

## **DIVISION 4: STREET**

### **4.1 DESIGN CRITERIA**

#### **A. APPLICABILITY**

1. These Design Standards shall govern the construction and upgrade of all public and private streets in the City of Dundee and applicable work within its service areas.
2. This section supplements OSSC Standard Specifications
3. Conditions not covered by this standard are to be specifically reviewed and approved by the City.
4. These Design Standards shall be the minimum allowable standards for any street within the City limits. Streets under the jurisdiction of ODOT or Yamhill County may have additional requirements and require the governing agency's approval prior to construction.

#### **B. GENERAL REQUIREMENTS**

1. All materials and streets shall be designed with a minimum practical design life of not less than 20 years.
2. All lots must be provided with legal access to a public or private street, conforming to the requirements of these Design Standards, prior to or concurrently with the development of the property. This shall generally be interpreted to mean that permanent streets and associated improvements, including but not limited to paving, curbs, non-deferred sidewalks, street lights, storm drains to drain the street improvements, etc., shall be provided for existing lots of record at the time development occurs and for new legal lots of record created by a major or minor partitioning or subdivision of land at the time of partitioning or subdivision.
3. All public improvements shall be designed and constructed in such a manner as to be readily accessible to and usable by individuals with disabilities as per the requirements of the Americans with Disabilities Act (ADA).

#### **C. STREET CLASSIFICATIONS AND TYPICAL SECTIONS**

1. The classification of arterials, collectors and residential roadways are established by the Dundee Transportation System Plan (TSP). Industrial and commercial streets are established by the surrounding land use designation. Refer to the Dundee tsp for streets designation and cross-sectional requirements.
2. Additional pavement and right-of-way width may be required to accommodate turning lanes, parking and bike lanes.
3. The number of travel/turn lanes for collector streets shall be determined by the volume of traffic. The City may require additional turning lanes where required by public works or require a traffic engineer's report evaluating the need for additional turning lanes.

## D. SURFACING REQUIREMENTS

1. The minimum pavement section for public streets shall conform to the following requirements. These sections are based upon subgrade compacted to 95% of AASHTO t-180 (modified proctor).

Street Classification	AC pavement Thickness (Inch)	Base Rock Thickness (Inch)
Arterial	4	15
Collector	4	12
Commercial/Industrial	4	15
Local Residential	3	10
Cul-De-Sac (Residential)	3	9

2. The City reserves the right to require an engineer-designed pavement section in lieu of the standard section. This will typically be required for streets for which the City Engineer has reason to suspect unsuitable soil conditions, high percentage of truck traffic, overlays proposed, or any other conditions that may significantly affect the pavement structure design.
3. Unless otherwise approved by the City Engineer, pavement designs shall be based on AC pavement conforming to OSSC Section 00744 (asphalt concrete pavement), Level 2 unless otherwise required by the City Engineer.

## E. OVERLAYS

1. Overlays shall be designed by a professional engineer registered in the State of Oregon experienced in pavement design and shall be designed with a minimum practical design life of not less than 20 years.
2. Unless otherwise approved by the City Engineer, testing of the existing pavement shall include the following as a minimum:
  - a. Coring of the street at maximum 50 foot intervals to establish the thickness and condition of existing pavement and aggregate base
  - b. Non-destructive falling weight deflectometer tests on the existing pavement proposed for overlay.
3. AC pavement overlays that include non-woven fabric shall be specifically designed for use with AC pavement. Overlay fabric shall be in accordance with the most current OSSC specifications, or approved equivalent. Hot oil tack coat (PBA-5 or approved equivalent) shall be used prior to placement of the overlay fabric. Use of emulsion tack coats shall be prohibited.
4. The standard minimum overlay thickness shall be 2-inches. In no case shall the overlay thickness be less than 1½ inches. This minimum thickness shall be increased as necessary to provide the required cross slopes, with smooth transitions between all variations in cross slope.

5. Sections which exhibit deflection or alligator cracking or which have otherwise failed shall be excavated and replaced prior to the overlay. Base rock and AC pavement repair thicknesses shall match standard section thicknesses or existing section, whichever is greater. Cracks greater than 1/8-inch wide shall be cleaned out and filled with an asphalt emulsion slurry and sand, or other method approved by the City Engineer. All crack sealing, skin patching and plugging of dig out areas must be approved by the City Engineer prior to the placement of the final fabric and overlay.
6. Unless otherwise approved by the City Engineer, all existing manholes, valve boxes and other structures shall be raised to grade before, or during, the overlay. Structures raised to grade following placement of the overlay shall have the pavement saw cut around the structure as required by the City Engineer and a PCC concrete patch placed around the structure.

**F. HORIZONTAL ALIGNMENT**

1. Street centerline alignments shall be parallel with the centerline of the right-of-way.
2. Unless required to match curvature of existing rights-of-way, horizontal curve radii shall be to an even 5 feet, and shall meet the following minimum requirements:

<b>Table 4.2: Minimum Horizontal Curve Radii</b>	
Street Classification	Minimum Horizontal Curve Centerline Radius
Arterial	300 Feet
Collector	200 Feet
Commercial/Industrial	250 Feet
Local Residential	200 Feet
Cul-De-Sac (Residential)	160 Feet
Note: Horizontal Curve Lengths Shall Conform To The Minimums Outlined Herein, Or The Length Required By AASHTO For The Posted Speed, Whichever Is Greater.	

**G. SURVEY MONUMENTATION**

1. The centerline of all street right-of-way shall be monumented in accordance with ORS 92.060 Section (2) and/or ORS 209.155 Section 2 before the City shall accept a street improvement. Monuments shall be set under the direction of a registered professional land surveyor. A record of survey must then be filed in compliance with ORS 209.250 and any additional requirements set forth by the City.
2. Survey monuments within the paved street improvement areas shall be set flush with the finish pavement surface with 2-inch aluminum caps.
3. The following centerline monuments shall be set as a minimum:
  - a. All centerline - centerline intersections
  - b. The centers of all cul-de-sacs.
  - c. Curve points in accordance with ORS 92.06 and 209.15.
4. All public utilities within the right-of-way shall be placed in positions that does not interfere with centerline monumentation.

**H. VERTICAL ALIGNMENT & STREET GRADE**

1. Street grades shall be designed to allow drainage to the curb areas within the public right-of-way.
2. Streets intersecting with a greater functional classification street or streets intended to be posted with a stop sign shall provide a 20 foot landing, measured from the curb line of the intersecting street, averaging five percent (5%) or less.
3. Street grades shall not exceed the following unless approved in writing by the City Engineer:
  - a. Arterials – 6%
  - b. Collectors – 10%
  - c. All others – 12%
  - d. Longitudinal street gradients shall be 0.4% minimum along the crown and gutter flow line.
  - e. At street intersections, the crown of the major (higher classification) street shall continue through the intersection. The roadway section of the minor street will flatten to match the longitudinal grade of the major street at the projected curb line.
  - f. Grade changes of more than one percent (1%) shall be accomplished with vertical curves. Vertical curve K-values shall conform to the values listed below. The vertical curve K-value shall be defined as the length of the vertical curve divided by the algebraic difference between tangent street grades ( $k=l/a$ ). This table assumes that street lighting exists. The City Engineer may require a higher K-value for sag vertical curves if the roadway will not be lighted.

**Table 4.3: Design Control For Vertical Curves**

Design Speed Mph	Crest Vertical Curve, Minimum K-Value	Sag Vertical Curve, Minimum K-Value
20	7	9
25	12	13
30	19	19
35	29	26
40	44	34
45	61	44

Source: American Association of State Highway and Transportation Officials, A Policy of Geometric Design of Highways and Streets 2001, Fourth Edition.

**I. CROSS SECTIONS AND CROSS SLOPES**

1. GENERAL
  - a. Street cross-slopes shall be between two percent (2%) and five percent (5%).
  - b. Symmetrical street cross sections are preferred.
  - c. Off-set crown cross sections are acceptable only where required due to unusual topographic conditions and/or to match existing facilities. Off-set crowns shall not exceed 12 inches between the high and low curb.

- d. Shed cross-sections are not permissible for any public street without specific approval from the City Engineer.
- e. See Dundee Standard Details 401-403 for typical cross sections.

## 2. SUPERELEVATION

- a. Superelevations shall be prohibited unless approved by the City Engineer.
- b. If approved by the City Engineer, superelevations shall be designed per ODOT's Highway Design Manual.

## J. TRANSITIONS

1. Street width transitions from a narrower width to a wider width shall be designed with a 10:1 taper. Delineators, as approved by the City, shall be installed to mark the edges of the transition.
2. Street width transitions from one width to a narrower width, or lane alignment transitions shall be designed with the length of transition taper as follows:

$$L = S \times W$$

Where L = minimum length of taper (feet)

S = designated speed (mph)

W = ep to ep offset width (feet)

3. Delineators, as approved by the City, may be installed to define the configuration. Maximum spacing of delineators shall be the numerical value of the design speed, in feet (i.e. 35 foot spacing for 35 mph).
4. In situations where a tapered transition cannot be provided, a barricade shall be installed at the end of the wider section of the street and a taper shall be appointed and delineated as approved by the City. The barricade shall conform to MUTCD standards.

## K. CURB & GUTTER

1. Cement concrete curb or curb and gutter will be used for all street edges for each street classification unless otherwise approved by the City Engineer. All curb or curb and gutter will be constructed of commercial concrete.
2. The standard curb for City streets shall be 24-Inch curb and gutter for all road classifications, per Oregon Standard Drawing RD700.
3. A minimum of two curb weep holes, 3-inches in diameter, shall be provided for each lot.
4. All new curbing shall be stamped to mark where each water, sanitary sewer or storm drain services lateral crosses the curb line. The curbs shall be marked on the top of the curbs with an imprinting stamp a minimum of 2-inches high. The impression for a water service shall be the letter "W", sanitary sewer service shall be the letter "S" and storm drain service shall be the letter "D".
5. Street curbs shall be imprinted with street names at intersections.

## **L. SIDEWALKS**

1. Sidewalks shall be provided on both sides of all streets for all road classifications unless otherwise specified within an approved plan or by the City Engineer.
2. Sidewalks will be provided setback from the roadway curb whenever possible. Curbside sidewalks will only be allowed on a case by case basis.
3. Sidewalks shall be constructed of concrete, and shall be a minimum of 5 feet wide when setback from the roadway and 6 feet wide when adjacent to the roadway, unless otherwise required by the Dundee TSP, capital improvement plan or area specific master plan.
4. Sidewalks shall be a minimum of 4-inches thick except at driveway crossings, which shall be a minimum of 6 inches thick.
5. Drain pipe shall be provided under all sidewalks to connect to all curb weep holes.
6. Handicap access ramps shall be located so as to avoid conflict with storm drain catch basins.
7. Handicap access ramps shall conform to current PROWAG Standards and shall be provided at all corners of intersections where crossing is permitted and at the ends of all sidewalks unless otherwise approved by the City Engineer.
8. Sidewalks shall be designed with adequate clear space conforming to current PROWAG Standards at all street furnishing and appurtenance locations. Additional right-of-way (or easement) may be required to either relocate the obstruction or widen the sidewalk.
9. The City may, at their discretion, require the installation of special sidewalk surfacing for new public sidewalks. The City will provide stamps for contractor use.
10. Crosswalks shall only be placed at intersections and are required at the following locations:
  - a. Those locations adjacent to and along established pedestrian routes to and from a school.
  - b. Locations adjacent to public parks, community centers, libraries, and other high use public facilities.
  - c. Locations where accident records, sight obstructions and/or pedestrian volume warrants the installation.
  - d. Locations where significant numbers of handicapped or senior citizens cross a street.
11. Crosswalks shall be marked (striped) only at crossings that are protected by a traffic signal, or stop sign, or at other locations recommended by the City Engineer or required by the City Council.
12. Pedestrian crosswalks shall not be located on arterial roads or roads with a speed limit greater than 35 mph unless in conjunction with signalization or as approved by the City Engineer.

**M. BIKEWAYS**

1. Bikeway locations shall be determined by the City. Bikeway facilities shall meet the requirements of this document and the AASHTO publication, Guide for Development of New Bicycle Facilities, as amended and adopted by the Oregon Department of Transportation.
2. Structural sections of bikeway facilities on streets shall conform to that of the street or be integral with the curb. Bikeways not within a street shall be constructed upon compacted subgrade that has been sterilized if an asphaltic concrete bikeway, to one of the following pavement section designs:
  - a. 4-inches of asphalt concrete over 2-inches of compacted base rock, or
  - b. 2-1/2 inches of asphalt concrete over 4-inches of compacted base rock, or
  - c. 4-inches of Portland Cement concrete over 2-inches of compacted base rock.
3. Design shall conform to AASHTO guidelines. When bikeways are integrated with a curb, all inlet grates shall be designed to protect the bicyclist from the grate or opening.

**N. INTERSECTIONS**

1. Traffic control shall be maintained per the current edition of the Manual on Uniform Traffic Control Devices (MUTCD). Traffic control may be subject to modification by the City Engineer in accordance with recent traffic engineering study findings.
2. The interior angle at intersecting streets shall not be less than seventy-five degrees (75°).
3. Design vehicle for intersections will be determined by the City Engineer on a case by case basis.
4. A tangent section shall be carried a minimum of 50 feet each side of the intersecting right-of-way lines, except along arterial or collector streets. Arterial and collector streets shall maintain a tangent section carried a minimum 100 feet measured from the curb line of the intersected street.
  - a. Staggered or Tee intersections at collectors and arterials shall be avoided within 300 feet of an opposing intersection. Intersections of local streets shall not be offset staggered less than 150 feet from an opposing intersection.
  - b. Curb radii at intersections shall be as shown below for the various functional classifications. The right-of-way radius at intersections shall be sufficient to maintain the same right-of-way to curb spacing as the lower classified street and must provide for sufficient right-of-way to allow construction of required ADA facilities.

**Table 4.4: Minimum Curb Intersection Radii**

Street Classification	Arterial	Collector	Commercial / Industrial	Local
Arterial	40 Feet	-	-	-
Collector	25 Feet	20 Feet	-	-
Commercial/Industrial	40 Feet	40 Feet	40 Feet	-
Local Residential	12 Feet	12 Feet	12 Feet	10 Feet

- c. Safe intersection sight distance shall be evaluated for all intersections using the principles and methods outlined by AASHTO.
- d. Traffic signal modification, relocation or installation is required when roadway or driveway geometry interfere with existing signal facilities, would result in an un-signalized approach or meets signal warrants.
- e. Visual Obstructions - As defined by AASHTO guidelines, 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. Please note that the clear vision area requirements do not apply to:
  - i. Public utility poles.
  - ii. Trimmed trees with an 8 foot clearance to the tip of the first branch furthest from the trunk measured from the top of curb.
  - iii. Warning signs or signals.
  - iv. Locations where natural ground contours prohibit cross visibility at the intersection.

## **O. DRIVEWAYS (ACCESS)**

1. The City Engineer shall have the authority to limit access and designate access locations on public streets under jurisdiction of the City. When a parcel has multiple roadway frontages, access shall be granted from the lesser classification roadway. Access to streets and highways under Yamhill County or ODOT jurisdiction must be formally approved by those entities at the applicant's initiative and expense.

## **2. DRIVEWAY SPACING**

- a. No more than one driveway per property shall be permitted in residential zones.
- b. 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.
- c. Driveways shall not be located within 25 feet of a local road intersection or 150 feet of a collector, arterial or industrial road intersection.
- d. Residential driveways of adjoining properties shall have a minimum 15 foot separation between driveway edges.
- e. Location of all driveways serving commercial, industrial or multifamily facilities shall be approved on a case-by-case basis by the City Engineer.
- f. No commercial driveway will be approved where backing onto the curb or sidewalk occurs.
- g. One driveway access to arterial streets shall be allowed for adjacent properties with a common owner. Driveway access may be denied or closed if another access exists.
- h. Commercial or industrial driveways shall have a minimum edge to edge spacing of 75 feet.
- i. Driveways serving a single parcel shall be a minimum six feet (6') from top of wing to property line.

### 3. DRIVEWAYS AND DRIVEWAY APPROACHES

- a. Standard residential, commercial or industrial driveways are required for all developments.
- b. Driveways shall conform to the City of Dundee Standard Details.
- c. Driveway approaches shall be constructed to meet current ADA Standards at all locations where sidewalks cross or will cross the driveway.
- d. Driveway approaches on curbed streets shall be constructed of concrete, and shall be a minimum of 6 inches thick.
- e. All driveways shall have a minimum 10 foot paved approach from the back of sidewalk location.
- f. Common driveways serving multiple lots and flag lot driveways over 150 feet in length shall be provided with an emergency turn around meeting the requirements of the Department of Public Safety.
- g. Driveway slopes shall not exceed 15 percent (15%).
- h. Two-way multifamily residential driveways shall have a minimum width of 18 feet and a maximum width of 22 feet. One-way multifamily residential driveways shall have a minimum width of 10 feet and a maximum width of 12 feet.
- i. Two-way commercial or industrial driveways shall have a minimum width of 24 feet and a maximum of 35 feet. One-way commercial or industrial driveways shall be designed for the largest vehicle with a minimum driveway width of 12 feet. A turning diagram must be submitted for all commercial or industrial driveway submittals showing adequate width for the largest vehicle. Wider driveway widths may be permitted on a case-by-case basis.
- j. Single family residential driveways shall be a minimum width of 10 feet and a maximum width of 24 feet.
- k. All driveways shall be angled 90 degrees to the street, unless designated as a right-turn only with approval from the City Engineer.
- l. No object (fire hydrants, light poles, power poles, street trees etc.) Shall be placed within 6 feet of the driveway edge, where feasible.

### P. CUTTING EXISTING STREETS

1. No street shall be cut within five years of construction or reconstruction unless approved by the City Engineer and authorized in writing by the City Council.
2. In the event that the City allows a street to be cut within the time limits described above, the City Engineer may prescribe paving replacement greater than shown within these Design Standards.
3. If construction work is performed by a private party, a maintenance bond for the cost of the original construction and repair shall be posted with the City stating that the party shall be responsible for the condition of pavement patches for a period of two years, and during that time shall repair to the City's satisfaction any of the patches which become settled, cracked, broken or otherwise faulty.
4. Street cuts in Portland Cement concrete streets shall be restored as required by the City Engineer.

**Q. PRIVATE STREETS**

1. Private streets serving four or more residences shall be constructed to public street standards.
2. Pavement sections and widths for private streets, common driveways or flag lot drives shall conform to the following:

<b>Table 4.5 Minimum Pavement Width And Sections</b>			
Classification	Minimum <sup>1</sup>	Pavement	Base rock
	Paved Width <sup>2</sup>	Thickness	Thickness
Common Drives Serving Two Or Three Residences	20 Feet	2 ½ Inches (Ac)	8 Inches
		6 Inches (PCC)	2-inches
Flag Lot Driveway	12 Feet	2 ½ Inches (AC)	6 Inches
		6 Inches (PCC)	2-inches
1 - wider pavement widths may be required by the local fire chief			
2 - paved width shall be measured from the face of curb where curbs exist.			

3. As a minimum, all grading for flag lot drives shall be completed by the developer at the time of street and utility construction.
4. Private roads shall be constructed within easements with an easement width equal to the width of the surfacing (pavement and sidewalk) plus 10 feet, to provide 5 feet on each side.
5. 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.
6. New street names are subject to the approval of the City.

**R. STREET ENDS**

1. All streets shall be designed as part of an interconnected grid system unless approved by the City Engineer. Where an interconnected grid system is not possible, the following recommendations shall be met:
  - a. Stub Streets
    - i. Stub streets greater than 300 feet in length are required to provide a paved cul-de-sac turnaround or hammerhead.
    - ii. Stub streets that are to allow for future extensions shall be barricaded and signed as per the standard drawings.
  - b. Cul-de-sacs, Eyebrow Corners & Turnarounds
    - i. Cul-de-sacs, eyebrow corners, and turnaround areas shall be allowed only on local streets and commercial or industrial streets.
    - ii. Hammerheads may be used on private streets in lieu of a cul-de-sac. A driveway shall not be used as part of the hammerhead.
    - iii. All street ends shall be paved and signed “no parking” except when located on local streets.

- iv. Cul-de-sacs shall be as short as possible with a maximum permissible length of 200 feet.
- v. The minimum curb radius for transitions into cul-de-sacs shall be twenty-five (25) feet and the right-of-way radius shall be sufficient to maintain the same right-of-way curb spacing as the adjacent portion of the road.
- vi. Eyebrow corners may be utilized on local streets where expected ADT will not exceed five-hundred (500) vehicles per day or as approved by the City Engineer. Minimum curb radius for eyebrow corners is forty-one (41) feet with a minimum right-of-way radius of forty-five (45) feet. Eyebrows shall be evaluated to allow turning requirements for fire department vehicles.

**S. ILLUMINATION**

- 1. Spacing and location of street lighting shall be approved by City based on a photometric design. The design and installation of street lights shall be paid for by the developer.
- 2. Street lights shall be placed at all street intersections. Unless otherwise approved by the City, street light spacing shall not exceed 200 feet or 3 lot widths, whichever is less. Lesser spacing must be used whenever required by the photometric design.
- 3. Street lights to be located per City Standard Details unless specifically approved by the City Engineer.

**T. LANDSCAPING/STREET FURNITURE IN THE RIGHT-OF-WAY, EASEMENTS, AND ACCESS TRACTS**

- 1. Plantings established in the right-of-way shall be maintained by the abutting property owner.
- 2. Any existing planting areas within the right-of-way that are disturbed by construction activity shall be restored to their original condition.
- 3. Any plantings or other improvements placed within the right-of-way (by abutting property owners) are subject to removal when the right-of-way is needed for public use. The property owner is responsible for removing any landscaping or other improvements upon official notice. The property owners shall be responsible for survival of the relocated plantings.
- 4. Plantings within the right-of-way shall comply with the following provisions:
  - a. All landscaping shall comply with the sight distance provisions of these Design Standards, unless otherwise approved by the City Engineer. No trees shall be planted within 30 feet of an intersection measured from the closest curb.
  - b. Where existing landscaping maintained by the City exists, every effort shall be taken to protect and preserve the existing vegetation during construction. Plants shall be relocated or removed only upon approval of the Public Works Departments. Damaged landscape areas shall be restored prior to issuing a final occupancy permit.
  - c. In areas where an existing landscaping concept or pattern has been established or approved, all new landscaping shall conform to the intent of the concept.

Plantings shall be of a similar variety, size, and spacing to those already established and/or approved for the area.

- d. All trees planted in areas with adjacent pedestrian usage shall maintain 7 feet of clearance to the lowest branches.
  - e. No low growing vegetation is to extend beyond the curb. Trees must have no limbs or other vegetation extending beyond the curb line or edge of asphalt for a distance of 7-1/2 feet above the road surface.
  - f. Approval from the Public Works Department must be received before trees are planted in or adjacent to sidewalk sections. All tree planting is subject to the regulations of the Dundee Municipal Code Chapter 12.12.
  - g. Street trees are required along the frontages of all developments as specified in the Dundee development ordinance. Street trees shall be species listed on the street tree list of the Dundee development ordinance, section 2.207.
5. Street furniture may be required at the discretion of the City Engineer and will be required to meet all ADA clear space requirements.

#### **U. TRAFFIC CONTROL**

##### **1. SIGNAGE**

- a. Street signs shall be installed on all new public and private streets. Street names for all new streets shall be approved by the City.
- b. Sign material shall conform to City Standards. Location and type of signs shall conform to the MUTCD, or the Oregon supplement to the MUTCD and City Standards.
- c. Signs along county or state right-of-ways shall be approved by the county or ODOT as appropriate.

#### **V. TRAFFIC CALMING**

1. In existing neighborhoods, traffic calming devices will be installed only through the City TSP. In new developments, traffic calming devices may be required by the City if problems are anticipated or as the result of an engineering study. All traffic calming devices will be reviewed and approved by Public Works Supervisor / City Engineer.
2. The following are approved for installation as traffic calming devices:
  - a. Traffic circle;
  - b. 14 foot local speed bump;
  - c. 22 foot collector speed bump;
  - d. Chokers, curb extensions;
  - e. Chicanes; and
  - f. Semi and full diverters.

#### **W. TEMPORARY TRAFFIC CONTROL:**

1. It is the responsibility of the developer to provide adequate temporary traffic control to ensure traffic safety during construction activities.

2. Plans meeting the requirements of Section 1-10 of the Standard Specifications shall be reviewed and approved by the City Engineer prior to any temporary traffic control being installed.
3. All traffic control devices shall conform to the Manual on Uniform Traffic Control Devices and the Oregon supplement to the MUTCD

## **X. BARRICADES AND GUARDRAILS**

1. Guardrails shall be designed and constructed per OSSC standards.
2. Barricade installation shall be based on MUTCD. Red and white reflectorized Type III barricades shall be used at the end of a street. White and black reflectorized Type III barricades shall be used at the end of a street widening which does not taper back to the existing pavement width. White and black reflectorized Type II barricades shall be used at the end of the sidewalk or pedestrian/bike path.

## **Y. FRANCHISE UTILITIES**

1. Non-City owned franchise utilities are required to relocate existing facilities at their own expense when a conflict results between their facilities and public street improvements. The improvement work must be required by the non-City owned utility in order for the relocation work to be the financial responsibility of the utility; otherwise all costs shall be the responsibility of the developer. Any relocation of a utility shall be underground.
2. All non-City owned franchise utility distribution or collection systems including but not limited to power, telephone, natural gas, and T.V. cable in new plats or short plats shall be installed underground prior to paving.
3. For all new single-family plats and short plats, a minimum 5-foot wide common or individual non-exclusive utility easement shall be provided connecting any lots without public street frontage to a public street. Easements for existing or future utility lines that do not lie along rear or side lot lines, shall be of a width specified by the serving utility.

## **Z. MEDIANS**

1. A median shall be in addition to, not part of, the specified road width. Where raised medians are allowed, the following criteria must be met:
  - a. Landscaping and irrigation shall be required. Plans shall be prepared by a qualified landscape architect.
  - b. Shall be designed so as not to limit turning radius or sight distance at intersections.
  - c. The raised median shall be set back at least 2 feet from the median lane on both sides.
  - d. Street lighting shall be sufficient to provide illumination of the raised median.
  - e. Objects, such as trees, shrubs, signs and light poles shall not physically or visually interfere with vehicle or pedestrian traffic in the travel way.
  - f. The style and design of the raised median shall be site specific. The raised median shall be safe for the design speed, and shall be subject to approval of the City Engineer.
2. Shall be maintained by the homeowners association unless otherwise approved.

## **4.2 MATERIALS**

### **A. GENERAL**

1. Unless otherwise approved by the City Engineer, materials used for the construction of public streets shall conform to the most current version of the Oregon Standard Specifications for Construction (OSSC), the minimum requirements outlined herein and as shown on the Standard Details. This listing is not intended to be complete nor designed to replace the any of the city required standards.
2. In the case of conflicts between the provisions of these Design Standards and the Standard Specifications, the more stringent as determined by the City Engineer shall apply.
3. It is not intended that materials listed herein are to be considered acceptable for all applications. The Design Engineer shall determine the materials suitable for the project to the satisfaction of the City Engineer.

### **B. AC PAVEMENT**

1. AC pavement shall conform to OSSC Section 00745 - hot mix asphalt concrete (HMAC), and shall meet job mix formula requirements for Level 1, 2, 3 or 4 as defined in OSSC Section 00745.13(b) as specified.

### **C. GRANULAR BASEROCK**

1. Granular base rock shall conform to OSSC section 02630.10 - Base Aggregate. Gradation shall be as follows:
  - a. Base Rock: 1½ inch - 0
  - b. Leveling Rock: ¾ inch - 0
  - c. Alternate Single Size Aggregate: 1-inch - 0 as approved by the engineer.

### **D. CONCRETE (CAST-IN-PLACE)**

1. All concrete shall conform to the requirements of OSSC Section 00440, Commercial Grade Concrete, 3300 psi.

### **E. STREET LIGHTS**

1. Unless otherwise approved by the City Engineer, street light poles and arms shall be fiberglass poles that are grey or brown in color, have a natural finish, and be of the direct burial type. Poles used on residential streets excluding intersections shall not exceed a nominal 25 feet in height. Poles used on collector streets or intersections may not exceed a nominal 30 feet in height.
2. Street lights along residential streets, excluding intersections, shall be limited to 100 watt HPS fixtures. Street lights along nonresidential streets or at intersections shall be limited to 150 watt HPS fixtures, except that lights at major intersections on state highways shall be limited to 250 watt HPS fixtures.
3. All street lighting shall meet the requirements of DMC 17.303 Exterior Lighting and Dark Sky/Outdoor Lighting Requirements.

4. All street lighting materials, including wire and installation procedures shall meet current requirements for maintenance by the City and the local electric utility company.

**F. SIGNAGE**

1. All sign posts shall be 2-3/8 inch diameter steel pipe factory powder coated color “black”.