

## **SECTION 100 ROADWAY DESIGN**

The general design and construction requirements for the City of Puyallup shall be those contained in the Standard Specifications for Road, Bridge, and Municipal Construction (hereinafter referred to as the “Standard Specifications”), Washington State Department of Transportation and American Public Works Association, Washington State Chapter, latest edition, unless superseded or amended by the City of Puyallup City Standards for Public Works Engineering and Construction (hereinafter referred to as the “City Standards”).

### **101 General Roadway Design Criteria**

#### **101.1 Roadway Classifications**

The City of Puyallup has four (4) roadway classifications: Principle Arterial, Minor Arterial, Collector (neighborhood and commercial), and Residential Street. Roadway geometrics vary depending on roadway classification. The engineering design criteria for streets are outlined in Table 100-2 “Geometric Design Criteria” on page 100-17. Street widths and right of way widths are outlined on page 100-16 in Table 100-1 “Roadway Width Design Criteria”.

#### **101.2 Location of Streets**

The location of all streets shall conform to the current Transportation Element of the Comprehensive Plan for the City of Puyallup and the most recently adopted Transportation Plan. All proposed street systems shall extend existing streets at the same or greater width, but in no case less than the required minimum width.

#### **101.3 Cross Section**

Streets shall be constructed in accordance with City Standard Details. When an existing road is to be widened, upon approval from the Engineering Services Staff, the transverse slope of the new portion of roadway may vary from 2 percent minimum to 5 percent maximum. If the transverse slope cannot be maintained within the 2 to 5 percent limits, the existing roadway shall be removed and replaced to City Standards or overlaid with a minimum of 1½-inch HMA.

#### **101.4 Intersections**

##### **101.4.1 Intersections of Streets and Arterials**

Streets intersecting with existing or proposed public highways, major and minor arterials as shown on the City’s Functional Roadway Classification Plan shall be held to a minimum, subject to review and approval by the Engineering Division.

##### **101.4.2 Intersection Spacing**

1. Spacing between major arterials shall be approximately one (1) mile.
2. Spacing between major arterials and secondary arterials shall be approximately 1/2 mile.
3. Spacing between major/secondary arterials and collectors shall be approximately 1/4 mile.
4. Street intersection offsets or jogs with centerline offsets of less than 125 feet shall not be allowed.

5. Streets are to intersect between 90 to 85 degrees measured at centerline intersects.

#### 101.4.3 Intersection Geometry

The geometric design at intersections to achieve drainage shall meet the following requirements:

1. At the intersection of different classifications of streets (i.e. a secondary arterial with a collector), the center line slope and typical cross section should be carried through the intersection of the higher classified street with the lower classified street matching in a manner which will not interfere with the slope or cross section of the higher classified street.
2. Where the same class of streets intersect (i.e. residential with residential), the center line and slopes should be matched at the center line of the intersection with cross slopes varying through the intersection to allow drainage, unless directed otherwise by the Engineering Services Staff.

#### 101.5 Cul-De-Sacs

The design shall be in accordance with City Standard Details 01.01.15 and 01.01.16. Cul-de-sacs shall not exceed 500 feet in length measured from the centerline of the intersecting roadway to the fillet of the cul-de-sac. The radius to face of curb shall not be less than 37 feet. The radius of right-of-way shall be no less than 48 feet. Cul-de-sac streets with a paved diameter of 60 feet or more may employ elongated parking bays with the approval of the Engineering Services staff.

#### 101.6 Temporary Turnarounds and Street Ends

Where, in the opinion of the Engineering Services staff, it is desirable to provide for street access to adjoining property, proposed streets shall be extended by dedication to the boundary of such property. Such cul-de-sac streets shall be provided with a paved temporary turnaround having a roadway radius of at least 35 feet on a temporary easement. Such temporary easement shall be automatically released upon the extension and construction of said street beyond the boundary of the original subdivision. These streets shall have a type III barricade installed across the entire width of the roadway at the end of the driving surface. The words "THIS ROAD IS PLANNED TO BE EXTENDED IN THE FUTURE" shall be stenciled in 6-inch white letters on pavement approximately 10 feet from barricade in accordance with City Standard Detail 01.01.21.

#### 101.7 Alleys

Alleys shall be at least 20 feet wide and constructed in accordance with City Standard Detail 01.01.09 and 01.01.10. Alleys may be provided to the rear of lots zoned for business purposes and shall not be provided in residential blocks except where the subdivider produces evidence satisfactory to the hearing examiner or city council of the need for alleys.

#### 101.8 Sidewalks

Concrete sidewalks shall be constructed in accordance with City Standard Detail 01.02.01 or 01.02.02. Sidewalks shall be installed on both sides of streets within the public right-of-way contiguous to the property line. The following minimum sidewalk widths shall apply:

Single family residential 5 feet  
Commercial use located in residential area 8 feet  
Multi-family residential 8 feet  
Industrial areas 8 feet  
Commercial areas 8 feet

#### 101.8.1 End of Sidewalk

When new sidewalk is constructed and ends abruptly mid-block, a temporary pedestrian transition shall be constructed from the end of new sidewalk to the shoulder. If the receiving shoulder right of way is accessible to wheelchairs then the transition shall be constructed to meet all applicable State and federal standards, except that a detectable warning at the base of the transition will not be required. If the receiving shoulder right of way is not accessible to wheelchairs then a non-accessible temporary pedestrian transition constructed from the new sidewalk to the shoulder will be acceptable. All end of sidewalk pedestrian transition designs required herein shall be reviewed and approved by Engineering Services staff.

#### 101.8.2 Curb Ramps

1. Curb ramps located in city right of way shall be designed by a licensed professional engineer to meet all applicable State and federal requirements.
2. Two curb ramps shall be designed for each intersection corner except when the design engineer can demonstrate that special circumstances exist which makes the construction of two ramps impractical. In such instances a single curb ramp may be permissible at the intersection corner when approved by the Engineering Services Manager.
3. The construction of a new curb ramp in city right of way shall be matched by a receiving curb ramp located at the opposite end of the crosswalk in accordance with RCW 35.68.075.
4. When work is performed which alters a street as defined by the Public Right of Way Accessibility Guidelines, and if construction of sidewalks are required, the ramps shall be constructed to meet all applicable State and federal requirements.

#### 101.9 Curb and Gutter

Concrete curb and gutter shall be constructed in accordance with City Standard Detail 01.02.09. The minimum face of curb radii at intersections shall be 25 feet for residential streets, 35 feet for collectors and arterial streets, and at least 5 feet at the intersection of a street and alley unless otherwise determined by Engineering Services staff. Increases to these minimum values may be necessary to accommodate larger design vehicles.

#### 101.10 Driveway Approaches

1. Driveway approaches shall be constructed in accordance with City Standard Details for residential 01.02.12, 01.02.13, 01.02.14, 01.02.15 and for commercial 01.02.16, industrial 01.02.17, and public facilities 01.02.17.
2. No driveway entrance shall be wider than 30 feet unless otherwise approved by the Engineering Services staff.

3. The driveway approach within public right-of-way shall slope toward the street unless otherwise approved by the Engineering Services staff.
4. See Section 204.2.6 for additional information regarding culvert pipes for driveways.
5. The total driveway width for any one ownership on any one street shall not exceed 50 percent of the ownership on that street. Residential driveway approaches shall be a minimum of 3 feet away from a property line.
6. The sidewalk ramp at a Commercial Approach 01.02.16 and 01.02.19, or at a Residential Driveway Alternate 1 (01.02.13), shall be increased in length as necessary so that the sidewalk ramp slope does not exceed 8.3 percent, except that the sidewalk ramp length shall not be required to exceed 15 feet.
7. For proposed street construction projects where Commercial Approach 01.02.16, 01.20.19, and/or Residential Driveway Alternate 1 (01.02.13) will be utilized the design engineer shall review the proposed driveway locations relative to each other and to adjacent existing driveways so that potential ADA accessibility issues along the affected sidewalk route are resolved prior to construction.
8. Along the circumference of a residential cul-de-sac mountable curb and gutter may replace the construction of standard curb, gutter and driveway approaches when approved by the Engineering Services Manager. If mountable curb and gutter is approved at a cul-de-sac then a suitable modified driveway approach design shall be concurrently required to be submitted for approval by the Engineering Services Manager.

#### 101.10.1 Driveway Approaches onto Major/Secondary Arterials and Collectors

1. Single family residential driveways shall not access directly onto major/secondary arterials or collectors unless approved by the Engineering Services staff.
2. Driveways allowed for commercial, industrial, public facilities, and residential uses shall be combined whenever possible.
3. Driveways shall be aligned across roadway when possible.
4. Driveways shall be no closer than 300 feet for major/secondary arterials and 150 feet for collectors from the nearest intersection.
5. Minimum spacing between driveways shall be 300 feet for major/secondary arterials and 150 feet for collectors, measured between closest edge of each driveway. A reduction of these widths will be considered on a case-by-case basis. Where 150 feet separation cannot be maintained between driveways on a neighborhood collector, driveway access shall be limited to one driveway per parcel. Further subdivision of the property will necessitate a shared private access/road.

#### 101.11 Monuments

Monuments shall be installed in accordance with City Standard Detail 01.01.17. Concrete monuments shall be set at all points of intersection of streets, at angle points of curvature in each street (PCs and PTs), and at all center points of cul-de-sac heads. When streets are not centered within the right-of-way, the engineering as-built plans shall clearly show offset distance to the nearest .01 foot.

#### 101.12 Dead End Streets

1. Dead end streets shall be signed with a “Dead End” sign at the entrance to the street.

2. A street network which has only one point of ingress/egress shall have a “No Outlet” sign located at the entrance.
3. Dead end streets that are planned to be extended in the future shall have a type III barricade installed across the entire width of the roadway at the end of the driving surface. A sign with the words “THIS ROAD IS PLANNED TO BE EXTENDED IN THE FUTURE” shall be placed at the center of the barricade in accordance with City Standard Detail 01.01.21. This wordage shall also be stenciled on the road in 6-inch letters using white traffic paint.

### 101.13 Channelization and Signage

Channelization and signage shall be in accordance with the latest Manual on Uniform Traffic Control Devices (MUTCD), and/or WSDOT Standard Specifications. Plans for channelization and signage shall be on separate drawings from the street plan/profile sheets.

Contractor is responsible for paying for signs required for development and shall coordinate work with City.

#### 101.13.1 Stop Signs and Stop Bars

1. All stop sign controlled intersections with a painted crosswalk shall have a stop bar located a minimum of 4 feet in advance of the crosswalk.
2. If the intersection warrants a traffic signal, no stop signs shall be placed. All intersections with a traffic signal shall have stop bars on all approaching lanes, regardless if there is a painted crosswalk or not.
3. The City Standard width for stop bars shall be 24 inches wide. Material shall be as described in the City Standard Detail 01.03.11.
4. Stop Signs at Intersections with Major/Secondary Arterials  
Stop signs with stop bars shall be used on all residential/collector streets intersecting major arterials. The exception shall be if the street intersecting the arterial is an alley. In this case, an engineer study will be performed to determine if a stop bar with the stop sign is warranted. When the stop sign can be placed, the stop bar shall be in line with the stop sign. If due to site conditions the stop sign must be placed further back, then the stop bar shall be placed 4 feet minimum from the edge of the intersecting lane or extension of the face of curb.
5. Stop Signs at Residential Streets Intersecting with a Collector  
Stop signs shall be placed on all residential streets that intersect a collector. For new installations stop bars shall be omitted until traffic patterns have been established, and a traffic study determines if they are warranted. Existing intersections of residential and collectors shall be investigated as necessary on a case-by-case study to determine if additional visibility or a stopping guide is warranted.
6. Stop Signs Where Residential Streets Intersect Residential Streets  
Residential streets intersecting residential streets shall have a traffic study performed to determine if a stop or yield sign is necessary. Warrants shall meet the minimum warrants as depicted in the latest edition of the MUTCD. If the intersection warrants a stop sign, no stop bar shall be placed unless the traffic study determines one is necessary.

#### 101.14 Roadway Widening

When an existing road is required to be widened, or when a road is required to be extended which is to be greater in width than the existing roadway, a taper of length (L), not less than that calculated using the equations below, shall be provided at the transition point where the direction of traffic goes from the wider roadway to the narrower roadway. Applicable channelization and signage shall be provided in accordance with the MUTCD.

$L = SW$  for speeds of 45 mph or more

$L = WS^2/60$  for speeds of 40 mph or less

Where:

L = Minimum length of taper

S = Posted speed limit in mph

W = Width of offset

#### 101.15 Alleys in major plats

There may be private streets and alleys used in residential developments, subject to the following standards:

##### 1. Private Alleys

Private alleys shall be constructed in accordance with City Standard Detail 01.01.09. Private alleys may provide secondary access for up to 38 units. Private alleys shall have a maximum length of 1,000 feet between intersections with public streets. Private alleys shall have a 20 foot easement established. This easement may include access rights for public or private utility.

#### 101.16 Design Criteria Specific to Plats (major and short)

##### 101.16.1 Access/Easements

The proposed plat shall be reviewed for adequate ingress and egress to all proposed lots. Extension of streets or access rights from property line to property line of the subdivision land may be required in order that such street access may be extended in the future.

If there is other reasonable access available, the Engineering Services staff may limit the location of direct access to city arterials or other city streets. A right-of-way which is proposed to be dedicated to the City shall not be so dedicated, unless it meets City Standards. When an adjoining landowner will be obligated to construct or maintain a future road, a note to this effect shall be stated on the face of the plat.

Existing legal easements less than the minimum required width may be allowed to remain. However, additional lots shall not be served by such existing easement unless widened to the minimum required width.

##### 101.16.2 Road Reserved Areas

Where a city street or arterial may be, or is being planned for the subdivision land area, the Engineering Services staff may require that a right-of-way area be dedicated for a future street.

### 101.16.3 Lot Access

The subdivision of land into a plat shall be such as to provide access to each lot from a public or private street. Private streets may be permitted or platted in any residential or planned development subdivision, pursuant to standards specified in this code. Every subdivided property shall be served from a public dedicated street or panhandle or approved private roadway.

### 101.16.4 Panhandle Access

A lot within a subdivision may be permitted with a panhandle access, provided the panhandle shall have a minimum width of 20 feet and a maximum length of 200 feet and shall serve no more than one (1) lot. Panhandle accesses will not be allowed unless they are separated by at least one (1) lot width.

### 101.16.5 Access Serving Two or More Dwelling Units

Minimum access to all lots within a subdivision shall be provided by a dedicated, constructed, and maintained city street or private road. The Engineering Services staff shall have the authority to approve any new dedicated right-of-way and improvements within a plat and shall have the authority to approve any addition to existing dedicated right-of-way and improvements within a plat. (See Table 100-1) The authority shall be deemed to constitute an acceptance by the public of the dedication, provided the decision together with his/her finding of fact in each case is based upon the following criteria and standards as minimum conditions of approval:

\*Any dedicated public roads or private roads greater than 150' is subject to the requirement of a fire department turnaround per the Fire Code Official.

#### 1. Dedicated Public Road Serving 1-2 dwelling units

- a. Streets serving 1-2 dwelling units shall have a minimum pavement width of 15 feet with two 2½-foot gravel shoulders and a maximum length of 200 feet.
- b. Streets serving 1-2 dwelling units and with a length greater than 200 feet shall have a minimum width of 30 feet consisting of 24 feet from face of curb to face of curb, curb and gutter, fire department turnaround, and storm drainage.

#### 2. Dedicated Public Road Serving 3-4 dwelling units

- a. Streets serving 3-4 dwelling units shall have a minimum width of 30 feet consisting of 24 feet from face of curb to face of curb, curb and gutter, and a maximum length of 200 feet.
- b. Streets serving 3-4 dwelling units and with a length greater than 200 feet shall have a minimum width of 30 feet consisting of 24 feet from face of curb to face of curb, curb and gutter, fire department turnaround, and storm drainage.

#### 3. Private Road Serving 1-2 dwelling units

- a. Streets serving 1-2 dwelling units shall have a minimum width of 20 feet consisting of 15 feet of asphalt with two 2½-foot gravel shoulders, an inverted crown, and shall have a maximum length of 200 feet.

4. Private Road Serving 3-4 dwelling units
  - a. Streets serving 3-4 dwelling units shall have a minimum width of 30 feet consisting of 24 feet from face of curb to face of curb, curb and gutter, and a maximum length of 200 feet.
5. All streets, dedicated or private, as required in this manual shall be improved with a permanent street as approved by the Engineering Services staff. Improvements shall include but not be limited to, base course, permanent hard surface, and drainage control as approved by the Engineering Services staff. Sanitary sewers and water mains shall be designed and installed to serve all lots that could be served from said dedicated or private streets.
6. In addition to other standards required by this manual, the Planning Director or the Engineering Services staff may require additional standards and conditions or may modify the standards and conditions in such a manner as is necessary to:
  - a. Maintain the intent and purpose of this manual; and
  - b. Assure that a degree of compatibility shall be maintained with respect to properties and existing or potential uses within the general area; and
  - c. Preserve the public health, welfare, and safety.

## **102 Street Lighting Specifications**

Street lighting along street frontage for all subdivision, commercial, multi-family and industrial developments shall be designed and provided by the developer's engineer. The design plans shall be stamped and signed by a Washington State licensed professional civil engineer. The installation shall be in accordance with City Standard Details and the National Electric Code. The installation shall be inspected by the Washington State Department of Labor and Industries Electrical Inspection Division. The design shall meet the following design criteria.

### **102.1 30-Foot Steel Street Light Standard**

#### **1. Dimensions**

Street light standards shall provide a mounting height of 30 feet 0 inches plus or minus 6 inches with a nominal 8-foot mast arm for residential and 12-foot mast arm for commercial. When a street light is to be installed greater than 4 feet from the edge of the driving surface the street light mast arm shall be increased to a dimension that provides a minimum of a 3-foot overhang onto the driving surface. The pole and base shall be designed accordingly.

Base plate shall have slotted holes to accommodate 1-inch anchor bolts and 1½-inch bolt circle with minimum clearance of 1 inch between bolt and pole.

Handhole center shall be located approximately 12 inches from the base plate, rotated 90 degrees from mast arm on the side opposite of oncoming traffic.

#### **2. Strength**

Poles shall meet all strength requirements of AASHTO for 90 mph isotach when used with a luminaire weighing 48 pounds with an E.P.A. of 1.1 square feet.



### 3. Finish

The poles and all hardware shall be hot dipped galvanized, minimum 3 mil thickness. All attaching bolts and screws that are not galvanized shall be stainless steel. Mast arm attachment shall be secured by three (3) bolts. Each pole shall have handhole (with cover), ground lug, and removable pole cap. Each city pole shall have a black 4" to 6" letter "C" stenciled on the roadway side of the pole 16" above grade.

#### 102.2 Anchorage

Poles shall be anchored with four (4) bolts, 1- x 36- x 4-inch #8 UNC with hot-dipped galvanizing after threads are cut. Galvanized area shall extend from threaded end for a minimum of 12 inches. Bolts shall be provided with two (2) galvanized nuts and flat washers for leveling. Shims will not be allowed. A non-shrinking grout shall be installed with one ½ inch drain hole under the base plate after the engineer has approved the pole installation.

#### 102.3 Conduit

All conduit shall be buried a minimum of 24 inches deep unless otherwise specified. All roadway crossings shall be rigid metallic or schedule 80 PVC. Conduit shall conform to Section 9-29 of WSDOT Standard Specifications. Schedule 40 PVC may be used in locations other than roadway crossings.

#### 102.4 Junction Boxes (when required)

Junction boxes shall be installed at locations as shown on the plans. They will conform to WSDOT Standard Plan J-11a. They shall be level with the sidewalk grade and firmly bedded to prevent future settling. The cover shall be galvanized and grounded. The letters "LT" and "ELECTRIC" shall be etched on the cover.

#### 102.5 Conductors, Wires, etc.

Wire conductors for underground feeder runs and for circuitry from the in-line fuse in the poles to the junction box shall be 600-volt, single conductor stranded copper and insulated with USE grade polyvinyl chloride compound or approved equal in accordance with the Insulated Power Cable Engineer's Association Specifications, minimum size AWG 8. An AWG 8 green insulated stranded copper wire will be run from the service ground rod to the safety ground lug on each pole. Feeders shall be sized in accordance with the National Electrical Code. Wires inside pole between ballast and in-line fuses shall be Rome 2C AWG 10 stranded pole and bracket wire or approved equal. Splices will be allowed in junction boxes and pole bases only. No more than 2 conduits will be allowed inside street light pole.

#### 102.6 Fuses

Luminaire fusing and electrical connections at light standard bases shall conform to Section 9-29.7 of the WSDOT Standard Specifications and as shown on the Uniform Luminaire Wiring Detail in the Appendix. In-line fuse holders shall be SEC model 1791-SF with FNM-5 fuses or approved equal.

### 102.7 Electrical Services

1. All electrical services shall be Tesco service cabinet catalog #26-000, skyline service cabinet series 47700-p2 or approved equivalent.
2. Contractor is to verify that detail specifications and equipment locations meet with serving utility's requirements and City of Puyallup engineering requirements.
3. Conduit size and quantity as required by plans of N.E.C.
4. It shall be the contractor's responsibility to coordinate the installation of the street light system with all utilities, private and public, to avoid schedule and location conflicts.
5. For residential street lighting the contractor shall be responsible to install one meter for the plats lighting system per Puget Sound Energy requirements. On very large plats Puget Sound Energy may require more than one meter.
6. Base of service cabinet shall be sealed with silicone or approved equivalent and have a half inch drain hole.

### 102.8 Luminaires and Lamps

One (1) of the following General Electric flat lens cobra heads shall be used as indicated on plans:

M2AC10S3M2GMC32 = 100 Watt, 240V (Residential)

M2AC15S3M2GMC32 = 150 Watt, 240V (Signals)

M2AC20S3M2GMC32 = 200 Watt, 240V (Arterials)

The City will energize the streetlight system when a home is occupied adjacent to the street light or immediately across the street. At the developer's request, any or all streetlights may be energized prior to the occupancy of homes. However, the developer shall assume full responsibility for electrical power costs and repair costs due to damage from vandalism.

### 102.9 Photo cells/shorting caps

Each luminaire shall be supplied with one (1) photo cell and one (1) shorting cap, to be installed at the direction of the City of Puyallup Signal Technician. Photo cell shall be Fisher Pierce PE Cell model # 7790B.

### 102.10 Safe Wiring Labels

The contractor is advised that Safe Wiring Labels required by Labor and Industries shall apply on this project. (electrical inspection sticker).

### 102.11 Guarantee

The contractor shall surrender to the City of Puyallup any guarantee or warranty acquired by them as a normal trade practice in connection with the purchase of any materials or items used in the construction of the illumination.

### 102.12 Location

In general, street lights shall be located on the highest corner of the intersection. One street light will be placed at all new intersections. All new signal poles shall be equipped

with a luminaire arm. All other spacing of streetlights will be determined by the adjacent roadway classification:

**PRINCIPAL ARTERIALS (POSTED SPEEDS 35-45 MPH; 20,000+ADT)**  
 Commercial & Industrial Land Use Categories 150 ft  
 Residential Land Use Categories 150 ft

**MINOR ARTERIALS (POSTED SPEEDS 35-45 MPH; 8,000-20,000 ADT)**  
 Commercial & Industrial Land Use Categories 150 ft  
 Residential Land Use Categories 300 ft

**COMMERCIAL COLLECTOR (POSTED SPEED 30 MPH; 2,500-8,000 ADT)**  
 Commercial & Industrial Land Use Categories 150 ft

**NEIGHBORHOOD COLLECTOR (POSTED SPEED 30 MPH; 1,200-3,500 ADT)**  
 Residential Land Use Categories 300 ft

**LOCAL STREETS (POSTED SPEED 25 MPH; UP TO 1,500 ADT)**  
 Residential Land Use Categories 300 ft

Notes:

1. Distances are measured along roadway centerline typical. Pole placement is staggered, alternating sides of the roadway if possible.
2. All street light poles shall be per City Standard Detail 01.05.01 through 01.05.09.
3. Local streets shall have one street light at all intersections, at the fillet of cul-de-sac and every 300 ft.
4. Light poles located within the Pedestrian Oriented Commercial and Fair zones shall be painted hunter green. Poles shall be equipped with globe style luminaires: Union Metal Nostalgia series, design NL 109, with 70 watt high pressure sodium lamps mounted 12 feet above ground to the bottom of the bracket.
5. Where roads divide two different zone classifications, the commercial/industrial zone shall take precedence, unless otherwise approved by the Engineering Services staff.
6. All proposed lighting plans shall be submitted and approved by Engineering Services staff prior to installation. Plans shall be submitted on 24" x 36" paper and stamped by a licensed Professional Engineer in the State of Washington.
7. Street lights shall be located 24" minimum from face of curb unless directed otherwise by the Engineering Services Staff.
8. If a street changes direction at sufficient angle and is a substantial distance from another light location as determined by the Engineering Services staff an additional light may be added.
9. Street lights are considered traffic safety items, and shall be completed and energized prior to final plat or occupancy approval. Traffic safety shall mean both vehicles and pedestrian safety.
10. Street lights are not intended to light private property nor provide home security.

102.13 Installation

It shall be the contractor's responsibility to coordinate the installation of the street light system with all utilities, private and public, to avoid schedule and location conflicts. The contractor shall provide written permission from Puget Sound Energy for the electrical service location and a copy of the load calculations to the City of Puyallup Engineering

Technician. The contractor shall contact the City at (253) 841-5593 when the light is ready to be energized and the City will contact Puget Sound Energy to set up an account.

#### 102.14 Meter

For residential street lighting the contractor shall be responsible to install one meter for the plats lighting system per Puget Sound Energy requirements. On very large plats, Puget Sound Energy may require more than one meter.

### **103 Roadway Plan Requirements**

The plans for street design shall conform to the requirements of Section 2.0 herein. The following requirements shall also be shown on the plans where applicable.

#### 103.1 Road and Storm Plans:

- Plan and profile views per Section 2.2
- All existing trees 6 inches in diameter or larger, which trees are proposed to be removed, and which are to remain
- Existing and proposed contours at 2-foot intervals
- The fill and/or excavation quantities in cubic yards
- The type of fill material and compaction requirements
- State whether or not the fill material will be placed upon native or stripped vegetation.
- Cross sections at 200-foot-minimum intervals showing the fill/grading shall be shown on the plans through all properties, and 30 feet beyond the property lines. Scale shown shall be consistent with the requirements of Section 2.1.9.
- Limits of grading
- Street names
- Center line bearings
- Center line/baseline stationing
- Center line elevations at 50-foot intervals, except as otherwise stated
- Where transverse slope (crown) varies from 3 percent, include gutter line elevations at 50-foot intervals, and the beginning, end, and other critical locations throughout the duration of slope variations (i.e., PCs, PTs, BVCs, EVCs, and slope transition changes).
- Centerline grade shall be in percentage (%).
- Horizontal curve datum at center line
- Vertical curve datum at center line
- Intersection gutter line elevations at 1/4 points and right-of-way curve
- Intersection elevation datum at 1/4 points of radii
- Accurate locations of monuments at all center line intersections, cul-de-sacs, PCs, PTs, and PRCs
- Location, length, width of sidewalks, and driveways
- Length, type, and location of curb and gutter
- Wheelchair ramp locations
- Right-of-way and width; lot/subdivision lines and street addresses
- Right-of-way radii
- Curb-to-curb pavement width
- Mailbox design and/or placement/replacement
- Street landscaping
- Standard street construction notes
- Legend (complete for existing and new)
- Storm drainage system

- Height and profile of existing or proposed retaining structures
- Delineation of critical areas
- Measures for protection of trees and/or landscaping required to be retained
- Utility locations (new and existing) for:
  - Water system
  - Sanitary Sewer System
  - Gas
  - Telephone
  - Power
  - Cable TV
  - Address any horizontal or vertical utility conflicts
- For residential street lighting the contractor shall be responsible to install one meter for the plat lighting system per Puget Sound Energy requirements. On very large plats, Puget Sound Energy may require more than one meter.

103.2 Street Light Plans:

- Street light layout plans shall be on separate drawings from the street plan/profile sheets. The final locations shall be determined by the Engineering Services Staff after the City receives a copy of the Puget Power transformer layout design drawings. Street light bases shall be located 36 inches from face of curb to center of light standard bolt circle.
- Street light disconnects shall be located near the power transformers.
- Street light conduit for wiring shall be located within the utility easement for power, gas, telephone, and cable TV wherever possible.
- Street light: location, type, height, and wattage
- Service cabinets: location and type
- Conduits and wire: location, type, size, and length
- Junction boxes: locations and types

103.3 Channelization and Signing Plans:

- Incorporated with “Street Light Plans”
- Lane markers: locations and types
- Pavement markings: locations and types
- Signs: locations, types, and mountings
- Painted street curbs

103.4 Signalization Plans:

- Separate detailed plans required
- Pole base locations
- Video detection: camera mounting and detection zone location
- Conduit location
- Details of traffic signal system to be reviewed and approved by the City Traffic Engineer
- Location of power source
- Refer to Traffic Signal Design Manual, Appendix D, for complete information.

## 104 Roadway Plan Notes

The following notes shall be shown on the plans.

### **ROADWAY NOTES:**

1. All work in City right-of-way requires a permit from the City of Puyallup. Prior to any work commencing, the general contractor shall arrange for a preconstruction meeting at the Development Services Center to be attended by all contractors that will perform work shown on the engineering plans, representatives from all applicable Utility Companies, the project owner and appropriate City staff. Contact Engineering Services to schedule the meeting (253) 841-5568. The contractor is responsible to have their own approved set of plans at the meeting.
2. After completion of all items shown on these plans and before acceptance of the project, the contractor shall obtain a "punch list" prepared by the City's inspector detailing remaining items of work to be completed. All items of work shown on these plans shall be completed to the satisfaction of the City prior to acceptance of the water system and provision of sanitary sewer service.
3. All materials and workmanship shall conform to the Standard Specifications for Road, Bridge, and Municipal Construction (hereinafter referred to as the "Standard Specifications"), Washington State Department of Transportation and American Public Works Association, Washington State Chapter, latest edition, unless superseded or amended by the City of Puyallup City Standards for Public Works Engineering and Construction (hereinafter referred to as the "City Standards").
4. A copy of these approved plans and applicable city developer specifications and details shall be on site during construction.
5. Any revisions made to these plans must be reviewed and approved by the developer's engineer and the Engineering Services Staff prior to any implementation in the field. The City shall not be responsible for any errors and/or omissions on these plans.
6. The contractor shall have all utilities verified on the ground prior to any construction. Call (811) at least two working days in advance. The owner and his/her engineer shall be contacted immediately if a conflict exists.
7. Any structure and/or obstruction which requires removal or relocation relating to this project, shall be done so at the developer's expense.
8. Monuments shall be installed at all street intersections, at angle points, and points of curvature in each street. All boundary monuments must be installed according to the Washington State subdivision laws.
9. Curb and gutter installation shall conform to City Standard Detail 01.02.09.
10. Sidewalks and driveways shall be installed as lots are built on. Sidewalks and driveways shall conform to City Standard Detail 01.02.01, 01.02.02 and 01.02.12. If asphalt is damaged during replacement of curb and gutter, the repair shall conform to City Standard Detail 01.02.10.

11. The surrounding ground (5 feet beyond the base) for all power transformers, telephone/TV pedestals, and street light main disconnects shall be graded to a positive 2 percent slope from top of curb.
12. Signage and traffic control devices are safety items and shall be installed prior to issuance of any certificate of occupancy or plat approval. However, in larger developments, exact locations of stop and yield signs may need to be determined after full buildout when traffic patterns have been established. In this case, contractor shall provide indicated "City-placed" signs, signposts, and brackets to the City sign specialist (253) 841-5471 for later installation by the City. All signage shall be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD).
13. Prior to any sign or striping installation or removal the Contractor shall contact the City sign specialist (253) 841-5471 to arrange for an on-site meeting to discuss placement and uniformity.
14. New or revised stop signs or yield signs shall be advance warned using the procedure outlined in the MUTCD. Advance warning signs and flags shall be maintained by installer for 30 days and then removed.

## **105 Illumination General Notes**

The following notes shall be shown on the plans.

### **ILLUMINATION NOTES:**

1. All work shall be in accordance with City of Puyallup public works standards and WSDOT standards and specifications.
2. The locations of features shown are approximate and shall be verified by the contractor prior to construction start.
3. Utility locations are approximate and shall be verified in the field by the contractor prior to any illumination work.
4. All work shall be consistent with utility agency requirements. The contractor shall coordinate with affected utility agencies throughout the project. The contractor shall be responsible for any damage to utilities.
5. Conduit locations are shown for illustrative purposes. Actual locations shall be determined by the contractor in the field.
6. Contractor shall coordinate with the city signal/illumination technician at 253.405.4390 prior to construction.
7. The location of all conduits, junction boxes, poles, and cabinets shown on this plan may be adjusted in the field to avoid conflicts and meet ADA requirements. All final locations shall be approved by the city traffic engineer prior to construction.

8. Junction box locations shown are for illustrative purposes only. Junction boxes shall be field located by the contractor with direction from the city.
9. Contractor shall adjust junction box lids to be flush with top of sidewalk.
10. Any new junction box which will be located within or partially within sidewalk shall have lids and frames with a non-slip coating on the top surface equal to MEBAC1 or SLIPNOT#3.



**Table 100-1  
Roadway Width Design Criteria**

SHORT PLAT	MAJOR PLAT	ALLEYS	CUL-DE-SACS
<p><b><u>PUBLIC (Right-Of-Way)</u></b>            * 1-2 D.U.: 200' length, maximum            20' r-o-w width: 15' asphalt with two 2-1/2' gravel shoulders</p> <p>1-2 D.U.: Greater than 200' length            30' r-o-w width: 24' width face of curb to face of curb, curb and gutter, fire dept.            Turnaround, storm drainage required</p> <p>* 3-4 D.U.: 200' length, maximum            30' r-o-w width: 24' width face of curb to face of curb, curb and gutter required</p> <p>3-4 D.U.: Greater than 200' length            30' r-o-w width: 24' width face of curb to face of curb, curb and gutter, fire dept.            Turnaround, storm drainage required</p> <p><b><u>PRIVATE (Tract)</u></b>            * 1-2 D.U.: 200' length, maximum            20' wide tract: 15' asphalt with two 2-1/2' gravel shoulders, inverted crown required</p> <p>* 3-4 D.U.: 200' length, maximum            30' wide tract: 24' width face of curb to face of curb, curb and gutter required</p>	<p><b><u>RESIDENTIAL</u></b><sup>(1)(2)</sup>            2-4 D.U.: 300' length, maximum            30' right-of-way: 24' width face of curb to face of curb, curb and gutter, Sidewalks required</p> <p>If greater than 200' length, fire dept. Turnaround required.</p> <p>5-120 D.U.: 50'-60' right-of-way            28' width: face of curb to face of curb, curb and gutter, sidewalks, cul-de-sac Required</p> <p>Greater than 120 D.U.: 50'-60' right-of-way; 34' width face of curb to face of curb</p> <p><b><u>COLLECTOR</u></b><sup>(1)(2)</sup>            Right-of-way: 60' width            Street width: 36'-44'            Requirements: site specific</p> <p><b><u>SECONDARY ARTERIAL</u></b>            Right-of-way: 60'-100' width            Requirements: site specific</p> <p><b><u>MAJOR ARTERIAL</u></b>            Right-of-way: 80'-150' width            Requirements: site specific</p>	<p><b><u>PUBLIC</u></b>            Commercial: 20' width            Secondary Access only</p> <p>Primary Access may be allowed on public alleys. Each request will be examined individually. May require alley improvements to be made by applicant to nearest public road.</p> <p>Residential: Site Specific</p> <p><b><u>PRIVATE</u></b>            1,000' length, maximum            20' width</p> <p>For Secondary Access serving up to 38 units or Primary Access serving up to 8 units</p>	<p><b><u>RESIDENTIAL</u></b>            500' length (maximum) measured from intersection to fillet of sac            50' right-of-way            Turnaround: 37' radius to face of curb, 48' radius to right-of-way</p> <p><b><u>INDUSTRIAL</u></b>            Requirements for classifications other than residential shall be site specific based on largest truck anticipated to travel on road.</p>

\* Any dedicated public roads or private roads greater than 150' is subject to the requirement of a fire department turnaround per the Fire Code Official.

Notes: (1) Right-of-way designated as residential access shall be provided with a 10-foot private utility easement and a 15-foot city utility easement reserved within and along front and rear and a 2-1/2-foot private and city utility easement along the side property lines of all lots abutting said residential access streets.

(2) Pavement width may be wider if roadway has been identified as a bike route in the City's Comprehensive Plan.

**Table 100-2  
Roadway Geometric Design Criteria**

	<b>MAJOR/SECONDARY ARTERIAL</b>			<b>COLLECTOR</b>			<b>RESIDENTIAL</b>	
<b><u>Design Speed(mph)</u></b>	55	50	45	45	40	35	35	
<b><u>Posted Speed</u></b>	45	40	35	35	30	25	25	
<b><u>Horizontal Curvature</u></b>								
D maximum (degrees)	6.7°	9.6°	13.5°	13.5°	19.1°	25.5°	25.5°	
R minimum (ft)	850	600	425	425	300	225	150	
Tangent Length (ft) <sup>(1)</sup>	Minimum tangent length between reverse curves is dependent on superelevation runoff and entering sight distance. If none of these elements apply, the following minimum tangent lengths shall be used for Major/Secondary Arterials and Collectors: (2 lanes, 250 feet) (3 lanes, 300 feet) (4 lanes, 375 feet) (6 lanes, 450 feet)						100	
<b><u>Vertical Curvature</u></b> <sup>(2)</sup>								
Length of crest and sag based on stopping sight distance specified for design speed								
Maximum Grade	(Major)	5.0%	5.0%	5.0%	10%	10%	10%	10%
	(Sec.)	8.0%	8.0%	8.0%				
Minimum Grade		0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Maximum Superelevation		5.0%	5.0%	5.0%	*	*	*	*
<b><u>Cross Slope</u></b>								
City Standard		3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Min. Cross Slope <sup>(3)</sup>		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Max. Cross Slope <sup>(3)</sup>		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Stopping Sight Distance (ft) <sup>(4)</sup>		550	475	400	400	325	250	250
Entering Sight Distance (ft) <sup>(5)</sup>		530	470	415	415	350	300	300
<b><u>Lane Width (ft)</u></b>		11 (12 for turning lane)			11 (12 for turning lane)			9
<b><u>Curb Radii (ft)</u></b> <sup>(6)</sup>		35			35			25

**Notes:**

- (1) When it can be shown that the minimum tangents would be impractical and where there would be no impact on traffic safety standards, the Engineering Services Staff may authorize modification of the requirement.
- (2) All changes in grade shall be connected by vertical curves of a minimum length of 200 feet unless otherwise specified by the engineering department.
- (3) All new roads shall be constructed with the city's standard cross slope. Existing roads to be widened may vary cross slope between minimum and maximum slopes as necessary with approval from the city engineer.
- (4) Stopping sight distance based on: design speed, object height of 0.5 feet and a driver's eye height of 3.5 feet.
- (5) Entering sight distance based on posted speed and shall apply to all intersections and driveways, commercial or residential.
- (6) When different classifications of streets intersect, the lower classification curb radii shall be used.

\* Superelevation is not allowed in these street classifications.