be served in the future without cutting into the new street. Services are typically provided through main or service connection stubouts past the edge of the pavement.
8. Utilities that plan ahead and construct projects prior to City repaving projects may have their pavement restoration requirements reduced.

#### **4B.200      Testing**

Testing will be required at the developer's or contractor's expense. The testing will be ordered by the developer or contractor, and the chosen testing lab will be approved by the City Construction Inspector. Testing will be done on all materials and construction as specified in the [WSDOT/APWA Standard Specifications](#) and with frequency as specified herein. Copies of the test and sample results will be provided to the City within three days of the test results.

In addition, the City will be notified before each phase of street construction commences (i.e., staking, grading, subgrade, ballast, base, top course, and surfacing).

**Table 12: Testing and Sampling Frequency Requirements**

<b>Item</b>	<b>Test</b>	<b>Acceptance Sample</b>
Gravel Borrow	Grading & SE	1 – 4000 Ton
Select Borrow	Grading & SE	1 – 4000 Ton
Sand Drainage Blanket	Grading	1 – 4000 Ton
Gravel Base	Grading, SE & Dust Ratio	1 – 4000 Ton
CSTC	Grading, SE & Fracture	1 – 2000 Ton
CSBC	Grading, SE & Fracture	1 – 2000 Ton
Streambed Sediment	Grading	1 – 500 tons
Maintenance Rock	Grading, SE & Fracture	1 – 2000 Ton
Ballast	Grading, SE & Dust Ratio	1 – 2000 Ton
Permeable Ballast	Grading & Fracture	1 – 2000 Ton
Backfill for Sand Drains	Grading	1 – 2000 Ton
Crushed Coverstone	Grading, SE & Fracture	1 – 1000 Ton
<b>Crushed Screening</b>		
$\frac{5}{8}$ – No. 4	Grading & Fracture	1 – 1000 Ton
$\frac{1}{2}$ – No. 4	Grading & Fracture	1 – 1000 Ton
No. 4 – 0	Grading & Fracture	1 – 1000 Ton
<b>Gravel Backfill for</b>		
Foundations	Grading & SE	1 – 1000 Ton
Walls	Grading, SE & Dust Ratio	1 – 1000 Ton
Pipe Zone Bedding	Grading & SE	1 – 1000 Ton
Drains	Grading	1 – 500 Ton
Dry Wells	Grading	1 – 500 Ton
<b>PCC Paving</b>		
Coarse Aggregate See Note 7	Grading	1 – 2000 CY
Fine Aggregate See Note 7	Grading	1 – 2000 CY
Combined Aggregate See Note 7	Grading	1 – 2000 CY
Air Content	Air	1 – 500 CY
Cylinders (28-day)	Compressive Strength	1 – 500 CY
Core	Density	1 – 500 CY
	Thickness	1 – 500 CY
Cement See Note 5	Chemical & Physical Certification	
<b>PCC Structures</b>		
Coarse Aggregate See Note 7	Grading	1 – 1000 CY
Fine Aggregate See Note 7	Grading	1 – 1000 CY
Combined Aggregate See Note 7	Grading	1 – 1000 CY
Consistency	Slump	1 for every 5 trucks, See Note 8
Air Content	Air	1 for every 5 trucks, See Note 8
Cylinders (28-day)	Compressive Strength	1 for every 5 trucks, See Note 8



Cement	Chemical & Physical Certification	
Grouts See Note 5	Compressive Strength	1 set per day
<b>Hot Mix Asphalt</b>		
Completed Mix, See Note 3 and 4		
	Grading & Asphalt Content	1 – 800 Ton
	Compaction	1 – 80 Ton

Item	Test	Acceptance Sample
<b>Hot Mix Asphalt Aggregate</b>		
Aggregate	SE, Fracture, Uncompacted Void Content of Fine Aggregate, See Note 3	1 – 1600 Ton
Blend Sand See Note 1	SE	1 – Project
Mineral Filler	SE	Certificate
<b>Asphalt Treated Base</b>		
Aggregate	Grading See Note 1 & SE	1 – 1000 Ton
Completed Mix		
See Note 4	Grading & Asphalt	1 – 1000 Ton
	Compaction, See Note 2	5 – Control Lot

Asphalt Materials		Certification	
Asphalt Binder (PG, Etc.)	Verification:	2-1 Quart	Every other mix acceptable sample, See Note 6
Emulsion for Bituminous Surface Treatment	Verification:	2-1 Quart	Every other shipment
Emulsion for HMA Tack Coat	Verification:	2-1 Quart	1 sample per project (Statistically Evaluated Projects Only)

Compaction 9	See Note	
Embankment		1 – 2500 CY
Cut Section		1 – 500 LF
Surfacing		1 – 1,000 LF (per layer)
Backfill		1 – 500 CY

Note 1-Tests for grading will be performed only when aggregates are being produced and stockpiled for use on a future project.

Note 2-A control lot shall be a normal day's production.

Note 3-For projects under statistical acceptance, the sampling shall be performed on a random basis and the subplot size shall be determined to

provide not less than three uniform-sized sublots with a maximum subplot size of 800 tons. Should a lot contain less than three sublots, acceptance will be in accordance with nonstatistical evaluation. For projects under nonstatistical acceptance, sample frequency shall be one sample per subplot, and the sublots shall be approximately uniform in size with a maximum subplot size of 800 tons.

Note 4-Mix design conformation samples shall be submitted to the State Materials Laboratory Bituminous Concrete Section. For all projects, submit one sample per day from the first five days of production for each plant and one sample every fifth day of production thereafter. The conformation samples should be taken in conjunction with and be a representative quarter, of the acceptance samples taken for the project as described in WSDOT Test Method 712. If no acceptance sample is required for any day of production no conformation sample will be required either.

Note 5-Cement may be accepted by the engineer based on the Manufacturer's Mill Test Report number indicating full conformance to the specifications. The engineer has the option of taking samples at the job site for submission to the State Materials Laboratory for testing.

Note 6-The first sample of asphalt binder will be taken with the second Hot Mix Asphalt (HMA) mix sample. For nonstatistical HMA, take one sample for every 1,600 tons of mixture.

Note 7-The frequency for fine, course, and combined concrete aggregate samples for PCC Paving and PCC Structures shall be based on the cubic yard (CY) of concrete.

Note 8-Sample the first truck, and each load until two successive loads meet specifications, and then randomly test one load for every five loads. If at any time one load fails to meet specifications, continue testing every load until two successive loads meet specifications, and then randomly test one load for every five loads.

Note 9-For materials placed in a non-structural application outside the roadway prism such as slope flattening or shoulder dressing, acceptance for compaction may be based on visual inspection to the satisfaction of the engineer.

**Special Note:** The tolerance limits in the table above do not apply to statistically accepted material.

## **4B.210 Traffic Calming Devices**

Traffic calming in Olympia neighborhoods is used to improve neighborhood livability by reducing the speed and impact of vehicular traffic on residential neighborhoods by incorporating traffic calming devices. The following are approved for installation as traffic calming devices:

- A. Traffic Circle pursuant to Standard Drawing 4-40A, 4-40B, 4-40C. Signing for traffic circles will be pursuant to Standard Drawings 4-40D, 4-40E, 4-40F, 4-40G, or 4-40H;
- B. Fourteen-foot Local Speed Bump pursuant to Standard Drawing 4-42A;
- C. Twenty-two-foot Collector Speed Bump pursuant to Standard Drawing 4-42B;
- D. Chokers, Curb Extensions;
- E. Chicanes; and
- F. Semi- and Full Diverters.

In new developments, traffic calming devices may be required by the City or may be requested by developers if City Standards are met.

All traffic calming devices will be reviewed and approved by [Public Works Transportation](#). In new developments, the devices should be reviewed at the time of the preliminary design review and again upon final approval of the plans.

## **4C SIDEWALKS AND CURBS**

### **4C.020 Design Standards**

Plans for the construction of sidewalks and curb, or curb and gutter, are to be submitted as part of the street plans when applicable.

The City has set forth minimum standards as outlined in Section 3.040 that must be met in the design and construction of sidewalks and curb, or curb and gutter. Because these are minimum standards, they may be modified by the City Engineer should the City Engineer feel circumstances require increased or decreased widths.

#### 4C.030 Sidewalks

Sidewalks will be 4 inches thick and will be constructed of commercial concrete or porous concrete where approved. When the sidewalk and curb or curb and gutter are contiguous, the width of the sidewalk will be measured from face of curb to back of sidewalk.

- A. Arterial streets. Sidewalks and curb or curb and gutter will be required on both sides of all arterial streets interior to the development. Sidewalks and curb or curb and gutter will also be required on the development side of streets abutting the exterior of said development. Arterial streets for purposes of this subsection will include major arterials, secondary arterials, and collector streets.
- B. Local access streets. Sidewalks will be required on both sides of local access streets interior to the development and on the development side of local access streets abutting the exterior of said development including cul-de-sacs.
- C. The design and construction of all sidewalks and curb or curb and gutter, and walkways will meet the following minimum standards:

The width of sidewalks will be as shown in the street design drawings. Those sidewalks designated in the Comprehensive Bike Plan of the City as bike paths will, in addition, meet the minimum width requirements established for said bike paths. The City Engineer will require that the design of all sidewalks provide for a gradual rather than an abrupt transition between sidewalks of different widths or alignments.
- D. Form and subgrade inspection by the City is required before sidewalk is poured.
- E. Monolithic pour of curb and sidewalk will not be allowed.
- F. For driveway requirements, see Section 4B.140.
- G. Repair, maintenance, and upkeep of the sidewalk and all streetside features, including landscaped areas and trees, is the responsibility of the abutting property owner.

#### **4C.040 Curb or Curb and Gutter**

Cement concrete curb or curb and gutter will be used for all street edges as specified in Standard Plans for each street classification unless otherwise approved by the Public Works Director. All curb or curb and gutter will be constructed of commercial concrete as shown on Detail 4-14. Curb and gutter shall not be installed adjacent to bicycle lanes.

Form and subgrade inspection by the City are required before curb or curb and gutter are poured.

#### **4C.050 Curb Ramps**

All sidewalks must be constructed to provide access in accordance with the standards of state law.

Curb ramps will be constructed of commercial concrete. Form and subgrade inspection by the City are required before a curb ramp is poured.

Curb ramps will be installed in accordance with City Standard Plans.

#### **4C.060 Staking**

All surveying and staking will be performed by an engineering or surveying firm capable of performing such work. The engineer or surveyor directing such work will be licensed by the State of Washington.

A preconstruction meeting will be held with the City prior to commencing staking. All construction staking will be inspected by the City prior to construction.

The minimum staking of curb or curb and gutter and sidewalk will be as follows:

Stake top back of sidewalk or top face of curb at a consistent offset for vertical and horizontal alignment every 25 feet (50 feet in tangent sections).

Staking will be maintained throughout construction.

#### **4C.070 Parking Bulb-outs**

On local access streets, parking bulb-outs are required for block faces that are greater than 350'. The parking bulb-outs placed at both street ends will define

a parking lane. A 100' no parking zone in the center of the block is also required to accommodate Emergency Vehicle access. Refer to Standard Drawing 4-13B for typical block configuration.

#### **4C.071 Pedestrian Bulb-outs**

Curb bulb-outs are required on all arterials, major collectors and neighborhood collector streets where on-street parking exists. Curb bulb-outs are required on all downtown streets where on-street parking exists. Typical layout of a pedestrian bulb-out is shown in Standard Drawing 4-13A.

When a 10' travel lane is adjacent to a pedestrian bulb-out, the edge of the bulb-out shall be set back 1' from the edge of the travel lane. If the travel lane is 11' or greater, no additional setback is required and the edge of the bulb-out will extend to the edge of the on-street parking.

Downtown is defined as the area bounded by: Budd Inlet on the north; Budd Inlet and Capitol Lake on the west; along 11th Avenue extending between Capitol Lake and Jefferson Street; along Jefferson Street, 11th Avenue to Union Avenue; along Union Avenue, from Jefferson Street to Eastside Street; along Eastside Street on the east from Union Avenue to Olympia Avenue; and along Olympia Avenue in a westerly direction reconnecting with Budd Inlet on the north, including properties owned by the Port of Olympia. See [Appendix 4](#).

### **4D BIKEWAYS**

#### **4D.020 Design Standards**

The design of bicycle paths will depend upon their type and usage. Bikeway surfacing will be as outlined in [Section 4B.160](#).

All minimum design standards as set forth in Section 3.040 will apply. The minimum design standards for bikeways will be as defined in the [WSDOT Design Manual](#), Division 15, Pedestrian and Bicycle Facilities.

Bike lane markings will be installed pursuant to WSDOT Standard Plan M-9.50-01 and City of Olympia Standard Drawings 4-27D.

Normally bikeways are shared with other transportation modes, although they may be provided exclusively for bicycle use. Bikeways are categorized as follows:

- A. Class I, Bike Path. A separate facility for use principally by bicyclists, but may be shared with pedestrians. These facilities are separated from motor vehicle roadways.
- B. Class II, Bike Lane. A portion of the motor vehicle roadway that is designated by signs and pavement markings for bicycle use. These facilities are adjacent to the motor vehicle roadway.
- C. Class III, Bike Route. A street that is designated with signs as a bicycle route where bicycle usage is shared with motor vehicles on the street, or less desirably, with pedestrians on a sidewalk or walkway. Where bicycle usage is shared with motor vehicles, the curb lane width will be increased to 14 feet.
- D. Class IV, Shared Roadway. An unsigned facility within commercial and high-density urban centers where sidewalk bicycling is not permitted. No special designations or design criteria are directed toward bicycle use.
- E. Class I, II, III, or IV Bikeways, as appropriate, will be provided as follows:
  - 1. Wherever called for on the Bicycle Facilities Map.
  - 2. When traffic analysis or traffic planning indicates substantial bicycle usage that would benefit from a designated bicycle facility as determined by the City except where noted herein.

#### **4D.030 Staking and Testing**

Staking and testing will be done in accordance with street staking and testing as outlined in [Sections 4B.190](#) and [4B.200](#).

### **4E TRAILS OR SHARED-USE PATHS**

#### **4E.010 Design Standards**

The design of trails or shared-use paths will depend upon their type and usage. Trails or shared-use path surfacing will be outlined in [Section 4B.160](#).

All minimum design standards as set forth in Section 3.040 will apply. The minimum design standard for bikeways will be as defined in the [WSDOT Design Manual](#), Chapter 1515, Shared-Use Path Design.

Trails or shared-use path widths will be installed pursuant to City of Olympia Standard Drawing 4-2L. The trails or shared-use paths in the standard are sorted into three classes. The classes are designed to meet the needs of commuters and recreational users as well as preserve habitat and environmentally sensitive areas.

- A. **Commuter Multi-Use.** This trail/path class will be used in the urban areas where trail demand is the highest, and is designed to accommodate pedestrians and bicycles. Paved with asphalt, it is the widest trail/path, interned for commuter and recreational use.
- B. **Neighborhood Connector.** This trail/path class is designed as a primarily recreational walkway and bikeway. Narrower than Class I, it is suitable for steeper areas, but is paved with asphalt and will link trails, neighborhoods, and destinations.
- C. **Recreational Pedestrian.** This trail/path class is designated to accommodate pedestrians in a natural environment. It is a low-impact trail/path which can be used in “sensitive areas.” This trail/path is the narrowest, and surfaced with compacted crushed rock to 95 percent.

The following table summarizes the design standards for the three trail/path class standards.

**Table 13: Trail and Shared-Use Path Design Standards**

Trail Class	Trail Width	Vertical Clearance	Surface Material	Maximum Grades	Minimum Corridor Width	User
Commuter Multi-use	12 Feet + 2 Feet Grass Shoulder	10 Feet	2 Inch Asphalt 2 Inch CSTC 6 Inch Gravel Base	8% Maximum less than 5% recommended	22 Feet	High use commuter, bicycle, pedestrian
Neighborhood Connector	10 Feet + 2 Feet Grass Shoulder	10 Feet	2 Inch Asphalt 2 Inch CSTC 4 Inch Gravel Base	8% Maximum less than 5% recommended	20 Feet	Primarily pedestrian
Recreational Pedestrian	3 to 6 Feet Minimum	8 Feet	3 Inch ¼ Minus (compacted to 95%) Geotextile 4 Inch CSBC	10% Maximum	16 Feet	Recreational, pedestrian

Refer to Standard Drawing 4-2L for trail section and [WSDOT Design Manual](#), Chapter 1515, Shared-Use Path Design.



Required on all trails:

**Maximum Grades:** When grade is greater than 5 percent, provide 5-foot-square resting area adjacent to trail every 200 feet.

**Minimum Curve Radius (Class I and II):** Level or rolling = 90 feet, downgrades greater than 4% = 260 feet.

**Minimum Design Speed:** Level or rolling = 20mph, downgrades greater than 4% = 30mph.

Trails with bicycles must design for sight stopping distance on all vertical and horizontal curves based on a 4.5 foot eye height.

Sign posts must be set back a minimum of 2 feet from edge of pavement.

Planted trees must be set back a minimum of 4 feet from edge of pavement.

## **4F ILLUMINATION**

### **4F.010 General**

All new commercial or residential subdivisions, short plats, or property development requiring review by the Site Plan Review Committee will provide streetlights in accordance with the standards for such improvements of the City, and they will be owned and operated by the City.

### **4F.020 Design Standards**

A street lighting plan submitted by the applicant and approved by the Public Works Director will be required for all streetlight installations. Type of installation will be as set forth in [WSDOT/APWA Standard Specifications](#) and as directed by the City except where noted herein.

Refer to the City of Olympia Streetlight Installation Guidelines for specific equipment and installation guidelines and procedures.

All public streetlight designs will be prepared by an engineering firm capable of performing such work. The engineer will be licensed by the State of Washington. All developments will submit the lighting plan on a separate sheet. After the system is completed and approved, a set of record drawing Mylars will be submitted to the City as a permanent record.

Streetlights will be located in accordance with the Illumination Standards [Illumination Standards, Table 14](#) and Detail 4-30. In addition, intersections will be illuminated to 1.5 times the highest foot-candle requirement of the streets surrounding the intersection, if none of the intersecting streets' average maintained horizontal illumination level (foot-candles) is equal to or greater than one foot-candle. Exception: In residential and intermediate classes, local streets intersecting collector streets do not need 1.5 times the illumination at intersections provided a luminaire is placed at the intersection. Streetlight layout will be first considered for one-sided street placement then opposite-side street placement. Staggered spacing will be allowed upon approval of the engineer where it is necessary to achieve the average maintained horizontal illumination or there is an established staggered pattern and it is necessary to continue this pattern.

The Local Access Street classification requires the use of ornamental lamp posts for streetlight poles. All other street classifications require the use of high-mast decorative ornamental fiberglass streetlight poles with an acorn-style luminaire and decorative bracket arm mounted to the pole.

Specifications for each type of streetlight pole is available at the [Community Planning and Development Department](#).

**Table 14: Illumination Standards**

Street Class	Area Class		# of Lanes	Luminaire LED Equivalent to HPS (Watt)	Mounting Height	Curb Overhang	Maximum Spacing		
							One Side	Both Sides	Staggered
Local	Res	20	2-In	100	12	0			150
	Int	20	2-In	100	12	0			150
	Res	25	2-In	100	12	0			150
	Int	25	2-In	100	12	0			150
Neighborhood Collector	Res-Int	27	2-In	200/50	30/12	2			300
Neighborhood Collector with Swale	Res-Int	27	2-In	200/50	30/12	1			300
Neighborhood Collector Boulevard	Res-Int	18/10/18	2-In w/ Blvd	200/50	30/12	2			300
Neighborhood Collector with Swale	Res-Int	18/10/18	2-In w/ Blvd	200/50	30/12	1			300
Street Class	Area Class		# of Lanes	Luminaire HPS (Watt)	Mounting Height	Curb Overhang	Maximum Spacing		
Major Collector	Res	28	2-In	200/50	30/12	2	180		
	Res	32	2-In	200/50	30/12	2	180		

	Res	39	3-In	200/50	30/12	2	180		
	Res	43	3-In	200/50	30/10	2	145		
	Res	50	4-In	400/50	35/12	2	240		
	Res	54	4-In	400/50	35/12	2	245		
	Int	28	2-In	200/50	30/12	2	165		
	Int	32	2-In	200/50	30/12	2	155		
	Int	39	3-In	200/50	30/12	2	145		
	Int	43	3-In	200/50	30/12	2	140		
	Int	50	4-In	400/50	35/12	2	240		
	Int	54	4-In	400/50	35/12	2	245		
	Ind	28	2-In	200/50	30/12	2	130		
	Ind	32	2-In	200/50	30/12	2	125		
	Ind	39	3-In	200/50	30/12	2	130		
	Ind	43	3-In	200/50	30/12	2	110		
	Ind	50	4-In	400/50	35/12	2	215		
	Ind	54	4-In	400/50	35/12	2	205		
	Comm	28	2-In	400/50	35/12	2	215		
	Comm	32	2-In	400/50	35/12	2	215		
	Comm	39	3-In	400/50	35/12	2	200		
	Comm	43	3-In	400/50	35/12	2	195		
	Comm	50	4-In	400/50	35/12	2	180		
	Comm	54	4-In	400/50	35/12	2	170		
Major Collector Boulevard	Res	18/ 14/ 18	2-In	200/50	35/12	2		245	
	Res	18/ 14/ 18	3-In	200/50	35/12	2		240	
	Res	25/ 14/ 25	4-In	200/50	35/12	2		250	
	Res	27/ 14/ 24	4-In	200/50	35/12	2		250	
	Res	18/ 14/ 18	4-In	200/50	35/12	2		235	
	Int	18/ 14/ 18	3-In	200/50	35/12	2		235	
	Int	25/ 14/ 25	4-In	200/50	35/12	2		205	
	Int	27/ 14/ 27	4-In	200/50	35/12	2		195	
	Ind	18/ 14/ 18	2-In	200/50	35/12	2		190	
	Ind	18/ 14/ 18	3-In	200/50	35/12	2		190	
	Ind	25/ 14/ 25	4-In	200/50	35/12	2		160	
	Ind	27/ 14/ 27	4-In	200/50	35/12	2		155	
	Com	18/1 4/18	2-In	200/50	35/12	2		155	

	Com	18/ 14/ 18	3-In	200/50	35/12	2		155	
	Com	25/ 14/ 25	4-In	200/50	35/12	2		250	
	Comm	27/ 14/ 27	4-In	200/50	35/12	2		250	
Major Commercial Collector	Int	44	2-In	400/50	35/12	3	230		
	Int	48	2-In	400/50	35/12	3	235		
	Int	55	3-In	400/50	35/12	3	240		
	Int	59	3-In	400/50	35/12	3	245		
	Int	66	4-In	400/50	35/12	3	230		
	Int	70	4-In	400/50	35/12	3	220		
	Ind	44	2-In	400/50	35/12	3	230		
	Ind	48	2-In	400/50	35/12	3	225		
	Ind	55	3-In	400/50	35/12	3	210		
	Ind	59	3-In	400/50	35/12	3	200		
	Ind	66	4-In	400/50	35/12	3	185		
	Ind	70	4-In	400/50	35/12	3	175		
	Com	44	2-In	400/50	35/12	3	195		
	Com	48	2-In	400/50	35/12	3	185		
	Com	55	3-In	400/50	35/12	3	175		
	Com	59	3-In	400/50	35/12	3	165		
Com	66	4-In	400/50	35/12	3	155			
Com	70	4-In	400/50	35/12	3	145			
Major Commercial Collector Boulevard	Int	18/ 10/ 18	2-In	200/50	35/12	3		240	
	Int	18/ 14/ 18	3-In	200/50	35/12	3		240	
	Int	33/ 14/ 33	4-In	200/50	35/12	3		175	
	Int	35/ 14/ 35	4-In	200/50	35/12	3		170	
	Ind	18/ 10/ 18	2-In	200/50	35/12	3		200	
	Ind	18/ 14/ 18	3-In	200/50	35/12	3		190	
	Ind	33/ 14/ 33	4-In	200/50	35/12	3		140	
	Ind	35/ 14/ 35	4-In	200/50	35/12	3		135	
	Com	18/ 10/ 18	2-In	200/50	35/12	3		1695	
	Com	18/ 14/ 18	3-In	200/50	35/12	3		160	
	Com	33/ 14/ 33	4-In	200/50	35/12	3		120	

	Com	35/ 14/ 35	4-In	200/50	35/12	3		115	
Major Industrial Collector	Int	28	2-In	200/50	30/12	3	170		
	Int	32	2-In	200/50	30/12	3	160		
	Int	39	3-In	200/50	30/12	3	150		
	Int	43	3-In	200/50	30/12	3	140		
	Int	50	4-In	400/50	35/12	3	240		
	Int	54	4-In	400/50	35/12	3	245		
	Int	61	5-In	400/50	35/12	3	245		
	Int	65	5-In	400/50	35/12	3	235		
	Ind	28	2-In	200/50	35/12	3	135		
	Ind	32	2-In	200/50	35/12	3	130		
	Ind	39	3-In	400/50	35/12	3	225		
	Ind	43	3-In	400/50	35/12	3	230		
	Ind	50	4-In	400/50	35/12	3	220		
	Ind	54	4-In	400/50	35/12	3	210		
	Ind	61	5-In	400/50	35/12	3	195		
	Ind	65	5-In	400/50	35/12	3	185		
	Com	28	2-In	400/50	35/12	3	215		
	Com	32	2-In	400/50	35/12	3	215		
	Com	39	3-In	400/50	35/12	3	205		
	Com	43	3-In	400/50	35/12	3	195		
Com	50	4-In	400/50	35/12	3	185			
Com	54	4-In	400/50	35/12	3	175			
Com	61	5-In	400/50	35/12	3	160			
Com	65	5-In	400/50	35/12	3	155			
Arterial	To be developed		See Table 15 for light levels and uniformity ratio						
Arterial Boulevard	To be developed		See Table 15 for light levels and uniformity ratio						
Pedestrian Way, Trails, and Shared-use Paths	To be developed		See Table 15 for light levels and uniformity ratio						

For the purposes of this section, area classes are determined by zoning as follows:

Commercial

- Downtown Business
- General Commercial
- Commercial Services - High Density
- Medical Services
- Central Waterfront
- Community Retail
- Professional Office/Residential
- Residential Mixed Use
- Commercial Service - High Density
- Community-Oriented Shopping Center

Industrial

- Light Industrial/Commercial
- Industrial

Intermediate

Neighborhood Retail  
Planned Unit Development  
Neighborhood Centers

Residential

Single-Family Residential  
Two-Family Residential  
Residential Multifamily  
High-Rise Multifamily  
Mixed Residential  
Neighborhood Village  
Planned Residential Development  
Urban Village

As new zones are created, they will be classified by the Public Works Director. If road widths differ from those in the [Illuminations Standards Table](#), other spacings will be determined by the Public Works Director using the following criteria:

**Table 15: Average Maintained Horizontal Illumination (Foot-Candles)**

Road Class	Residential	Intermediate	Industrial	Commercial
Local	*	*	N/A	N/A
Collector	0.6	0.8	1.0	1.2
Arterial	0.8	1.2	1.4	1.6
Sidewalk	0.2	0.6	0.6	0.9
Pedestrian Way, Trails, and Shared-use Paths	0.5	1.0	1.0	2.0
Uniformity Ratio:	6:1 average: minimum for local 4:1 average: minimum for collector 3:1 average: minimum for arterial and boulevard			

Sidewalk and pedestrian uniformity ratio (average:minimum) will be 6:1 for residential, 5:1 for intermediate and industrial, and 4:1 for commercial.

Dirt Factor = 0.85, lamp lumen depreciation factor = 0.73  
Minimum Weak Point Light - 0.2fc except residential local street.

In addition, intersections will be illuminated to 1.5 times the highest foot-candle requirement of the streets surrounding the intersection if none of the intersecting streets average maintained horizontal illumination level (foot-candles) is equal to or greater than one foot-candle.

\* Intersection lighting required and then at the spacing specified in the [Illumination Standards Table](#).

400 W initial lamp lumens = 50,000

200 W initial lamp lumens = 22,000

100 W initial lamp lumens = 8,800

70 W initial lamp lumens = 5,950

Line loss calculations will show that no more than 5 percent voltage drop occurs in any circuit. Branch circuits will serve a minimum of four luminaries.

Pole foundations will be pursuant to Standard Drawing 4-44. Poles will be approved by the City.

All streetlight electrical installations, including wiring conduit and power connections, will be located underground.

#### Area Classifications

**Commercial:** That portion of a municipality in a business development where ordinarily there are large numbers of pedestrians and a heavy demand for parking space during periods of peak traffic or sustained high pedestrian volumes and a continuously heavy demand for off-street parking space during business hours. This definition applies to densely developed business areas outside of, as well as those that are within, the central part of a municipality.

**Intermediate:** That portion of a municipality that is outside of a downtown area but generally within the zone of influence of a business or industrial development, characterized often by moderately heavy nighttime pedestrian traffic and a somewhat lower parking turnover than is found in a commercial area. This definition includes densely developed apartment areas, hospitals, public libraries, and neighborhood recreational centers.

**Residential:** A residential development, or a mixture of residential and commercial establishments, characterized by few pedestrians and a low parking demand or turnover at night. This definition includes areas with single-family homes, townhouses, and small apartments. Regional parks, cemeteries, and vacant lands are also included.

**Pedestrian Way, Trails and Shared-use Paths:** Public sidewalks, trails and shared-use paths for pedestrian and bicycle traffic generally not within rights-of-way for vehicular traffic roadways. Included are skyways (pedestrian overpasses), subwalks (pedestrian tunnels), walkways giving access to park or block interiors, connections to neighboring uses, and crossings near centers of

long blocks. Trails and shared-use paths are designed to meet the needs of commuters and recreational uses.

#### GENERAL NOTES (STREETLIGHT CONSTRUCTION)

1. All workmanship, materials, and testing will be in accordance with [WSDOT/APWA](#), [MUTCD](#), [National Electrical Code \(NEC\)](#), or City of Olympia Engineering Design and Development Standards, or City of Olympia Streetlight Installation Guidelines unless otherwise specified below. In cases of conflict, the most stringent guidelines will apply.
2. A right-of-way obstruction permit, electrical permit, and inspections are required for all streetlight installations within the City of Olympia. The contractor is responsible for obtaining said permits prior to any type of actual construction. These permits are available from the [Community Planning and Development Department](#), 601 4<sup>th</sup> Avenue East, Olympia, WA.
3. A clearly marked service disconnect will be provided for every lighting circuit. The location and installation of the disconnect will conform to the [NEC](#) and the City of Olympia standards. The photocell window will face north unless otherwise directed by the City. The service disconnect will not be mounted on the luminaire pole. The service disconnect will be of a type equal to a Milbank CP3B-11115AALSP2, 120/240 VAC, 1v3W, Caltrans Type 3B with contactors, photo electric cell, and test switch. All service disconnects will be used to their fullest capabilities (i.e., maximum number of luminaires per circuit).
4. All lighting wire will be copper with a minimum size of #8. All wire will be suitable for wet locations. All wire will be installed in Schedule 40 PVC conduit with a minimum diameter of 1½ inches. A bushing or bell end will be used at the end of a conduit that terminates at a junction box or luminaire pole. Conductor identification will be an integral part of the insulation of the conductors throughout the system (i.e., color-coded wire). Equipment grounding conductor will be #8 copper. All splices or taps will be made by approved methods utilizing epoxy kits rated at 600 volts (i.e., 3-M 82-A2). All splices will be made with pressure-type connectors (wire nuts will not be allowed). Direct burial wire will not be allowed. All other installation will conform to [NEC](#), [WSDOT/APWA](#), and [MUTCD](#) standards.
5. Each luminaire pole will have an in-line fused watertight electrical disconnect located at the base of the pole. Access to these fused disconnects will be through the hand-hole on the pole. The hand-hole will be facing away from oncoming traffic. Additional conductor length will be left inside the pole and pull or junction box equal to a loop



having a diameter of 1 foot. Load side of in-line fuse to luminaire head will be cable and pole bracket wire, 2-conductor, 19-strand copper, #10, and will be supported at the end of the luminaire by an approved means. Fuse size disconnect installation and grounding in pole will conform to [NEC](#) standards.

6. Approved pull boxes or junction boxes will be installed when conduit runs are more than 200 feet. In addition, a pull box or junction box will be located within 10 feet of each luminaire pole and at every road crossing. Boxes will be clearly and indelibly marked as lighting boxes by the legend "L.T." or "LIGHTING." See [WSDOT Standard Plan J-11a](#). All empty conduit runs will terminate inside a J-Box and have 14-gauge coated copper tracer wire inside the conduit with accessible ends (2-foot tails).
7. All lighting poles will be tapered round shafts with a linear taper of between 0.125 and 0.14 inches per foot. In existing developed areas, the City may approve/require use of other poles to establish consistency within the developed area.
8. Mounting heights, arm length, power source, luminaire, and bolt patterns will be as follows:  
  
Mounting Height: \_\_\_\_\_ ft.  
Arm Length: \_\_\_\_\_ ft.  
Power Source: 240 VAC, single phase, 3-wire  
Luminaire Type: \_\_\_\_\_ watt, high-pressure sodium  
Flat lens, medium cutoff I.E.S. Type 3 distribution  
Bolt Pattern: 4 bolt, \_\_\_\_\_ diameter bolt circle
9. Cement concrete bases will follow City of Olympia Streetlight Standard Drawing 4-33. Conduit will extend between 3 and 6 inches above the concrete base.
10. Refer to Standard Drawings 4-30, 4-31, and 4-31A for typical streetlight installation layout.
11. Any modification to approved plans will be reviewed and approved by the City prior to installation.

#### **4F.040 Staking**

All surveying and staking will be performed by an engineering or surveying firm capable of performing such work. The engineer or surveyor directing such work will be licensed by the State of Washington.

A preconstruction meeting will be held with the City prior to commencing staking. All construction staking will be inspected by the City prior to construction. Staking will be maintained throughout construction.

The minimum staking of luminaries will be as follows:

- A. Location and elevation to the center of every pole base.
- B. Location and elevation of each service disconnect.
- C. Location and elevation of each J-box.

#### **4F.050      Testing**

All luminaries will be subject to an electrical inspection. Lamp, photocell, and fixture will be warranted per Section 2.030F, a minimum 2-years unless the Manufacturer's Warranty exceeds this period, then the period of the Manufacturer's Warranty applies.

### **4G            SIGNALS**

#### **4G.010      General**

Signals will be installed pursuant to the requirements set forth herein. This work will consist of furnishing and installing a complete and functional traffic control system of controllers, signals, and appurtenances as required by the City.

#### **4G.020      Design Standards**

Signal systems will be designed in accordance with the specifications as set forth in the [WSDOT Design Manual](#) and the [WSDOT/APWA Standard Specifications](#) and City of Olympia Traffic Signal Design Guidelines.

All public signal designs will be prepared by an engineering firm capable of performing such work. The engineer will be licensed by the State of Washington. All applicable requirements set forth in Section 3.040 will be included. Approval of plans and specifications will be obtained before construction commences.

Signal or strain pole foundations will be pursuant to Standard Drawing 4-34.

The beacon and gong assembly for emergency vehicle preemption indication will be pursuant to Standard Drawing 4-36.

#### **4G.030 Induction Loops**

Induction loops will be constructed pursuant to [WSDOT/APWA Standard Specification 8-20.3\(14\)C](#), WSDOT Standard Plan J-50.10, Standard Drawing 4-35, and the following:

- A. Loops will not be cut into final lift of new asphalt.
- B. Loops will be preformed in crushed surfacing top course (CSTC) before paving or will be cut in existing asphalt or leveling course to sub-base before intersection is overlaid.

#### **4G.040 Staking**

All surveying and staking will be performed by an engineering or surveying firm capable of performing such work. The engineer or surveyor directing such work will be licensed by the State of Washington. Staking will be maintained throughout construction.

A preconstruction meeting will be held with the City prior to commencing staking. All construction staking will be inspected by the City prior to construction.

The minimum staking of signals will be as follows:

- A. Location with cut or fill to center of all pole bases.
- B. Location of junction box.
- C. Location of all corners of controller base.
- D. Location of service disconnect.
- E. Locations of conduit crossings.

#### **4G.050 Testing**

All signals will be subject to any necessary electrical inspections as well as requirements as set forth in the [WSDOT Design Manual](#) and the [WSDOT/APWA Standard Specifications](#).

A signal system will not be approved or accepted by the City until the signal has performed correctly to the City's satisfaction for a 30-day "checkout" period as outlined below.

Controller and cabinet testing will be required at WSDOT District 3 Laboratory and/or the City of Olympia. All specifications and material samples will be submitted to the City for review and approval prior to installation.

#### **4G.060 Checkout Procedures**

The contractor will call for an intersection checkout after completing the controller cabinet installation along with all other signal equipment complete with wiring connections. All parts and workmanship will be warranted for one year from date of acceptance.

New signals will operate without any type of failure for a period of 30 days. The contractor will have technical personnel available to respond to system failure within 24 hours during the 30-day checkout period.

Failure of any control equipment or hardware within the checkout period will restart the 30-day checkout period.

#### **4H MISCELLANEOUS STREETSIDE FEATURES**

##### **4H.010 General**

Miscellaneous features included herein will be developed and constructed to encourage the uniform development and use of streetside features wherever possible.

##### **4H.020 Design Standards**

The design and placement of roadside features included herein will adhere to the specific requirements as listed for each feature and when applicable to the appropriate standards as set forth in Sections 3.010 and 3.040.

##### **4H.030 Staking**

All surveying and staking will be performed by an engineering or surveying firm capable of performing such work. The engineer or surveyor directing such work will be licensed by the State of Washington. Staking will be maintained throughout construction.

A preconstruction meeting will be held with the City prior to commencing staking. All construction will be inspected by the City prior to construction.

#### 4H.040 Testing

Testing will be required at the developer's or contractor's expense on all materials and construction as specified in the [WSDOT/APWA Standard Specifications](#) and with a frequency as specified in the [WSDOT Construction Manual](#).

#### 4H.050 Survey Monuments

- A. All existing survey control monuments that are disturbed, lost, or destroyed during surveying or construction will be replaced with the proper monument as outlined in B and C below by a land surveyor registered in the State of Washington at the expense of the responsible builder or developer.
- B. State permit required. WAC 332-120 shall be adhered to: According to WAC 332-120 Survey Monuments - removal or destruction, a surveyor licensed in the State of Washington shall adequately search the records and the physical area of the proposed construction for known or existing survey monuments. Any found monuments shall be referenced and reestablished in accordance with current applicable state laws. Before any earth disturbing activities take place, the contractor's surveyor shall sign and seal the [Monument Preservation Documentation Letter](#), Appendix 3, and submit it to the engineer.
- C. A cast-in-place concrete surface monument with sufficient ferrous metal embedded to allow for detection by a magnetic detection device pursuant to City of Olympia standards is required. Cap will be Berntsen RB Series or brass plug marker.
- D. Required Monument Locations. Monument plan shall be submitted to City Surveyor for review and approval before any monuments are installed. Appropriate monuments will be placed as follows:
  1. At or near all street intersections.
  2. At the PC and PTs of all horizontal curves.
  3. At PI of all horizontal curves of streets where the PI lies within the limits of the traveled roadway.
  4. At all corners, control points, and angle points around the perimeter of subdivisions as required by the City.
  5. At all section corners, quarter corners, and sixteenth corners that fall within the right-of-way.

- E. The monument case will be installed after the final course of surfacing has been placed.

#### **4H.060 Bus Stops and Amenities**

- A. Public Transit will use the following guidelines in placement and design of public transit bus stop zones and passenger amenities. To provide greater passenger, pedestrian and vehicular safety, bus stops should be of adequate length to allow the vehicle to clear crosswalks and not obstruct traffic. The bus capacity at a stop (i.e., number of bus bays) should be increased with the rate of bus arrivals and passenger boardings. Whenever possible, bus stops should be located on the far side of street intersections to reduce the space required for the bus stop and to minimize conflicts between buses re-entering the traffic stream and vehicles making right turns onto cross streets.

Population densities generally dictate the number and placement of public transit bus stops. The City and [Intercity Transit](#), the public transit system, will use the following general guidelines to determine frequency and spacing of stops on any given Intercity Transit route:

1. The Central Business District (CBD) and environs bus stops can be placed approximately every 440 feet (9 to 12 per mile or one every 1 to 2 blocks).
2. Urbanized fringe (fully developed areas with mixed apartments, single-family housing, or no open space other than parks and schools) approximately every 700 feet (7 to 8 per mile or every 2 to 3 blocks).
3. Suburban areas (mostly single-family housing with pockets of open space and undeveloped land) every 1,250 feet (4 per mile) as needed in open areas.
4. In order to evaluate a new route and build ridership, placement of bus stop zones may initially depart from the above guidelines.
5. New service will not be initiated prior to the establishment of designated bus stops.
6. Bus stops can be initially located on an average of 4 to 6 stops per route mile along local residential collection/distribution segments of a new route.

7. Additional stops may be added if warranted but will not exceed the basic stop spacing guidelines of 8 to 10 stops per mile and no two stops within 600 feet of one another.
  8. Site designs for businesses, residential subdivisions, and multi-family developments along transit routes will accommodate transit use. This may include the location of a building entrance near a transit stop, pedestrian facilities, sheltered or unsheltered transit stops, and/or a bus bay. Connectivity to surrounding streets and trails shall be provided to reduce walking distance to transit routes consistent with block spacing criteria 2.040.3(e), including provision of pedestrian facilities.
  9. All new bus stops will comply with the [Americans with Disabilities Act \(ADA\) requirements](#). All “landing pads” require no more than a 2 percent grade. Bus stops with shelters require a minimum landing pad of 6’ wide by 8’ deep. Confirmation of any new stop location and design will be coordinated with Intercity Transit staff.
- B. The [Olympia School District](#) and the North [Thurston Public Schools District](#) will use the following criteria in placement and design of school bus stops:
1. A school bus stop will be required for each new residential subdivision or apartment complex where school children are to be boarding or deboarding unless it is determined by the school district that a new bus stop is not required because adjacent facilities already exist for the site.
  2. Placement will be determined by the school district and the City.
  3. Location of school bus stops will be designed with safety as a paramount concern. Major arterials with high traffic counts should be avoided where possible and only used when bus pullouts are available and significant protection is provided for children.
  4. School bus stops will be designed to complement the residential environment and provide convenient location and access for neighborhood children, including sidewalk access and connections to pedestrian facilities.
  5. Every effort will be made to make school bus stops and sidewalk access to school bus stops a safe and friendly pedestrian environment.
  6. The school district should make every effort to coordinate the location of school bus stops with Intercity Transit.
- C. The physical location of any bus stop zone will be primarily determined by the following standards: maximizing safety, operational efficiency, and

minimizing impacts to adjacent property. Bus pullouts or bulbouts may be required on arterial and commercial collector roads for safe bus berthing and to minimize impacts on traffic flow of buses stopping. Additionally, school bus pullouts or bulbouts may be required on local access roads if road geometries require, such as determined by the City and the school district.

- D. Maintaining adequate separation between driveways/intersections and bus stop zones, pullouts and bulbouts can increase the safety and efficiency of both the roadway and transit service.

When locating a bus stop pullout in reference to existing driveways or locating a driveway in reference to an existing bus pullout, the following guidelines need to be taken into consideration.

1. A minimum distance of 105 feet, 125 feet preferred, should be maintained between the pullout and the driveway on arterial roadways and a minimum of 55 feet, 75 feet preferred on local roads. This distance is measured from the edge of the driveway to the front or back of the transit vehicle, whichever end is closer.
2. A bus pullout should not be located where the transit vehicle will block sight distance from a driveway or intersection.
3. Driveways should not be located within the taper of a bus pullout.

When locating a public transit bus stop zone, the length of the zone will reflect the general space distance needed to maneuver a 40' long transit vehicle and the roadway speed limit. Within the urban core, this distance is 55' - 65'.

Design standard guidelines for a bus stop zone, pullout or a bulbout shall be obtained from Intercity Transit. Suggested guideline reference for bus stop zones, pullouts and bulbouts can be found in the [Washington State Department of Transportation Design Manual](#).

- E. All Intercity Transit and school district bus stops will be identified in some fashion. This may include pavement marking, bus stop sign and/or passenger shelter. Contact [Intercity Transit](#) for details required for Intercity Transit bus stops.



- F. A passenger shelter can be required for any bus stop and reflects criteria established by Intercity Transit and/or the City for when a shelter is needed. The following requirements apply to bus stop shelters:
1. Passenger shelters for Intercity Transit sites and school district sites will be designed to engineering standards set by Intercity Transit and the City. This includes shelters that are transparent for passenger visibility and safety, sight distance for approaching vehicles, protection from the elements, and reasonably vandal-resistant for easy maintenance. Additional passenger amenities or service features at these stops are subject to change. Shelters for school stops will not look like a public transit shelter unless used by both transportation systems.
  2. Intercity Transit has standard bus stop and passenger shelter designs that include a bench, information display panels, and a trash can. Shelters can be purchased directly from Intercity Transit for any designated public transit stop requiring a passenger shelter. These public shelters become the property of Intercity Transit unless designated otherwise by prior agreement. An alternate shelter design will be considered based upon approval by the City and Intercity Transit and constructed and maintained by the proposer or their designated party.
  3. Only Intercity Transit approved shelters will be maintained by Intercity Transit. School district bus stop shelters will be maintained by the subdivision's Homeowners Association or apartment owner, whichever is appropriate.
  4. Shelter size will be appropriate to anticipated service and use. The size of the Intercity Transit shelter will be determined by Intercity Transit and the City. School bus shelters will provide a minimum of 50 square feet of shelter for each 25 lots in a subdivision or each 25 two or more bedroom units in an apartment complex.
  5. The following criteria will be applied by the City's [Community Planning and Development Department](#) to public transit bus stop facilities:
    - a. Provide ADA accessible walkways paved with a hard all-weather surface linking various sections of subdivision and developments to peripheral streets with bus stops.
    - b. In designing walkways, provide access through mid-blocks to decrease distances to bus facilities and provide flexibility for pedestrians.

- c. Provide ADA accessible ramps and other facilities consistent with universal and barrier-free design standards along walkways leading to a bus stop.
- d. Developments enclosed by walls or fences will provide openings or gates for walkways to provide direct access between developments and bus stops.
- e. Use street name signs to mark pedestrian walkways.
- f. Separate roads and parking areas from pedestrian pathways by grade separations, landscaping, and other devices. A minimum 4- to 6-foot planting strip with trees will be provided to buffer sidewalks or walkways from streets and parking areas. When possible, a second row of trees should be provided between the sidewalk and adjacent property.
- g. Public transit bus stop zones will have a minimum 50' clear zone free of trees or shrubs on the leading side of the bus and a clear zone around the shelter to allow good visibility for both vehicle safety and security of pedestrians at the stop.
- h. Provide pedestrian facilities such as lighting, signs, and trash cans as warranted by anticipated use. (See illumination standards in Tables 14 and 15.)
- i. New development street systems should be designed so as to minimize pedestrian travel to bus stops.

#### **4H.070 Mailboxes**

- A. During construction, existing mailboxes will be accessible for the delivery of mail or, if necessary, moved to a temporary location.

Temporary relocation will be coordinated with the [U.S. Postal Service](#). The mailboxes will be reinstalled at the original location or, if construction has made it impossible, to a location as outlined below and approved by the U.S. Postal Service.

- B. Location

- 1. Bottom or base of box will be 36 inches to 42 inches above the road surface.
- 2. Front of mailbox 18 inches behind vertical curb face or outside edge of shoulder.

3. New developments. Clustered mailboxes are required. Contact the [U.S. Postal Service](#) for details. See Detail 4-18.
- C. Mailboxes will be set on posts strong enough to give firm support but not to exceed 4-inch x 4-inch wood or one 12-inch-diameter pipe, or material and design with comparable breakaway characteristics.

#### **4H.080      Guardrails**

For purposes of design and location, all guardrails along roadways will conform to the criteria of the [WSDOT Design Manual](#) as may be amended or revised.

On West Bay Drive, the [Ironwood Guardrail System](#) will be required.

#### **4H.090      Retaining Walls**

- A. Rock walls may be used for erosion protection of cut or fill embankments up to a maximum height of 8 feet in stable soil conditions that will result in no significant foundation settlement or outward thrust upon the walls. For heights over 4 feet or when soil is unstable, a structural wall of acceptable design, stamped by a licensed structural engineer, will be used. Rock walls over 4 feet high will be subject to inspection by a geotechnical engineer as outlined in the following paragraph.

Any rock wall over 30 inches high in a fill section will require an engineered design by a geotechnical engineer. The geotechnical engineer will continuously inspect the installation of the wall as it progresses and will submit inspection reports, including compaction test results and photographs taken during the construction, documenting the techniques used and the degree of conformance to the geotechnical engineer's design.

In the absence of such a rock wall design, walls having heights over 6 feet or walls to be constructed in conditions when soil is unstable require a structural wall having a design approved by the Public Works Department or the Community Planning and Development Department if outside the right-of-way. The design of structural walls will be by a professional structural engineer qualified in retaining wall design. Structural walls require issuance of a building permit prior to construction.

- B. The rock material will be as nearly rectangular as possible. No stone will be used that does not extend through the wall. The rock material will be hard, sound, durable, and free from weathered portions, seams, cracks, and other defects. The rock density will be a minimum of 160 pounds per cubic foot.

- C. The rock wall will be started by excavating a trench having a depth below subgrade of one-half the base course or 1 foot (whichever is greater).
- D. Rock selection and placement will be such that there will be minimum voids and, in the exposed face, no open voids over 6 inches across in any direction. The final course will have a continuous appearance and will be placed to minimize erosion of the backfill material. The larger rocks will be placed at the base of the rockery so that the wall will be stable and have a stable appearance. The rocks will be placed in a manner such that the longitudinal axis of the rock will be at right angles or perpendicular to the rockery face. The rocks will have all inclining faces sloping to the back of the rockery. Each course of rocks will be seated as tightly and evenly as possible on the course beneath. After setting each course of rock, all voids between the rocks will be chinked on the back with quarry rock to eliminate any void sufficient to pass a 2-inch-square probe.
- E. The wall backfill will consist of 1½-inch washed rock or as specified by a licensed engineer. This material will be placed to an 8-inch minimum thickness between the entire wall and the cut or fill material. The backfill material will be placed in lifts to an elevation approximately 6 inches below the top of each course of rocks as they are placed until the uppermost course is placed. Any backfill material on the bearing surface of one rock course will be removed before setting the next course.
- F. Perforated drainage pipe and filter fabric will be installed pursuant to Standard Drawing 4-26 and connected to a storm system. This pipe requirement may be waived by the engineer upon confirmation that no subsurface water problem exists.

#### **4H.100 Street Trees**

- A. Species, cultivars, or varieties
  1. The [Urban Forester](#) may provide a list of trees appropriate for planting as street trees.
  2. Other tree species or their varieties may be planted as street trees, with approval of the Urban Forester, if they are appropriate for the planting location and are generally free of health problems or other limitations.
  3. Some planting locations may require a specific species to ensure consistency with citywide streetscape designs. Only the designated species or variety shall be planted in these areas, unless otherwise authorized by the Urban Forester.

## B. Planting stock requirements.

1. Size. Unless otherwise specified by the Urban Forester, all tree planting stock shall conform to [American Standards for Nursery Stock](#) (ANSI Z60.1-1990) and shall be at least 1 ¾-inch caliper.
2. Grade. Unless otherwise specified by the Urban Forester, all trees shall have comparatively straight trunks, well-developed leaders and crowns, shall exhibit evidence of proper nursery pruning practices, and shall have a branch height of at least 6 feet. At the time of planting, all trees must be free of mechanical injuries and other objectionable features that affect the future form and beauty of the plant.

## C. Street tree spacing and location. The [Urban Forester](#) may vary the following standards as necessary to ensure public safety and consistent streetscape design. Spacing and location of trees shall be determined by the Urban Forester in accordance with local conditions; the species, cultivars, or varieties used; and their mature height, spread, and form.

1. Generally, all large trees, at maturity, shall be spaced 40 to 60 feet, center to center; all medium trees shall be spaced 35 feet, center to center; and all small trees shall be spaced 25 feet center to center.
2. In planting locations less than 5 feet wide, or where overhead lines or building setbacks present a special problem, the Urban Forester may vary these requirements or make site-specific recommendations to allow for the planting of trees where deemed appropriate.
3. Trees shall be planted at least 15 feet from driveways and alleys, and at street intersections, the distance shall be that specified in [Section 4B.150 \(Sight Obstruction\)](#).
4. No tree shall be planted closer than 20 feet to a utility pole or a streetlight to allow for maintenance and light penetration.

## D. Tree Grates

Street trees planted in sidewalks shall be in tree grates conforming to City Standards.

### 4H.110 Parking Lots

A parking lot construction permit is required prior to surfacing any unsurfaced designated parking area.

Stormwater retention will be provided and will follow the criteria as set forth in [Chapter 5](#) of these Standards.

Number of plans and specifications will be as required by the [Community Planning Development Department](#) and be submitted for review and approval by the City with respect to storm drainage discharge and on-site retention or detention, matching street and/or sidewalk grades, access locations, parking layout, and to check for future street improvement conformity and City zoning regulations.

Parking lot surfacing materials for a permanent all-weather surface include asphalt concrete pavement and cement concrete pavement. Gravel surfaces are not acceptable or approved surface material types.

Combination grass/paving systems are approved surface material types; however, their use requires submittal of an overall parking lot paving plan showing the limits of the grass/paving systems and a description of how the systems will be irrigated and maintained. If the City determines the grass/paving system is not appropriate for the specific application, alternate approved surfacing materials will be utilized.

Minimum requirements for parking lot capacity will be determined by the City.

#### **4H.120      Parking Meters**

When parking meters are installed, moved, or replaced, installation will be according to Standard Drawing 4-41A and 4-41B.

### **4I              ACCESS POINTS AND INTERSECTION CRITERIA**

#### **4I.010      General**

Driveways and access points on all arterial, major industrial collector, major commercial collector, and major collector streets, as defined in the [Street Design Standards Table](#) of this document, shall be designed and constructed in conformance with the latest standards established by the [American Association of State Highway and Transportation Officials \(AASHTO\)](#), the [Institute of Transportation Engineers \(ITE\)](#), and this document.

Access control includes:

- A. Reduce the number of access points or increase their spacing so that vehicle conflict areas or maneuver areas do not overlap.

- B. Limit the type of conflict by preventing certain turning maneuvers.
- C. Remove turning vehicles or queues from through lanes.
- D. Reduce the speed differential in through lanes between through vehicles and turning vehicles.
- E. Consider the impact of access points on adjacent or nearby properties as well as across the street.

#### **4I.020      Applicability**

These regulations shall apply to all new developments fronting on arterial, major industrial collector, major commercial collector, and major collector streets as defined in the [Street Design Standards Table 2](#), [Section 4B.030](#) of these Standards. For a development that combines more than one underlying lot, these regulations, including the number and spacing of access points, shall apply to the development as a whole, not to each underlying lot. If a development to which these regulations has been applied changes ownership, these regulations continue to apply to all future owners.

“Desirable conditions” shall be applied when sufficient space or street frontage is available. If sufficient space or street frontage for desirable conditions is not available, then lesser distances, down to but not less than the numbers labeled on “limiting conditions,” may be applied. Numbers for minimum spacing are based on driveways two lanes wide. In cases where driveways are wider than two lanes, there must be a corresponding increase in numbers for minimum spacing. “Access points” refer to driveways or other connections to private property. “Intersections” refer to points where public streets or roads interconnect.

#### **4I.030      Methods of Measurements**

Driveway throat width is measured perpendicular to the centerline of the driveway between lines defined by the radii, whether or not that occurs inside the property lines and is physically marked with curbing.

Driveway throat length is measured along the centerline of the driveway from the back edge of the driveway apron and the nearest vehicle aisle or circulation road.

Dimensions in this section refer to distances from (or along) the face of the curb. In the absence of a curb, the measurement is considered to be from (or along) the edge of pavement.

Driveway angles are measured between the driveway centerline and centerline of the roadway.

#### 4I.040 Spacing of Access Points, Same Side of Street

- A. The numbers in Table 16 shall be the minimum distance allowed between the centerlines of adjacent access points. Figure 1 shows an example of this situation.

**Table 16: Minimum Access Spacing Based on Separation of Conflict Area**

Speed on Adjacent Street	Desirable Conditions	Limiting Conditions
25	120	75
30	185	100
35	245	160

Distance in feet measured center to center of access drives.

Figure 1: Example of access spacing. Desirable condition at street speed of 25 mph.

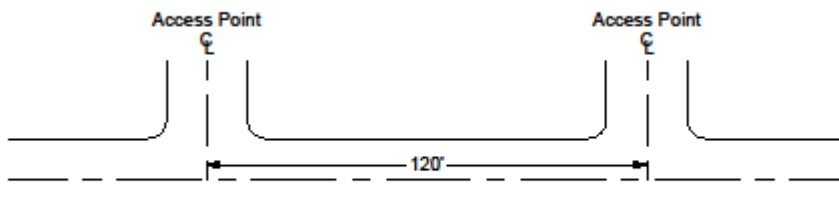


Figure 1

- B. In situations where site distance is limited, the numbers in Table 17 shall be the minimum distance allowed between the centerlines of adjacent access points or the centerline of an access point and the near side of the nearest street. If a development improves sight distance, then Table 16 shall apply.

**Table 17: Minimum Access Spacing Where Sight Distance is Limited**

Speed on Adjacent Street	Desirable Conditions	Limiting Conditions
25	150	100
30	210	160
35	300	240

Distance in feet measured center to center of access drives.



- C. In situations where an access point is served by one or more turn lanes, the numbers in Table 18, plus any necessary storage space in the turn lane based on expected turning volumes, shall apply. These numbers shall be the minimum distance allowed between the centerline of any access points served by a turn lane and the adjacent access point in the upstream direction; or the centerline of an access point and the near side of the nearest street in the upstream direction. In the downstream direction, Table 16 or 17 will apply. Figure 2 shows an example of access spacing with a turn lane.

**Table 18: Minimum Access Spacing for Access Points Served by Turn Lanes**

Speed on Adjacent Street	Desirable Conditions			Limiting Conditions		
	Deceleration	Storage	Total	Deceleration	Storage	Total
25	85	100	185	75	50	125
30	185	100	285	160	50	210
35	280	125	405	240	75	315

Source: Tables 16, 17 and 18 were adapted from ITE, *Transportation and Land Development*.

Distance in feet measured center to center of access drives. Total distance includes deceleration distance plus distance needed to maneuver into the turn lane. It may be necessary to add vehicle storage space to the deceleration distance.

Figure 2: Example of access spacing for access point served by turn lane. Desirable condition at street speed of 25 mph.

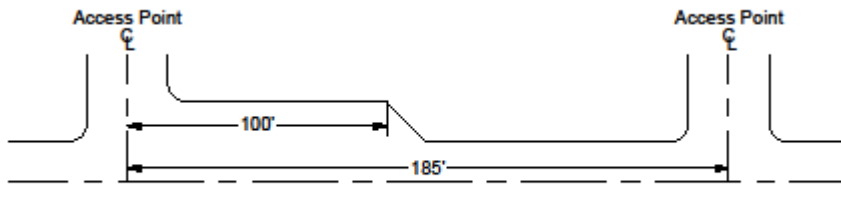


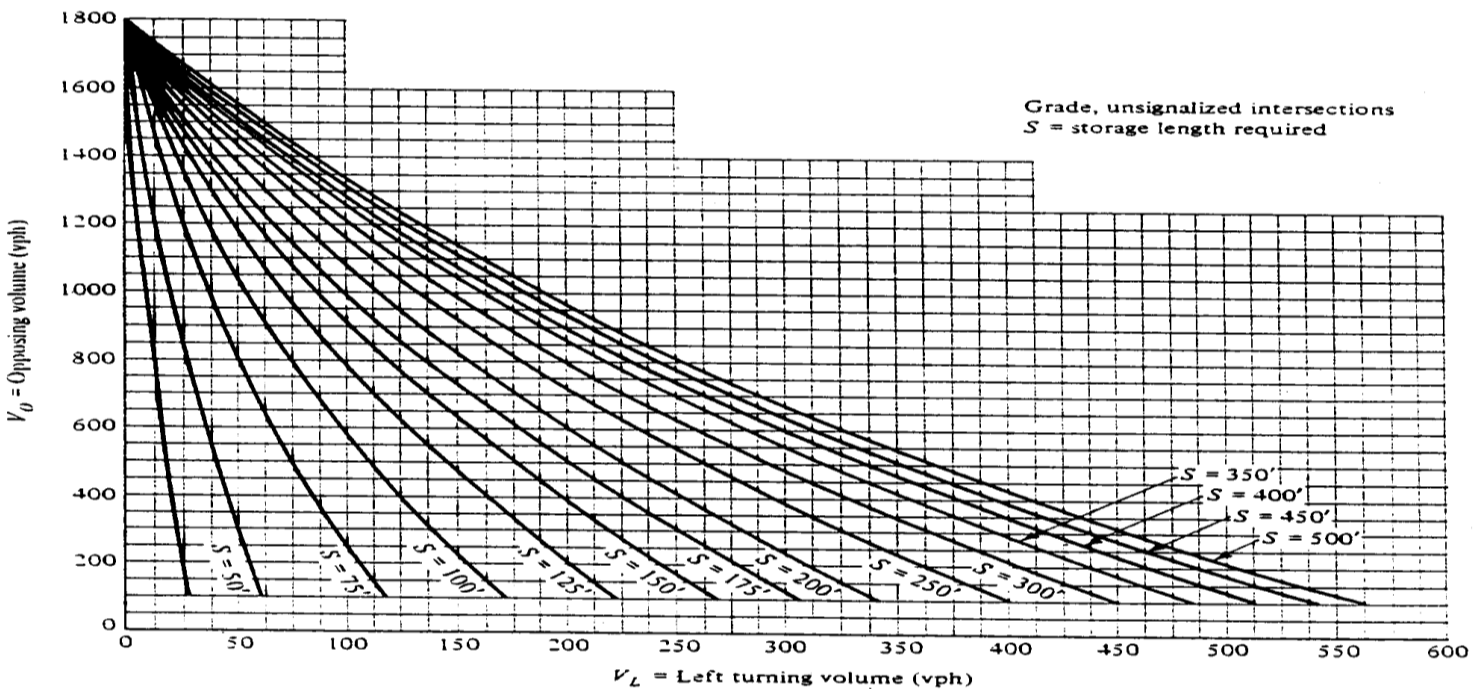
Figure 2

#### 4I.050 Alignment of Offset of Cross-Street Access Points

- A. If the Traffic Impact Analysis determines that there is or will be a need to signalize proposed access points, then proposed access points shall be aligned directly opposite any existing or proposed access points or T-intersection across the street.
- B. Where driveways are to be signalized, a minimum spacing of 1,320 feet to any other signalized intersection should be maintained.

- C. Driveways should be placed directly opposite from each other whenever possible. If this is not possible, it is necessary to provide adequate left-turn storage capacity in advance of each driveway and avoid the overlap of vehicles waiting to turn left into the driveways. If separation cannot be achieved, consideration should be given to combining the driveways. As shown in Figure 3, left-turn storage distance can be calculated using opposite and left-turn traffic volumes.
- D. The requirements of A, B, and C above shall not apply if the street to be accessed has a permanent median and/or traffic control device that prevents any cross-street movement of traffic or if the Public Works Director determines that adhering to said requirements would create a hazardous or undesirable situation.

Figure 3: Nomograph for left-turn storage at an unsignalized intersection.



The nomograph is used by reading horizontally from the opposing traffic volume,  $V_O$  on the vertical axis and reading vertically from the left-turn volume,  $V_L$ , on the horizontal axis and locating the minimum storage length,  $S$ , at the point where the horizontal and vertical lines cross. For example, 100 left-turning vehicles per hour,  $V_L$ , with an opposing through volume,  $V_O$ , of 950 vph, will require a minimum storage length of about 150 feet. Source: M.D. Hamelink.

Note: Deceleration distance must be added to storage length to obtain the total length of turn bay.

#### 4I.060 Corner Clearance from Intersections

Tables 19 and 20 can be used to determine minimum corner clearance for roadways operating at various speeds under signalized or unsignalized traffic control. Select the letter corresponding to the roadway and driveway configuration. Then locate the clearance value associated with that letter for the appropriate class of roadway at its prevailing operating speed. The guidelines provided below offer additional standards in establishing corner clearances. These include:

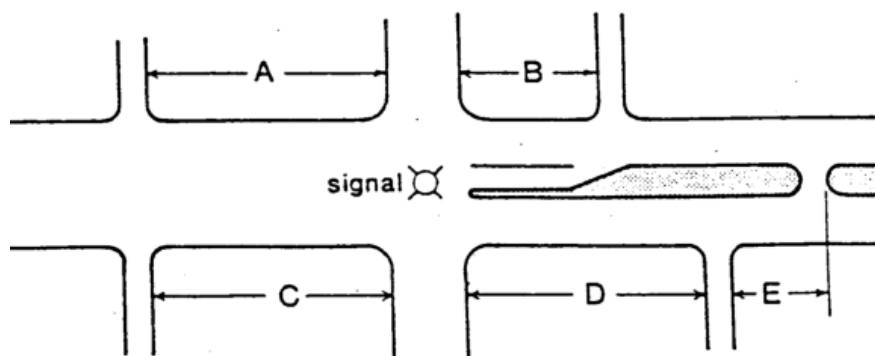
- A. In cases where corner clearances are not attainable because property frontages are narrow, access should be located as close as practicable to the property line most distant from the intersection. At such locations, serious consideration should be given to physically prohibiting left turns into and out of the driveway.
- B. Driveway locations near controlled intersections must not interfere with traffic operations that develop from the 90th percentile queue length. This situation must be checked for Item C and H in Tables 19 and 20. Conduct independent intersection queue analysis for determination. In situations where this is unavoidable, the Public Works Director may limit the access point to a right-turn only in-and-out operation.

**Table 19: Signalized Intersection Control  
Minimum Corner Clearances for Urban Conditions**

Item	Street Operating Speed		
	25	30	35
A	150	230	275
B	75	115	135
C <sup>1</sup>	150	230	275
D	150	230	275
E	95 or 0	115 or 0	135 or 0

<sup>1</sup> Listed distances are minimum, refer to 4I.060 (B)

Figure 4

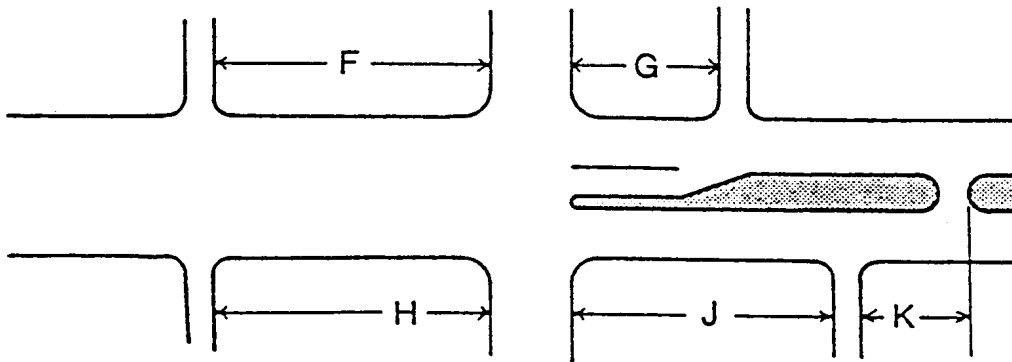


**Table 20: Stop Sign Intersection Control  
Minimum Corner Clearances for Urban Conditions**

Item	Street Operating Speed		
	25	30	35
F	95	115	135
G	75	85	105
H <sup>1</sup>	95	115	135
J	95	115	135
K	95 or 0	115 or 0	135 or 0

1 Listed distances are minimums, refer to 4I.060 (B)

Figure 5



**4I.070 Number of Access Points**

No development shall have more than one access point unless the Traffic Impact Analysis or Emergency Service requirements determine that additional access points are needed to serve the expected volume of traffic; to establish efficient movement of vehicles, including trucks, buses, or emergency vehicles; to reduce traffic conflicts; and provided that adequate space exists.

**4I.080 Access Location Based on Street Class**

When a development will be situated so that there is a choice of possible access points onto streets of different classes as defined in the [Street Design Standards Table](#), then access shall be allowed only on the street of lower class, unless the Traffic Impact Analysis determines that the street of lower class cannot provide adequate access capacity, sight distance, separation or roadway intersections, safety, or vehicle maneuver area. However, an industrial or commercial development should not access a neighborhood collector street or local access street as defined in the [Street Design Standards Table](#), if an alternative is available.

Access to corner lots shall be located on the minor street whenever possible and as close as possible to the property line most distant from the intersection.

#### **4I.090 Combined or Shared Access**

Any development expected to generate no more than 50 peak-hour trips, according to trip generation data from ITE or other reliable source, may be required to share access with an adjacent site or sites in order to reduce the total number of access points. When shared access is not feasible at the time of development but may be feasible in the future, any access point(s) shall be located at or near the edge of the property and designed to facilitate future connection to/from adjacent sites, provided such location does not conflict with other provisions of these regulations. Traffic connections between sites shall be designed and located so as not to encourage high-speed traffic, traffic conflicts with pedestrians, or through traffic.

#### **4I.100 Direction of Driveways (One-Way or Two-Way)**

Installing two, one-way driveways is warranted at point locations on all types of roadways and shall use the following criteria:

- A. The level of development should be less than 60 driveways per mile.
- B. Roadway ADT should be greater than 10,000, and roadway speed shall be less than 35 mph.
- C. At a commercial site, at least 40 vehicles per hour are expected to turn left across through traffic to enter the driveway during peak periods.
- D. Frontage widths should be at least 150 feet where practical to ensure that minimum drive separation distances can be attained.

#### **4I.110 Adjustment for Street Gradient**

If the street to be accessed has a gradient of three percent or more, distances specified in these regulations shall be adjusted to compensate for the effects of gradient on vehicle acceleration or deceleration.

#### **4I.120 Drive-Through Windows**

Drive-through windows and the approaches to them must be located and designed to accommodate on-site the maximum expected vehicle queue, with

no spillover of the vehicle queue onto adjacent streets or adjacent sites and with no interference with vehicles, pedestrians, and bicyclists at points of access or egress.

#### **4I.130 Monitoring and Enforcement**

If an access point for a new development is found not to be in compliance with these regulations, the City may order, by certified letter to the developer, that any noncomplying access point(s) be made to comply within 90 days. Any such access point not made to comply within 90 days may be closed by a barricade installed by the City. Any barricade installed according to these provisions shall be moveable or otherwise situated to allow emergency access.

#### **4I.140 Design of Access Points and Driveways**

The point of intersection between streets and access drives serving developments shall be designed as much as feasible within the constraints of the given terrain and available land area to minimize interference with through traffic on the street and to minimize conflict between vehicles at the access point and between vehicles and pedestrians or bicycles. The following design features shall apply where appropriate:

##### **A. All Access Points**

1. Access point geometrics. The maximum driveway width for two-way access drives onto an arterial or collector shall be 24 feet for residential, 30 feet for commercial uses, and 35 feet for industrial uses. Maximum driveway widths for one-way access drives onto an arterial or collector shall be 20 feet for residential, 20 feet for commercial, and 25 feet for industrial uses. A wider driveway width may be approved where a substantial percentage of oversized vehicle traffic exists, where divisional islands are desired, or where multiple exit or entrance lanes are needed.

The maximum driveway width onto a local access street shall be 24 feet for residential uses and 26 feet for commercial uses.

2. Angle. The angle between the extended centerline of a driveway and the centerline of the street being accessed shall be 90 degrees, or as close to 90 degrees as feasible. In no case shall an angle of less than 60 degrees nor more than 120 degrees be allowed.
3. Visual clues of access. Signs, landscaping, and other on-site features near an access point shall be designed and located to provide clues to

the location of the access point without interfering with drivers' sight distance and without significantly reducing the ability to see vehicles on the driveway or on the street.

4. Change of existing access. A developer may be required to change and/or abandon existing curb cuts, driveway designs, and other access-related features established for a previous development or land use.
5. Design vehicles. For commercial developments where access by trucks with trailer is not expected to be routine, the geometric design of access points shall be based primarily on the turning characteristics of passenger cars (defined by the [AASHTO](#) "P" design vehicle).

For industrial developments or any other development where access by trucks with trailers is expected to be routine, the geometric design of access points to be used by trucks shall be based on the turning characteristics of the AASHTO "WB-50" design vehicle.

Developments where on-site bus access is expected shall be designed to accommodate bus movement as defined by the AASHTO "BUS" design vehicle.

6. Pedestrian and bicycle movement. As much as is feasible within the parameters of these regulations, access points and driveways shall be designed to minimize conflict between vehicles and pedestrians or bicycles. Access points and driveways shall be designed to minimize the total risk and delay for vehicles, pedestrians using sidewalks or crosswalks, and bicycle riders using bike paths, streets, or driveways.
7. All driveways will be designed so that vehicles entering and exiting are able to turn without encroaching on adjacent lanes, either on the roadway or in the driveway.
8. Driveways must be noticeable to all drivers. This can be accomplished through the use of contrasting pavement, driveway and curb or curb and gutter color, compared to the roadway. Contrasting pavement can help to guide and regulate drivers.
9. Grade. The access drive shall intersect the street with a continuous, smooth grade not interrupted by curb, gutter, sidewalks, or any other rough, bumpy, or off-grade feature. Sidewalks or bike paths crossing such access points shall be at grade.
10. Striping. Multi-lane driveways shall have lanes delineated by paint stripes. Lanes in the same direction shall be delineated by a skip white line 4 inches wide. Lanes in opposite direction (if not separated by a

median) shall be delineated by a double solid yellow line, with each stripe 4 inches wide.

11. Markings, like signs, have the function of controlling traffic to encourage safe and expeditious operation. Markings either supplement the traffic signs or serve independently to indicate certain regulations or hazardous conditions. All pavement markings shall meet the standards set forth in the [Manual on Uniform Traffic Control Devices \(MUTCD\)](#) and City of Olympia Standards.
12. All traffic signs within the right-of-way shall meet the standards set forth in the MUTCD and City of Olympia Standards.

#### B. High Volume Access Points

For any development expected to generate at least 75 vehicle trips in the development's peak hour, the following conditions shall apply in addition to those under [Section A](#) above.

1. Throat length. Throat length is defined as the distance along an access driveway between the back edge of the driveway apron and a development's parking area. For high-volume access points, adequate throat length for various land uses is specified in [Table 21](#). A development with more than one access point or with multi-lane access driveways may be allowed shorter throat length if adequate vehicle storage can be provided on each access driveway.

In the downtown business area (designed "DB" on the [City of Olympia Zoning Map](#)) and along high-density residential corridors, the Public Works Director may allow a shorter throat length or may change other guidelines in keeping with that area's high density and pedestrian/transit orientation.



**Table 21: Minimum Throat Length and On-site Vehicle Storage**

Land Use	Size	Min. Throat Length (ft.)	Min. Total Storage (ft.)
Light Industrial	<100,000 ft <sup>2</sup>	50	100
	100,000 - 500,000 ft <sup>2</sup>	100	600
	>500,000 ft <sup>2</sup>	200	1,000
Discount Store	30,000 ft <sup>2</sup> or less	50	300
	30,000 ft <sup>2</sup>	75	600
Shopping Center	<250,000 ft <sup>2</sup>	50	500
	250,000 - 500,000 ft <sup>2</sup>	75	1,000
	500,001 - 750,000 ft <sup>2</sup>	200	1,500
	750,000 ft <sup>2</sup>	250	2,000
Supermarket	20,000 ft <sup>2</sup> or less	75	300
	>20,000 ft <sup>2</sup>	125	500
Apartment	<100 units	50	300
	100-200 units	75	500
	>200 units	125	750
Quality Restaurant	15,000 ft <sup>2</sup> or less	50	100
	>15,000 ft <sup>2</sup>	75	150
Drive-in Restaurant	2,000 ft <sup>2</sup> or less	75	100
	>2,000 ft <sup>2</sup>	100	200
General Office	<50,000 ft <sup>2</sup> or less	50	500
	50,000 - 100,000 ft <sup>2</sup>	75	750
	100,001 - 200,000 ft <sup>2</sup>	100	1,000
	200,001 - 500,000 ft <sup>2</sup>	150	1,500
	>500,000 ft <sup>2</sup>	250	2,000
Motel	105 rooms or less	75	150
	>150 rooms	100	200

Source: Adapted from ITE, *Transportation and Land Development*.

2. Curb return. All high-volume access points must provide curb return radii from private driveways to public roads as described in Table 22. By a Traffic Impact Analysis, a lower standard design may be allowed provided that the expected traffic volume can be adequately and safely accommodated. If significant truck traffic is expected, wider lanes and greater curb return radii may be required.

**Table 22: Curb Return Radius for High Volume Access Drives**

Land Use	Desirable (ft.)	Maximum (ft.)	Minimum (ft.)
Apartment/Commercial	20	25	15
Industrial	30	30	20

Source: Adapted from ITE, *Transportation and Land Development*.

3. Signalization. High-volume access points may be signalized if the Traffic Impact Analysis determines that signalization is warranted. Any signal so installed shall be coordinated with other nearby signals.

4. Street median opening. The most important design element for the raised divider is the median width that must be adequate to completely shadow left-turning vehicles from through vehicles. Median width shall be as specified in the standard street cross section designated by functional class. For conditions that do not apply to the standard street cross section, refer to [Table 23](#).

Where a median and/or pedestrian crossing island is desirable or required in a two-way center turn lane, refer to Standard Drawing 4-48.

Median openings should be designed to accommodate the design vehicle turning at a reasonable rate of speed. Semicircular radii may be used on the noses of medians up to 6 feet wide. Bull-nosed medians should be used for medians of greater width, using a minimum inside turning radius of 40 feet and a minimum nose-to-nose dimension of 40 feet for passenger vehicle design. To accommodate SU vehicles, a 50-foot control radius is recommended, and for WB-40 vehicles, a 75-foot radius.

**Table 23: Recommended Median Widths<sup>2</sup>**

Function	Minimum Width (ft.)	Desired Width (ft.)
Separation of Opposing Traffic	4 <sup>1</sup>	10
Pedestrian Refuge and Space for Traffic Control	6 <sup>1</sup>	14
Left-turn Speed Change and Storage	14	20
Crossing/Entering Vehicle Protection	20	40
U-turns, Inside-to-inside Lane	26	60

<sup>1</sup> Cannot accommodate left-turn lanes, hence such turns must be made from the through lanes unless prohibited by signs.

<sup>2</sup> Use in situations not covered by standard street cross sections.

Source: ITE, *Guidelines for Urban Major Street Design*.

Providing openings within a raised median barrier allows selected driveways full or partial left-turn access into or out of the driveway. Benefits gained from providing median openings can include:

- a. Limits left-turn access into or out of a driveway to a specific location, thereby reducing vehicle conflict points.
- b. Improves the operation of both the driveway and the roadway by the reduction of vehicle points.
- c. Provides an access point that may prevent a more circuitous route required to enter or leave driveways that could cause added traffic on local parallel streets. Table 24 shows the recommended spacing for barrier openings.

**Table 24: Minimum Spacing Between Median Openings\***

Speed on Adjacent Street	Desirable Conditions	Limiting Conditions
25	300	140
30	370	190
35	460	240

All speeds, openings provided at all arterials, collectors, and some local streets.

\* Plus 25 feet for each car stored in turn lane at expected maximum queue length.

Source: Adapted from ITE, *Transportation and Land Development*.

### C. Low-Volume Access Points

For any development expected to generate less than 75 vehicle trips in the development’s peak hour, the following conditions shall apply in addition to those under [Section A](#) above.

1. Driveways will be constructed to the City of Olympia Engineering Design and Development Standards, Standard Drawing 4-7, Cement Concrete Driveway.
2. Left-turn lane warrants. Left turns shall be prohibited to and/or from driveways under the following conditions:
  - a. Inadequate corner clearance (prohibit left turns to and from).
  - b. Inadequate sight distance (prohibit left turns with inadequate sight distance).
  - c. Inadequate driveway spacing (prohibit left turns to and from).

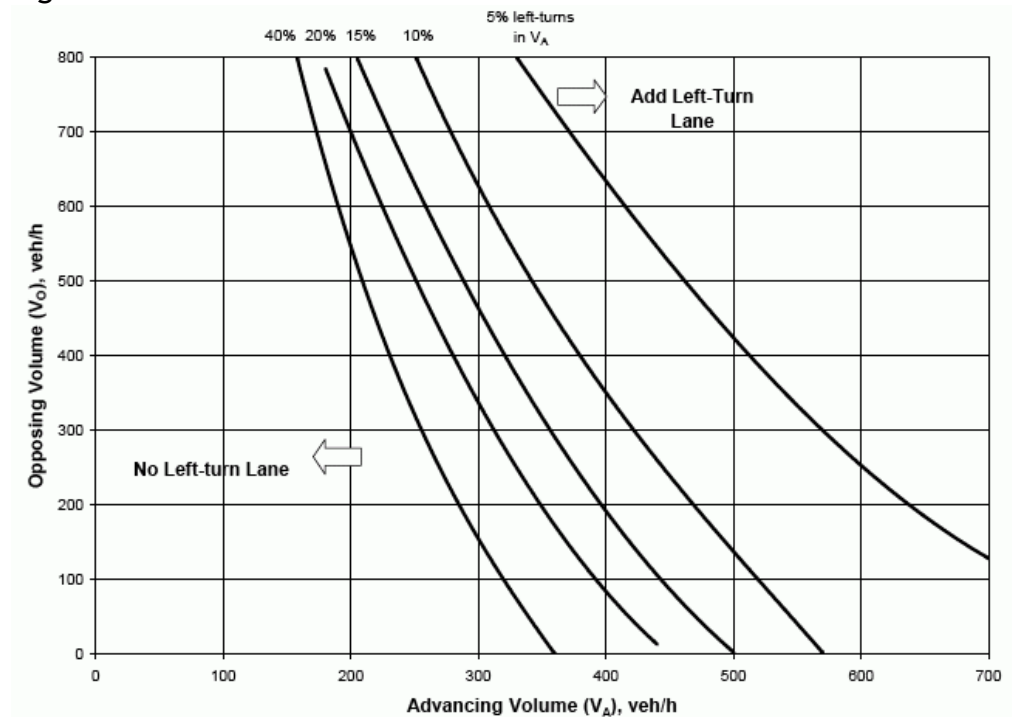
In addition, where volume warrants it, left-turning vehicles should be given a left-turn bay.

Figure 6 provides a method for determining the warrant that must be met in order to add left-turn lanes. A left-turn lane is determined to be warranted when a set percent of left turns are expected based on a relationship of the opposing volume to the advancing volume per lane. Drawing lines vertically from the advancing volume axis and horizontally from the opposing volume axis allows a determination of the warrant where the lines intersect. If the actual left-turn volume, measured in percentage of the advancing intersection of the vertical and horizontal lines, then a left turn is likely warranted. For example, if the advancing volume is 500 vehicles per hour (vph) and the opposing is 250 vehicles per hour, the lines intersect between the 5 percent and 10 percent curves at approximately 8 on the figure. Therefore, if the left-turn volume equals 8 percent or more of the advancing volume, 40 vph or more, then the left-turn is likely warranted. Left turns must be a

minimum of 5 percent of approach volume in order to use this figure. As the advancing and opposing volumes increase, the percentage of left turns required decreases. This is because as the advancing volume increases, the need to remove left-turn vehicles from the advancing volume increases and as the opposing volume increases, the harder it becomes for the left-turning traffic to cross the opposing traffic.

Channelization will also depend upon other standards such as site circulation, traffic volumes, accident history, and parking layouts.

Figure 6: Left Turn Warrant



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4-11B	Sidewalk Ramp Type C <i>Deleted</i>	2/26/2013
4-11C	Sidewalk Ramp Type D1 <i>Deleted</i>	2/26/2013
4-11D	Sidewalk Ramp Type D2 <i>Deleted</i>	2/26/2013
4-11E	Sidewalk Ramp Type E <i>Deleted</i>	2/26/2013
4-11F1	Sidewalk Ramp Type F, Sheet 1 of 3 <i>Deleted</i>	2/26/2013
4-11F2	Sidewalk Ramp, Type F, Sheet 2 of 3 <i>Deleted</i>	2/26/2013
4-11F3	Sidewalk Ramp, Type F, Sheet 3 of 3 <i>Deleted</i>	2/26/2013
4-11G	Sidewalk Ramp, Type G <i>Deleted</i>	2/26/2013
4-11H	Sidewalk Ramp, Type H <i>Deleted</i>	2/26/2013
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## Appendix 3: Monument Preservation Documentation Letter

### Monument Preservation Documentation

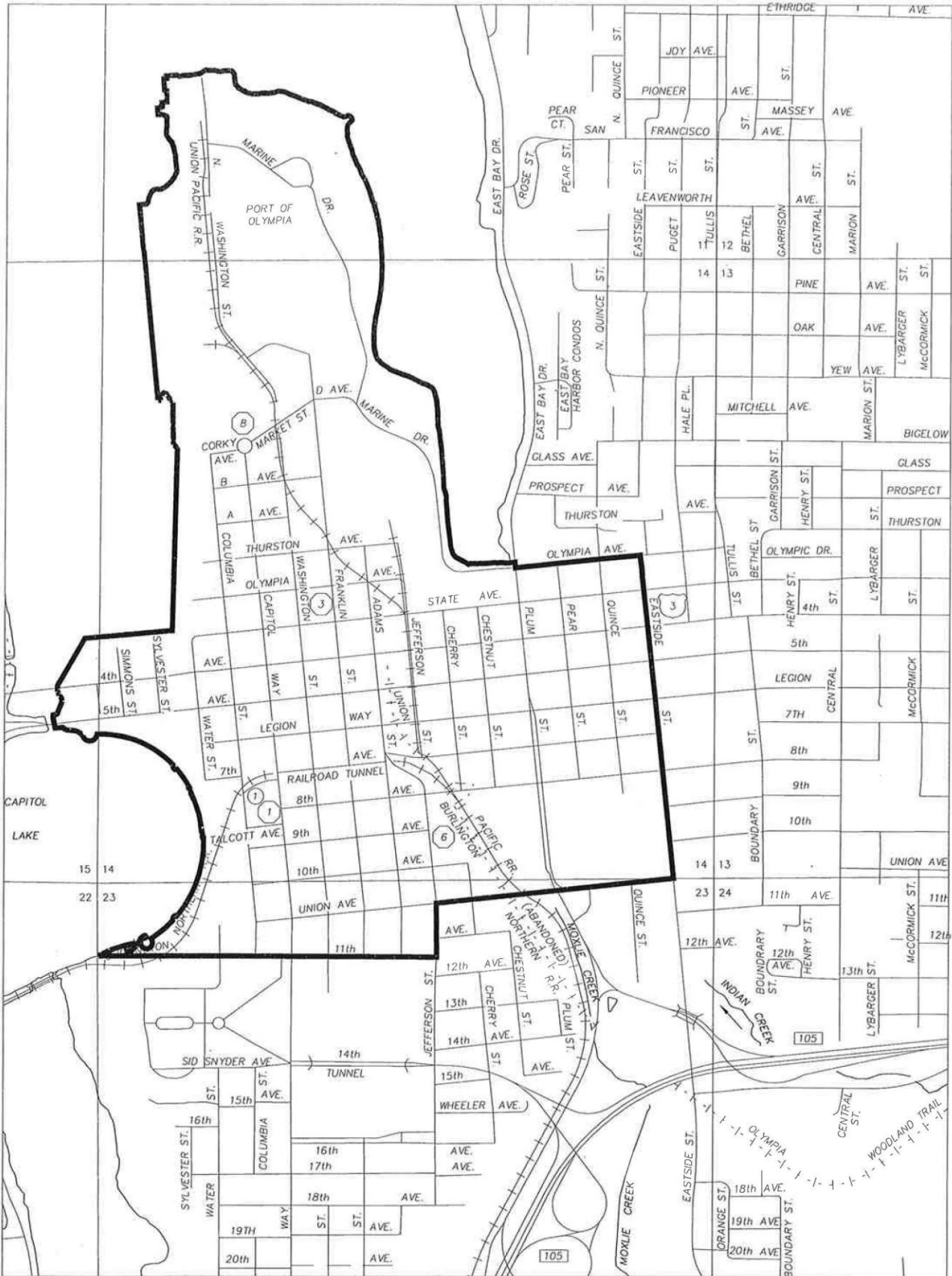
I, \_\_\_\_\_, representing \_\_\_\_\_, pursuant to  
(Licensed Surveyor) (Contractor)  
WAC Chapter 332-120 Survey Monuments-Removal or Destruction, certify that I  
have reviewed the construction plans for \_\_\_\_\_ and complied  
with the following: (Project)

1. Defined the areas where the proposed construction may disturb or destroy survey monuments.
2. Made a diligent search of survey records in Thurston County to determine possible locations and type of existing monuments.
3. Made a diligent field search within the defined construction limits at locations determined from the survey records research.
4. Made an additional diligent field search for unrecorded monuments at locations not defined from survey records but in locations where survey monuments typically exist.
5. Supplied City of Olympia with a map outlining the project boundary search area with the individual search areas being further defined indicating the type of monument found or that the monument was searched for and not found. (Map attached)
6. Each found monument has been referenced to at least 3 nearby points not likely to be destroyed with this construction. (Copies of references attached)
7. Permits have been obtained from the Department of Natural Resources according to WAC Chapter 332-120. (Copies of permits attached)

This certification is for the expressed purpose of preserving the existing location and type of survey monuments within the construction area. It is not for the purpose of verifying that these monuments mark the location of previously surveyed positions.

Signed and Sealed,

# Appendix 4: Downtown Boundaries



Appendix 5: Bicycle Facilities Map

