Division 2

Streets

DIVISION 2
STREETS

2.1 PURPOSE

a. In addition to the purposes outlined under Division 1 of these PWDS, the intent and purpose of these Standards is to:

1) provide design guidance criteria to the private sector for the design of public and private streets within the City;

2) establish standard right-of-way widths and improvement requirements for the appropriate street classifications;

3) require the use of design and materials to provide streets with a minimum practical design life of not less than 30 years.

4) ensure the development of a street system which will:

a) be of adequate design to handle the traffic needs for the City of Jefferson;

b) be designed in a manner to allow economical future maintenance;

5) conform with the City TSP and with the City Development Code.

Alternate materials and methods will be considered for approval on the basis of these objectives.

b. These Standards cannot provide for all situations. They are intended to assist but not to substitute for competent work by professional design engineers.

2.2 APPLICABILITY

a. These Standards shall govern all construction and upgrading of all public and private streets and associated facilities in the City of Jefferson and applicable work within the City's service areas.

b. Street Access Required in Conjunction with Development. All properties shall be provided with access to a public or private street, 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 partitioning or subdivision of land)* at the time of partitioning or subdivision.

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c. To & Through. As a condition of building/infrastructure construction, all developments are required to provide *(ie. designed & constructed by developer)* public street systems *(or private street systems in easements where approved by the City)* to serve adjacent undeveloped parcels in order to provide for the orderly development of the area, at locations and configurations required by the City Engineer or Public Works Director *(see also PWDS 1.6.c)*.

d. ADA & PROWAG Applicability.

1) New Construction: Newly constructed facilities within the project limits *(whether within or outside of the public right-of-way)* shall be made to comply with ADA and PROWAG standards as applicable. Designers are encouraged to reference the complete PROWAG document for additional information on work associated with the public right-of-way (www.access-board.gov).

2) Alterations: When alterations are made to the pedestrian circulation path *(including pedestrian crossings)*, the pedestrian access route shall be made to comply with ADA and PROWAG standards as applicable, to the maximum extent feasible within the scope of the project. Alterations shall not be allowed to gap pedestrian circulation paths in order to avoid compliance with ADA and PROWAG standards *(see USDOT/USDOJ memos in Appendix F for more detailed information)*.

a) When elements are altered or added to existing facilities in a manner that does not alter or impact the pedestrian circulation path, the pedestrian circulation path is not required to be modified. However, elements that are added shall be made accessible to the extent required by ADA or PROWAG standards.

b) Sidewalk improvements or replacement which includes or impacts curb ramps, landings or turning spaces will trigger a requirement to upgrade the affected ramp, landing or turning space.

c) Street resurfacing *(including overlays)* is an alteration which triggers the requirement to upgrade curb ramps if it involves work on a street or roadway spanning from one intersection to another, or spanning a mid-block pedestrian crossing.

d) Accessibility improvements are not required for work that is considered as maintenance. Examples of work considered to be maintenance include, but are not limited to, the following.

- Painting and/or other traffic control surface markings, excluding delineations of new accessible parking spaces.
- Crack filling & sealing
- Slurry seals or chip seals
- Localized high friction treatments

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- Minor street patching *(less than 50% of the pedestrian street crossing area)*
- Minor sidewalk repair which does not include or impact curb ramps, landings or turning spaces.
- Filling potholes

e) If a project includes work which is not included in the lists above, or which consists of a combination of several maintenance items occurring at or near the same time, the City will determine whether the project should be considered maintenance or an alteration.

3) NOTE: Even though these PWDS do not summarize all of the PROWAG requirements and/or exceptions, the design & construction team(s) are responsible for compliance with all provisions of PROWAG adopted & implemented under provisions of federal law & regulations.
The **current version of PROWAG** is the edition adopted in 2024, with an effective date of 9/3/2024.
https://www.access-board.gov/prowag/#table-of-contents

2.3 SPECIAL ITEMS

a. The design of the following are considered special items and are not covered in detail in these Standards:

1) Intersections with State highways
2) Intersections with railroads
3) Commercial/Industrial/Public campus entrances
4) Signalized Intersections
5) Bridges *(including private bridges for fire lanes, see OFC 503.2.6)* or culverted stream crossings or fish passage culverts.
6) Bus/Transit stops.
7) Roundabouts.

b. Review and approval of the above special items by the Public Works Director shall be required. When requested by the City, full design calculations shall be submitted for review prior to approval.

Bridges or culverts on fire lanes shall also be subject to review & approval by the fire code official per OFC 501.3.

2.4 APPROVAL OF ALTERNATE MATERIALS AND METHODS

a. Any alternate material or method not explicitly approved herein will be considered for approval on the basis of the objectives set forth in Paragraph 2.1, Purpose. Persons seeking such approval shall make application in writing to the Public Works Director. Approval of any major deviation from these Standards shall be in written form.

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Approval of minor matters will be made in writing, if requested. Any and all such requests shall be submitted in writing to the Public Works Director prior to City approval of the design drawings.

b. Any alternate must meet or exceed the minimum requirements set forth in these PWDS *(also see "equal" & "substitute" definitions under PWDS 1.4)*.

c. The written application is to include, but is not limited to, the manufacturer's specifications and testing results, design drawings, calculations and other pertinent information.

d. Any deviations or special problems shall be reviewed on a case-by-case basis and approved by the Public Works Director. When requested by the City, full design calculations shall be submitted for review with the request for approval.

2.5 CONSTRUCTION DRAWINGS

a. Construction drawings shall conform to the requirements of Division 1 of these PWDS.

b. Detail drawings shall be included on the construction drawings for all street system components including but not limited to typical sections, curbs, sidewalks, handicap ramps, drainage facilities, etc.

2.6 CITY STANDARD DETAILS

a. City standard details included in the Appendix are supplemental to the text of these PWDS and show the City's minimum requirements for the construction of certain standard system components.

b. In the case of conflicts between the text of these PWDS and the City standard details, the more stringent as determined by the Public Works Director shall apply.

c. As required by Division 1 of these standards, all applicable City standard details shall be included on the construction drawings. Details shall be placed in numerical order on the detail sheets *(oriented from top left of each sheet to bottom right)*, for ease of reference during construction.

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2.7 EXISTING STREET CLASSIFICATIONS

a. The classification of arterials and collectors is established by the Jefferson Comprehensive Plan and Transportation System Plan (TSP), while industrial and commercial streets are established by the surrounding land use designation. Streets currently designated by the Comprehensive Plan & TSP as arterial and collector streets are as outlined below for reference only. The current TSP is the official street classification source.

1) Arterial:
   - Marion Road
   - Scio Road
   - Talbot Road
   - 2nd Street (US 99E)

2) Major Collector:
   - 5th Street
   - Hazel Street
   - Cemetery Hill Road

3) Minor Collector
   - Greenwood Street
   - High Street
   - 3rd Street
   - 7th Street

4) Commercial/Industrial Streets include, but are not limited to, those portions of the following streets within or adjacent to C and I zones:

   a) East-West Streets
      - Bates Street
      - Ferry Street
      - North Avenue
      - Union Street
      - University Street

   b) North-South Streets
      - Main Street
      - Mill Street

2.8 OTHER JURISDICTIONS

a. Other than the City, there are two other agencies with jurisdiction over streets or roads within the City Limits. These agencies are the Oregon Department of Transportation (ODOT) and Marion County.

b. City Standards Control Unless More Stringent Standards Imposed. In all cases, the City

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design standards shall be considered to be the minimum allowable standards for any streets and associated improvements within the City Limits. ODOT and Marion County may have additional or more stringent requirements.

Approval from ODOT and Marion County will be required prior to construction activities on any street or road *(or associated improvements)* under their jurisdiction. However *(to avoid delay and confusion)*, development teams are encouraged to obtain written concurrence from Public Works and the City Engineer *(regarding scope and proposed design of street improvements)* prior to submitting drawings to ODOT or the county for review & comment *(see also PWDS 1.10.g)*.

2.9 DEFINITIONS AND TERMS

a. In addition to the definitions contained in Division 1 of these Standards, the following definitions may apply particularly to street systems. Unless otherwise defined in these PWDS, the following definitions and abbreviations shall apply whenever used. Other definitions as outlined in the Oregon Standard Specifications for Construction – OSSC (ODOT/APWA) shall also apply.

1) Abbreviations: Acceptable abbreviations for pavement materials are as follows:

   a) AC - Asphalt Cement *(also ACP – Asphalt Cement Pavement)*
   b) PCC - Portland Cement Concrete

2) Alley: A public right-of-way not more than 20 feet and not less than 10 feet in width, which intersects with a public street.

3) Arterial Street: A street of considerable continuity which is used for moving large volumes of traffic to and from the highway and for interconnection between major areas of the City.

4) Bike Lanes: A designated travel-way for bicyclists which is established within the roadway directly adjacent to the outside vehicular lane or on the shoulder.

5) Bike Path: A designated travel way for bicyclist which is completely separated from the vehicular travel lanes and is within independent right-of-ways or easements.

6) Bike Route: A designated travel-way for bicyclists which can be shared with vehicular traffic. The roadway is designated with signs for bicycling *(may or may not include pavement markings for the bike route or delineation of parking spaces, as determined by the City)*.

7) Clear Vision Area: A triangular area on a lot at the intersection of two streets, a street and a driveway or a street and a railroad, the sides of which are lines measured from the corner intersection of the right-of-way lines. The third side of the triangle is a line across the corner of the lot joining the ends of the other two sides. Where the lines at the intersections have rounded corners, the right-

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of-way lines will be extended in a straight line to the point of intersection.

8) Collector Street: A centrally located street for moving traffic from arterials to local streets.

9) Contraction Joint: A joint to prevent uncontrolled cracking in the sidewalk or pavement structure, consisting of a tooled joint and aggregate separation.

10) Cross Slope (Pedestrian Path): The grade that is perpendicular to the direction of pedestrian travel.

11) Cross Slope (Vehicle Path): The grade that is perpendicular to the direction of vehicular travel.

12) Crosswalk: See Pedestrian Street Crossing.

13) Curb: A raised barrier, typically made of concrete, which defines the edge of a road, sidewalk, or other paved area. Curbs may serve various purposes, including delincating pavement edges, channeling storm water runoff, or preventing vehicles from encroaching onto adjacent areas or pedestrian walkways.

14) Curb Ramp: A ramp that cuts through or is built up to the curb. Curb ramps can be perpendicular, parallel, or a combination of parallel and perpendicular. Sometimes labeled as "Pedestrian Ramp."

15) Detectable Warning: Detectable warnings consist of small, truncated domes built in or applied to a walking surface that are detectable by cane or underfoot. On pedestrian access routes, detectable warning surfaces indicate the boundary between a pedestrian route and a vehicular route for pedestrians who are blind or have low vision. Detectable warnings shall contrast visually with the surrounding sidewalk surface, and shall comply with current ADA and PROWAG standards.

16) Downstream Intersection: The nearest intersection from a driveway located in the direction of traffic flow of the nearest lane of the abutting street.

17) Expansion Joint: A joint to control expansion and potential heaving in the sidewalk or pavement structure and filled with preformed expansion joint filler.

18) Grade: The degree of inclination of a road, sidewalk or slope, in the direction of travel.

19) Half Street Improvement: Where allowed by the development code, half street improvements shall fully comply with the fire lane requirements of the Oregon Fire Code, including provision of additional width if on-street parking is allowed *(ie. unless on-street parking is explicitly prohibited by the development approval, and the street is signed for no parking)*. Generally half-street

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improvements are allowed only if the other side of the street was previously improved and the current development is required to complete the street improvement to full urban width *(three-quarter street improvements are the minimum typically required if there are frontage improvements required in conjunction with development, and where the far side of an existing or new street will be improved in the future in conjunction with other developments)*. See PWDS 1.11.k.2 for full street design requirements in conjunction with partial street improvements.

20) Intersection: The meeting point of two streets having at least three legs.

21) Local or Residential Street: A facility not designed as an arterial or collector. It serves primarily to provide direct access to abutting land and offers the lowest level of traffic mobility. Through traffic movement is deliberately discouraged.

22) Longitudinal Joint: A joint which follows a course approximately parallel to the centerline of the roadway.

23) Natural Grade: The grade with the land in an undisturbed state.

24) One-Way Driveway: A driveway of either vehicular ingress or egress, but not both.

25) Parking Space: A designated space in a parking area for the parking of one motor vehicle. An off-street parking space is a designated space for the parking of one motor vehicle, which is located on private property rather than on a public street.

26) Pedestrian Access Route: A continuous and unobstructed path of travel provided for pedestrians with disabilities within or coinciding with a pedestrian circulation path *(typically concrete, pavement or similar hard surface)*, whether located within or outside of the public right-of-way.

27) Pedestrian Circulation Path: A prepared exterior or interior surface provided for pedestrian travel in a public right-of-way, as well as accessible pedestrian routes required on sites or facilities which are open for access by the public or as otherwise required by applicable codes *(typically concrete, pavement or similar hard surface)*.

28) Pedestrian Ramp: See Curb Ramp.

29) Pedestrian Street Crossing: A marked or unmarked route, providing an accessible path to travel from one side of the street to the other. Pedestrian street crossings are a component of the pedestrian access route and/or the pedestrian circulation path.

30) PROWAG: See definition in Division 1.

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31) Running Slope: The grade that is parallel with the direction of pedestrian travel.

32) Sidewalk: A walkway or pathway dedicated and designated for the use of non-motorized vehicles and pedestrians.

33) Streets or Roads: Any public highway, road, street, avenue, alley, easement or right-of-way used or to be used for vehicle movement. Full street improvements include curb and sidewalk on both sides, storm drainage and fully improved in accordance with these standards.

34) Structures: Those structures designated on the standard plans as catch basins, manholes, etc. Detail drawings of structures or devices commonly used in City work and mentioned in these standards are included in the standard detail drawings in PWDS Appendix A.

35) Superelevation: The vertical distance between the heights of the inner and outer edges of pavement on horizontal curves.

36) Three-Quarter (3/4) Street: A ±75 percent portion of the ultimate width of a street, but not less than 25½ feet from face of curb to edge of pavement, usually along the edge of a development, where the remaining portion of the street will be provided when adjacent property is developed. 3/4 street improvements include curb, piped storm drainage and sidewalk on one side, storm drainage improvements stubbed across the street for future catch basins on the unimproved side, and a full depth gravel shoulder per PWDS 2.19.c & drainage facilities on the non-curbed side of the street, including paved driveway aprons *(for any existing driveways on the non-curbed side)* extended to the ROW line as a minimum which comply with PWDS grade requirements to match the future street width & future curb/sidewalk elevations.

37) Transition: The taper between portions of a street with different pavement widths.

38) Transverse Joint: A joint which follows a course approximately perpendicular to the centerline of the roadway.

39) Travelled Way: That portion of the roadway for the movement of vehicles, exclusive of shoulder and auxiliary lanes.

40) TSP: Transportation System Plan for the City of Jefferson, Oregon.

41) Turnaround Area: A paved area of sufficient size and configuration that emergency vehicles may maneuver around to head in the opposite direction without having to move in reverse more than once.

42) Turning Space: An area at the top or bottom of a curb ramp, providing a space for pedestrians to stop, rest, or change directions.

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43) Turnpike Street: Any public street, road or right-of-way which has been paved for vehicular movement and does not have curbs on either side of the street. Turnpike streets shall generally meet all standards required for the non-curb side of 3/4 street improvements.

44) Two Way Driveway: A driveway functioning as both a vehicular exit and entrance.

45) Upstream Intersection: The nearest intersection from a driveway located in the direction opposite the traffic flow of the nearest lane of the abutting street.

2.10 MATERIALS

a. General

1) Unless otherwise approved by the City Engineer, materials shall conform to the minimum requirements outlined herein and as shown on the City standard details.

2) In the case of conflicts between the provisions of these PWDS and the PWCS, the more stringent as determined by the Public Works Director shall apply. Acceptable materials shall be as outlined in these PWDS.

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.

4) Material/Equipment Submittals from Contractor Required. Per Section G-1300, construction submittals shall be provided by the Contractor for review by the City, for all material & equipment which will incorporated into work covered under the PWDS.

b. AC Pavement

1) Bituminous Material: The asphalt cement shall be PG 64-22 and shall meet the requirements of OSSC (ODOT/APWA) 00744.11, Asphalt Cement & Additives.

2) AC Design Mix:

a) Unless otherwise required by the jurisdiction with authority, AC pavement shall meet the requirements of OSSC (ODOT/APWA) 00744, hot mixed Asphalt Concrete Pavements (ACP), 1/2" dense graded mix *(for base course(s) and for leveling or wearing course)* as summarized below.

(1) Callout Reference Clarification. Where noted on the drawings, Class B pavement refers to the 3/4" dense graded mix, and

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Class C refers to 1/2" dense graded mix.

b) AC pavement for City streets shall be Level 2 Job Mix Formula (JMF) per OSSC (ODOT/APWA) 00744.13.

c) Unless otherwise specified or shown on the drawings, AC pavement for private streets, driveways, fire lanes and parking lots shall be Level 2 Job Mix Formula (JMF).

d) Level 3 Job Mix Formula (JMF) shall only be utilized where required and approved in writing by the agency with jurisdiction.

3) AC mix design shall be submitted to the City for review and approval prior to use.

c. **Granular Baserock**

1) Granular baserock shall conform to OSSC (ODOT/APWA) 02630.10 (Dense Graded Base Aggregate), with no more than 10% passing the #40 sieve and no more than 5% passing the #200 sieve. Gradation shall be as follows:

a) Base Rock: 1½"-0

b) Leveling Rock: 3/4"-0

c) Alternate single size 1"-0 aggregate as approved by the Engineer.

d. **Concrete (Cast-in-Place)**

1) All concrete shall conform to the requirements of OSSC (ODOT/APWA) 00440, Commercial Grade Concrete, 3300 psi air entrained min @ 28 days, max 5" slump, 4.5% air (±1.5%).

2) Concrete mix design shall be submitted to the City for review and approval prior to use.

e. **Street Lights**

1) Unless otherwise approved by the Public Works Director *(based on street light mast arms being added to existing wooden power poles)*, street light poles shall be fiberglass poles designed to produce a 25-foot mounting height, with a mounting arm per the City standard details and conforming to power company requirements & details.

New street light poles shall be grey or brown in color, have a natural finish, and be provided with a direct bury base sleeve for landscape areas, and a precast concrete pole foundation for sidewalk areas where required by the Public Works Director or the City Engineer.

2) Unless otherwise approved by the Public Works Director, all luminaries shall be

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LED Cobrahead style fixtures (*ie. equivalent to 100 watt high pressure sodium*) and photoelectric control relay with a 6 foot or 8 foot mounting arm as required for the light to be ±2 feet in front of the curb.

3) All street lighting materials, including wire, and installation procedures shall meet current requirements for maintenance by the local electric utility company. See 2.32.b regarding responsibility for street light or line extension fees.

f. **Geotextile Fabric**.

1) Unless otherwise required by City Engineer, geotextile fabric shall conform with OSSC (ODOT/APWA) 02320, Geosynthetics, with minimum property values conforming to Table 02320 Tables *(see current ODOT QPL list for qualified products)*.

2) Widths shall be as required *(to allow for a minimum seam overlap of 18-inches)*, or manufacturer's recommendations, whichever is greater.

3) Reinforcement Fabric. Unless heavier is specified or noted on the drawings, reinforcement fabric *(for over-excavation or under embankments)* shall be a geotextile fabric included on the ODOT QPL list for OSSC (ODOT/APWA) 02320-5 table *(for woven or non-woven fabric)*, generally conforming to the values listed below. **Slit film fabrics are not allowed**.

   a) Minimum values for woven: grab tensile strength of 315 lb; tear strength of 110 lb, puncture strength of 620 lbs; AOS of 30.

   b) Minimum values for non-woven: grab tensile strength of 200 lb; tear strength of 80 lb, puncture strength of 430 lbs; AOS of 30.

4) Separation Fabric. Unless heavier is specified or noted on the drawings, separation fabric *(where successful proof-roll allows compaction testing of subgrade to be waived)* shall be a geotextile fabric included on the ODOT QPL list for OSSC (ODOT/APWA) 02320-4 table *(for woven or non-woven fabric)*, generally conforming to the values listed below. **Slit film fabrics are not allowed**.

   a) Minimum values for woven: grab tensile strength of 180 lb; tear strength of 68 lb, puncture strength of 371 lbs; AOS of 30.

   b) Minimum values for non-woven: grab tensile strength of 113 lb; tear strength of 41 lb, puncture strength of 223 lbs; AOS of 30.

5) Drainage Fabric. Unless heavier fabric is specified or noted on the drawings, drainage fabric shall be a geotextile fabric included on the ODOT QPL list for OSSC (ODOT/APWA) 02320-1 table *(for woven or non-woven fabric)*, generally conforming to the values listed below. **Slit film fabrics are not allowed**.

   a) Minimum values for woven: grab tensile strength of 250 lb; tear strength of 90 lb, puncture strength of 495 lbs; AOS of 40.

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b) Minimum values for non-woven: grab tensile strength of 160 lb; tear strength of 56 lb, puncture strength of 310 lbs; AOS of 40.

6) Riprap Fabric. Unless heavier is specified or noted on the drawings, fabric under riprap shall be geotextile fabric included on the ODOT QPL list for OSSC (ODOT/APWA) 02320-2 table *(for woven or non-woven fabric)*, generally conforming to the values listed below. **Slit film fabrics are not allowed**.

a) Minimum values for woven: grab tensile strength of 315 lb; tear strength of 110 lb, puncture strength of 620 lbs; AOS of 40.

b) Minimum values for non-woven: grab tensile strength of 200 lb; tear strength of 80 lb, puncture strength of 430 lbs; AOS of 40.

g. **Pavement Markings**.

1) Public Streets & Walkways, City Owned Parking Lots. All stop bars, crosswalk striping and other roadway or parking lot marking and emblems shall be 125 mil thick pre-formed skid resistant thermoplastic with intermix glass beads *(Premark BD by Ennis-Flint, or OptaTrac by Geveko Markings)*.

2) Installation of thermoplastic markings shall be by methods and by a contractor approved by Public Works Director.

3) Paint may be used for curb painting where required *(fire hydrants, no parking, etc.)*, and for private parking areas, private accesses and private streets *(except for stop bars at public street intersections)*.

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2.11 IMPROVEMENT STANDARDS BY STREET CLASSIFICATION

a. The table below summarizes the improvement standards for each road classification.

IMPROVEMENT REQUIREMENTS		
Street Classification	Min. Right-of-Way Width	Curb to Curb Width
Arterial (3 Lane w/ Bikes, Planter Strip & No Parking)	72'	48'
Collector Major (2 Lane w/ Bikes, Planter Strip & No Parking) Minor (2 Lane w/ Bikes, No Planter Strip & No Parking)	60' 60'	36" 36'
Commercial/Industrial (2 Lane w/ Parking & No Planter Strips)	60'	40'
Residential (Local) (2 Lane w/Parking & No Planter Strips)	50'	34'
Residential Cul-de-sac • Parking 1 side (No Planter Strips) • Parking 2 sides (No Planter Strips)	 50' 50'	 30' 34'
Cul-de-sac Bulb (Residential) (No Planter Strips)	45' radius	38' radius
Alleys (w/ No Parking)	20'	18' [1]

[1] Width listed refers to driveable paved width, whether or not curbs are provided or required. Where curbs are not provided, gravel shoulders shall be provided on each side of paving to the extent possible.

OFC Notes:
- For reference, the minimum clear widths required for fire apparatus access roads (fire lanes) under the Oregon Fire Code (OFC) may take precedence in some situations *(20' fire lane width required where there are no fire hydrants, 26' fire lane width required for streets with fire hydrants, per OFC 503 & OFC App. D)*.
- Fire lanes up to 26 feet wide shall have fire-lane/no-parking signs posted on both sides, while fire lanes wider than 26 feet *(but less than 32 feet)* shall be posted on one side (OFC D103.6.1&2).
- The OFC requirements cannot be modified solely by a land use approval.

Notes:
-If a land use approval is granted for no parking on one or both sides of the street, curb(s) along the no parking sides(s) shall be painted and the curbline shall be signed for no parking at time of street construction.
-Right-of-way widths must be adequate to accommodate the specified street, curb, and sidewalk widths (*including planter strips if required*), while allowing a minimum of 0.5 feet from the back of sidewalk to the right-of-way line to ensure that survey monuments are not disturbed during construction or reconstruction of sidewalks (*see also ORS 209.140-155 & 92.044.7*).

b. The number of travel lanes for arterial and major collector roads shall be determined by the volume of traffic. The City may require additional turning lanes where required by Public Works and/or a traffic engineer's report evaluating the need for additional turning lanes.

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c. Additional pavement and right-of-way width may be required to accommodate turning lanes, parking and bike lanes.

2.12 PUBLIC STREET DESIGN MINIMUM SECTIONS

a. The street design shall result in streets which:

1) are of adequate design to handle the traffic needs of the City,

2) are designed in a manner to allow economical future maintenance, and,

3) provide a minimum practical pavement design life of 30 years for all streets.

b. The minimum pavement section for public streets *(and private streets which provide vehicular access to the public)* shall conform to the following table, based on the classification and/or use of each street segment, as determined by the City. These pavement sections are based on both the subgrade AND the baserock compacted to 95% of AASHTO T-180 *(Modified Proctor, ASTM D1557)*. Where subgrades cannot be compacted and tested to this standard *(or if subgrades are not compacted by Contractor choice)*, a thicker baserock section will be required.

MINIMUM PAVEMENT SECTIONS

Street Classification	AC Pavement Thickness (inch)	Baserock Thickness[3] (inch)
Arterial[1]	4	15
Collector Major	4	15
Minor	4	12
Commercial/Industrial	4	15
Local Residential	3½	10
Cul-de-sac (Residential)	3½	9
Alley in Residential Zone[2]	2½	9
Alley in Commercial Zone[2]	3	10

[1] – Thicker baserock & AC sections may be required by ODOT or Marion County wherein each has jurisdiction.

[2] – Alley Section Note: AC & rock thickness shown assumes the alleys are NOT used as primary vehicular access route or as an access driveway, in which case public street rock & AC sections will be required.

[3] – Minimum baserock thickness assuming both the subgrade and the baserock are compacted to 95% of Modified Proctor AND pass a proof-roll with a fully loaded 10 yard rock truck. Thicker baserock sections over geotextile fabric are required otherwise *(for uncompacted subgrades OR for subgrades which are not tested to verify compaction)*.

Thicker rock & AC sections may be required by the Public Works Director where heavier location traffic exists or is anticipated.

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c. 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 trucks, where overlays are proposed, or any other conditions that may significantly affect the pavement structure design.

d. Where required by the City, the design of overlays shall include non-destructive falling weight deflectometer tests or other tests approved by the City Engineer and the preparation of an engineering analysis of street improvements required for the design life required with all anticipated traffic, including truck traffic.

e. Unless otherwise approved by the City Engineer, pavement designs shall be based on AC pavement conforming to OSSC (ODOT/APWA) 00744, hot mixed Asphalt Concrete Pavements (ACP), for standard duty mix and compacted to a minimum of 91% of maximum density *(at all locations)* as determined by the Rice Standard Method.

2.13 OVERLAYS

a. All AC pavement overlays shall include non-woven overlay paving fabric specifically designed for use with AC pavement.

b. 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.

c. Design of overlays shall be based on an analysis of the existing pavement condition by a registered professional engineer experienced in the design of pavements, and shall result in the minimum practical design life as specified. Unless otherwise approved by the City Engineer, testing of the existing pavement shall include the following as a minimum.

   1) Coring of the street at maximum 50 foot intervals to establish the thickness and condition of existing pavement and aggregate base.

   2) Non-destructive falling weight deflectometer tests on the existing pavement proposed for overlay.

   3) Preparation of an engineering analysis of overlay thickness required to provide the specified design life with all anticipated truck traffic.

d. Areas of existing pavement and baserock which exhibit deflection or alligator cracking or have otherwise failed shall be excavated and replaced with new compacted baserock and AC pavement prior to the overlay. Baserock and AC pavement repair thicknesses shall match standard section thicknesses. All cracks greater than 1/8-inch in width shall be cleaned out and filled with an asphalt emulsion slurry and sand, or other method

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approved by the City Engineer. All crack sealing, skin patching and plugging of digout areas must be approved by the City Engineer prior to the placement of the final fabric and overlay.

e. Unless heavier fabric is specified or noted on the drawings, overlay paving fabric shall be Petromat MPV500 as manufactured by Solmax, or approved equal *(including strength, elongation, asphalt retention, minimum melting point, etc.)*. Hot oil tack coat *(PBA-5 or approved equal)* shall be used prior to placement of the overlay fabric. Use of emulsion tack coats shall be prohibited.

f. Asphalt overlays shall include grinding as required to allow the minimum overlay thickness at existing paving, catch basins, gutter pans and other structures which cannot be raised to grade. Unless otherwise approved by the City Engineer, all existing manholes, valve boxes and other structures shall be raised to grade before the overlay. Structures raised to grade following placement of the overlay shall have the pavement sawcut around the structure as required by the City Engineer and a reinforced PCC concrete patch placed around the structure.

g. Any existing survey monuments within AC pavement overlay areas shall be provided with a monument box to City and County Surveyor standards, installed prior to overlay paving, unless the Public Works Director allows the survey monuments to be reset by a licensed surveyor to finish pavement grade with aluminum caps *(case-by-case basis)*.

2.14 HORIZONTAL ALIGNMENT

a. Horizontal centerline alignments of improvements shall be parallel with the centerline of the right-of-way. Centerline of the proposed street extensions shall be aligned with the centerline of corresponding existing streets.

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b. Unless required to match curvature of existing right-of-ways, horizontal curves shall be to an even 5 feet, and shall meet the minimum requirements listed below:

MINIMUM HORIZONTAL CURVE RADIUS	
Street Classification	Minimum Horizontal Curve Centerline Radius
Arterials	300 feet
Collectors and Continuing Residential Streets	200 feet
Commercial/Industrial	250 feet
Cul-de-sac	160 feet
Alleys and Private Streets	100 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.	

c. Staggering or T 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 200 feet from an opposing intersection.

d. Streets intersecting an arterial or collector street but not continuing through the arterial or collector street along the same horizontal alignment *(ie. a staggered or tee intersection)* shall not be located within 300 feet of another street intersecting the opposite side of the arterial or collector street. Similarly, opposing-intersections of local streets shall be separated by not less than 200 feet.

2.15 MONUMENTATION

a. In accordance with ORS 92.060 Subsection (2) and/or 209.15 Section 2, the centerline of all street right-of-way shall be monumented 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.

b. Any existing or new street or property survey monuments within the paved street improvement areas, driveways, sidewalks or other hard surface areas or areas subject to vehicular traffic shall be set flush with the finish pavement surface with 2-inch aluminum caps.

The City reserves the right to require monument boxes per City standard details where directed by the Public Works Director. When monument boxes are used or required, monument boxes shall conform with details required by either the Public Works

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Director or the County Surveyor. Monument boxes must be designed to accept 1½" and 2" paving riser rings available from the same manufacturer.

c. The following street centerline monuments shall be set as a minimum:

1) All centerline - centerline intersections.

2) The centers of all cul-de-sacs.

3) Curve points in accordance with ORS 92.06 and 209.15.

d. All public utilities within the right-of-way shall be placed in positions that do not interfere with centerline monumentation.

2.16 INTERSECTIONS & PEDESTRIAN CROSSINGS

a. Intersections of private streets with public streets shall comply with intersection design requirements summarized herein, including applicable pedestrian crossing requirements as required to comply with PROWAG and ADA standards.

b. Intersection Angle. The interior angle at intersecting streets shall be kept as near to ninety degrees (90°) as possible and in no case shall it be less than seventy-five degrees (75°).

c. Centerline Horizontal Tangents.

1) There shall be a straight horizontal tangent section on each leg of an intersection having a length not less than shown in the table below.

2) The length of the horizontal tangent on each leg shall be measured from the extension of the curbline of the intersected street.

3) Where streets are not fully improved, horizontal tangent length shall be measured from the future curb location.

Street Classification	Minimum Horizontal Tangent Length (ft)
Arterial	100
Collector	75
Commercial/Industrial	75
Residential	50

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d. Primary & Secondary Street Designation at Intersections.

1) The designation of primary streets versus secondary streets for purposes of intersection design shall be made by the City Engineer and/or the Public Works Director, based on guidelines in the current PROWAG.

2) Primary streets *(at an intersection)* are defined as those streets on which traffic is NOT stop or yield controlled *(by signs)* through the intersection *(see also PROWAG R302.5.2.1)*, OR streets which on which traffic IS controlled by a traffic control signal *(see also PROWAG R302.5.2.3)*.

Secondary streets *(at an intersection)* are defined as those streets on which traffic IS stop or yield controlled *(signs)* through the intersection *(see also PROWAG R302.5.2.1)*.

e. Intersection Street Grades.

1) The maximum street grade through intersections and within the landing area *(vertical intersection approach as defined below, containing a pedestrian crossing which has not been legally closed and configured in compliance with PROWAG)* shall be 5% for a primary street and 2% for a secondary street, or as required to meet ADA and PROWAG standards where applicable.

f. Vertical Intersection Approach.

1) Secondary Street Intersection Approach, Vertical Curve Start Point. The beginning point of secondary street vertical curve at intersections *(from the cross-slope of the primary street to the centerline/curb street grade of the secondary street)* shall not be prior to the curb extension of the intersecting street unless otherwise approved or required by the City Engineer based on detailed drawings showing compliance with all ADA and PROWAG standards *(see Intersection Pedestrian Street Crossings below)*.

2) Secondary Street Intersection Approach without Vertical Curve. Vertical intersection approaches shall have straight street grades within the limits specified, with no more than a 1% grade break from the adjacent intersection cross slope *(street grade break at the curbline extension)*.

g. Intersection Pedestrian Street Crossing.

1) A pedestrian street crossing *(marked or unmarked as approved by the City)* shall be provided for all legal crossing locations as required by state law, unless the City Engineer determines that a crossing should not be provided *(ie. that the crosswalk should be closed)* based on consideration of safety and traffic issues, and approves the crosswalk to be closed *(closure of crosswalks at ODOT intersections requires written approval from ODOT)*. .

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2) Closed pedestrian crossing shall comply with physical separation requirements per PROWAG standards *(crosswalk closed signs only do not meet PROWAG standards)*. Physical separation shall consist of either:

a) Landscaping or other non-prepared surface 24 inches width minimum *(PROWAG R306.4.1.1)*, or

b) A vertical edge treatment *(ie. fence or similar)* with a bottom edge no higher than 15 inches above the adjacent pedestrian circulation path *(PROWAG R306.4.1.2)*.

3) Sidewalk access ramps meeting current ADA and PROWAG standards shall be provided at all corners of intersections where crossing is permitted, regardless of curb type *(or absence of curb)*.

Pedestrian street crossings shall comply with requirements for pedestrian access routes herein and current PROWAG standards.

4) Street Grades at Pedestrian Crossings.

a) Pedestrian Crossings of Secondary Streets at Intersection. The pedestrian cross slope within a pedestrian street crossings *(ie. street grades)* of a secondary street at an intersection shall not exceed 2.1% maximum at any point within the crossing.

b) Pedestrian Crossings of Primary Streets at Intersection. The pedestrian cross slope within a pedestrian street crossing *(ie. street grades)* of a primary street at an intersection shall not exceed 5% maximum at any point within the crossing.

5) The pedestrian grade of the pedestrian street crossing *(along the pedestrian access route)* shall not exceed 5% maximum at any point in the crossing, including at gutter pans.

h. Midblock Pedestrian Street Crossing.

1) Unless specifically approved in writing by the City Engineer on a case-by-case basis, mid-block pedestrian street crossings are not outright allowed.

2) Street Grades at Pedestrian Crossings. Where pedestrian access routes are contained within midblock street crossings, the pedestrian cross slope *(cross slope of the pedestrian street crossing)* shall be permitted to equal the street grade, unless otherwise required by PROWAG.

3) The pedestrian running grade of the midblock pedestrian street crossing *(along the pedestrian access route)* shall not exceed 5% maximum at any point in the crossing, including at gutter pans.

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i. Curb Radius. 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.

MINIMUM INTERSECTION CURB RADIUS[1]				
Street Classification	Arterial Street	Collector Street	Commercial/ Industrial Street	Local Street
Arterial Street	35 feet	-	-	-
Collector Street	30 feet	30 feet	-	-
Commercial or Industrial Str.	35 feet	35 feet	35 feet	-
Local Street	25 feet	25 feet	30 feet	20 feet

[1] Smaller or alternate curb radius may be required or approved by Public Works on a case-by-case basis, including the use of pedestrian bulbouts on wider streets where deemed applicable by Public Works or the City Engineer, and where reviewed with local fire code official to ensure adequate fire apparatus access *(see OFC Appendix D & ORS 368.039.3.* Larger radius may be required by Public Works to accommodate truck turning movements.

j. Street Signs. All newly platted or newly improved streets shall be posted with a name sign approved by the City. In the case of development, installation of any required street signs or traffic control signs shall be the responsibility of the developer.

2.17 VERTICAL ALIGNMENT AND STREET GRADES

a. Street grades shall be designed to allow drainage to the curb of areas within the public right-of-way, as well as lot drainage. In general, this requires the curbs of new streets be set a minimum of 6-inches below existing grade.

b. Unless otherwise approved in writing by the Public Works Director and applicable City planning authorities, street grades shall not exceed the following:

1) Arterials -6%

2) Collectors - 10%

3) All others -12%

4) Notwithstanding these maximum street grades, street grades through intersections and intersection approaches must allow for the installation of pedestrian ramps & pedestrian crossings conforming to PROWAG standards.

c. Minimum Grade. Minimum tangent street gradients *(centerline grade & gutter grade)* shall be 0.5% along the crown and curb for all streets *(Type A curb & gutter required*

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along all public streets).

d. Streets intersecting with streets not constructed to full City standards shall be designed to match both present and future vertical alignments of the intersected street. The requirements of these standards shall be met for both present and future conditions.

e. Street 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 the tangent street grades (K = L/A).

Vertical curve length shall not be less than the length computed from the formula L = K*A *(ie. K value shall not be less than the values listed below)*, where:

L = length of vertical curve in feet
K = vertical curve design constant (K-value)
A = algebraic difference between the tangent street grades each way.

DESIGN CONTROL FOR VERTICAL CURVES BASED ON STOPPING SIGHT DISTANCE

Design Speed MPH	Crest Vertical Curve, Minimum K-value	Sag Vertical Curve, Minimum K-value
15[1]	3	10 (8[2])
20	7	17
25	12	26
30	19	37
35	29	49
40	44	64
45	61	79
50	84	96
55	114	115

[1] Applies only to vertical curves in alleys or at the intersection of a secondary street (side street) to a primary (thru) street (*ie. transition from primary street cross slope to grade of secondary street*).

[2] Reduction in K-Value *(for sag curves on secondary street intersections)* which is allowed provided the intersection is fully illuminated with a street light *(per these standards)* adjacent to the sag vertical curve.

f. Street grades, intersections and super-elevation transitions shall be designed to not allow

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concentrations of stormwater to flow across travel lanes.

g. Slope easements shall be dedicated or obtained for the purposes of grading outside of the right-of-way or to ensure that roadway fill slopes are not disturbed.

2.18 STREET CROSS SECTIONS AND STREET CROSS SLOPES

a. General

1) Typical Cross Slope. Cross-slope of the street section shall be two percent (2%) unless otherwise approved by the City Engineer, based on a demonstration by the design engineer that PROWAG standards are met.

2) Maximum Cross Slope. Cross slopes shall not exceed 5% without a specific Public Works variance request and approval.

3) Symmetrical street cross sections with opposite curbs at the same level are preferred.

4) Offset Crowns. Off-set crown cross-sections are acceptable only where required due to sidehill lies and to match existing facilities. Off-set crowns shall not exceed 12 inches between the high curb and the low curb, and the crown location shall not be less than 12 feet from the face of curb.

5) Inverted crown sections are not acceptable for public streets.

6) Shed roof cross sections are not acceptable for public streets, except within and immediately adjacent to street intersections. The design of shed cross sections shall include provisions to avoid concentrated drainage sources from flowing across the pavement surface.

b. Superelevation

1) Use of superelevations shall be prohibited unless specifically authorized by the City Engineer. Criteria for approval of the use of superelevations shall generally conform to the requirements for variances as outlined under Division 1.

2) Off-set crown sections are not acceptable as super elevation sections.

3) Maximum superelevation allowed for City streets shall be five percent (5%) *(except at intersections or pedestrian crossings where lesser slopes are required by PROWAG).*

4) Super elevation transitions shall be designed to not allow concentrations of storm water to flow over the travel lanes.

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2.19 GRADING WITHIN PUBLIC RIGHT-OF-WAY & PUBLIC EASEMENTS

a. Grading for local street and commercial/industrial classifications shall not exceed the following cross slopes *(note: see PWDS 2.33 for guardrail requirements for side slopes steeper than 3H:1V)*:

1) From top of curb to 1 foot behind the sidewalk: One & half percent (1.5%) upward typical *(1.5% downward only with specific written authorization from Public Works)*.

2) From 1 foot behind sidewalk to property line: 5H:1V upward or downward.

3) Within the street frontage public utility easement (PUE): 5H:1V upward or downward.

4) Outside of right-of-way, utility easement to the City or PUE: 2H:1V up or down outside the right of way, utility easements or PUE.

5) Along the edge of turnpike streets *(from the back of the gravel shoulder)*: 3H:1V downward, unless otherwise approved on a case-by-case basis by the Public Works Director and City Engineer.

6) Where the City has issued written approval for the construction of a street with sidewalks on one side only *(and where there is no PUE on the side without sidewalks)*: 3H:1V upward or downward on the non-sidewalk side, starting from a point 2 feet behind the back of curb *(grading from the curb to the beginning of the 3H:1V slope shall be level or 2% max up or down)*.

b. Side slopes may be increased to 2H:1V up or down beyond 2 feet from the back of the sidewalk, walkway or maintenance access lane with approval from the City Engineer and affected utilities.

c. Gravel Shoulders Along ¾ Street or Turnpike Street. Where street improvements do not include curbs along both sides of a street, the design shall include a full depth gravel shoulder on the non-curbed side *(2' minimum width typical, wider shoulder may be required by Public Works to address site specific circumstances)*, and shall address collection of storm water drainage on the non-curbed side of street improvements.

d. Roadside Swales. Where ditches *(roadside swales)* are necessary along the non-curbed side *(ie. where ground does not slope away from the street)*, ditches shall conform with PWDS requirements and City standard details *(3H:1V side slopes unless otherwise approved by the City, as well as driveway culverts which meet City standards)*, and shall drain to an approved point of disposal.

e. Landscape Block Retaining Structures & Block Adhesive. Landscape blocks shall be installed as necessary *(whether or not specifically shown on the drawings)* to retain

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soil or backfill along curbs or sidewalks, or around manholes, cleanouts, catch basins, valve boxes, hydrants, meter or backflow boxes or vaults, light poles or other improvements, or around the end of culverts under streets or driveways, along alignments and to heights as determined and directed by the City Engineer or the Public Works Director.

All landscape blocks shall be secured together with landscape block adhesive *(Loctite PL500 or equal waterproof and temperature resistant adhesive)* in order to prevent separation, slippage or displacement of blocks after construction.

2.20 CURBS AND GUTTERS

a. All streets shall include curbs on both sides except in the situations of interim width improvements. The minimum tangent curb gradients shall be as outlined under Section 2.16, 'Vertical Alignment'.

b. The standard curb for City Streets shall be Type A curb and gutter for all road classifications.

1) Use of Type C curbs for public streets requires written approval by the City Engineer for each location proposed, and is typically limited to replacement of short lengths of existing Type C curbs *(other than at new driveway approaches)*, use at raised pedestrian crossing islands, or where required by County or ODOT standards.

2) Where Type A curb and gutter is installed along the edge of existing paved streets *(where pavement widening is not required, and where changes to the vertical alignment or cross slope is not required)*, the pavement shall generally be sawcut at the edge of the gutter pan and the new curb & gutter placed against the sawcut, in order to minimize the need for street patching and repaving.

c. The ends of all curbs shall be tapered downward to prevent damage to vehicle tires.

d. A six (6) inch curb exposure is normally required on residential streets and streets with curb and gutter. A seven (7) inch exposure may be required by the Public Works Director on streets where Type C curbs are allowed. Greater curb exposure shall also be provided where required by ODOT standards *(including near railroad crossing as required by ODOT rail)*.

e. Three (3) inch diameter curb weep holes shall be provided through curbs with inverts 1-inch above the gutter line, at the locations outlined below. Drain pipe shall be provided under all sidewalks to connect to all curb weep holes *(drain pipe under sidewalks shall extend 12-inches behind back of sidewalk and be capped)*. The location of all weep holes shall be shown or defined on the drawings as outlined in Division 1.

1) Opposite existing or anticipated roof drain downspouts *(minimum 2 per lot)*.

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2) At 16 foot on center along low areas where curb top is above adjacent ground.

3) At 16 foot on center adjacent to bank areas to receive groundwater.

f. When new curbing is being placed, a stamp shall be placed to mark where each water, sanitary sewer or storm drain service lateral crosses the curbline. 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". The impression for a sanitary sewer service shall be the letter "S". The impression for a storm drain service shall be the letter "D".

2.21 SIDEWALKS & MULTI-USE ACCESS ROUTES

a. Unless otherwise allowed by the Development Code and/or approved through the Planning Department, sidewalks shall be provided on both sides of curbed streets for all road classifications, as well as along at least one side of private streets as required to comply with City, state and/or federal ADA accessibility guidelines.

The design of public and private sidewalk or pathway systems shall provide for pedestrian connectivity between structures and buildings, to mailboxes and to the existing pedestrian system. Where required by City, state or federal standards, design and installation of offsite sidewalks or pedestrian pathways shall be provided *(to provide connectivity to an existing sidewalk/pathway system)*.

b. Easements to City Required for Sidewalks Outside of Public ROW. Sidewalk easements to the City shall be provided for any sidewalks or other public pedestrian access routes *(or multi-use path)* located outside of a public right-of-way. The sidewalk easement shall extend a minimum of 1 foot beyond the edge of sidewalks or walkways in relatively flat areas *(wider easements may be required for sidewalks with adjacent slopes or retaining walls, at the discretion of the Public Works Director)*.

c. Separate Curb & Sidewalk Concrete Placement. Monolithic curb & public sidewalk placement is NOT permitted for public curbline sidewalks *(ie. the curb concrete & the public sidewalk concrete shall be placed separately, except where approved by the City at pedestrian ramps)*.

d. Drain pipe shall be installed under sidewalks at locations as required to connect to curb weep holes or other storm drain facilities, as required & approved by Public Works.

Surface discharge of roof drains or other drain pipes across sidewalks is NOT allowed, nor is the sheet flow from parking lots, commercial/industrial/public/multi-family driveways, common residential driveways, or concentrated flow from long flaglot driveways allowed to flow across sidewalks.

e. All sidewalks shall fully comply with all ADA and/or PROWAG standards as applicable. Handicap access ramps meeting current ADA and PROWAG standards shall be provided at all corners of intersections where crossing is permitted, regardless of

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curb type *(or absence of curb)*, and at the ends of all sidewalks.

f. Handicap access ramps shall be located so as to avoid conflict with storm drain catch basins.

g. Minimum Thickness. Sidewalks shall be constructed of concrete, and shall be a minimum of 4-inches thick except at driveway crossings and pedestrian ramps, which shall be a minimum of 6-inches thick *(8-inch thickness required for commercial type driveways)*.

h. Multi-Use Path. Multi-Use paths shall be a minimum of 4-inches thick concrete *(any pathways used for maintenance vehicle access to utilities shall be 6" thick & reinforced with #4 bar at 12" OC EW, unless 8" concrete thickness is provided)*.

i. Sidewalks shall meet the minimum widths outlined below. The location of sidewalks within the public right-of-way shall be as approved by the City during the design process.

MINIMUM SIDEWALK WIDTHS

Street Classification	Min. Sidewalk Width excluding curb	Location unless otherwise approved
Highway 99W	6.0 ft or current ODOT standard	Curbline
Arterial Street	5.0 ft	Curbline
Collector Street	5.0 ft	Curbline
Commercial or Industrial Str.	5.0 ft	Curbline
Local Street	5.0 ft	Curbline
Private Street serving multiple residences / businesses /uses	5 ft	

Property line sidewalks, where approved by City, are typically offset 6" to 1' from the rights-of-way line in order to avoid conflicts with right-of-way and property monuments.

j. Water meters, utility poles, etc. are not permitted within sidewalks unless authorized in writing by the City Department of Public Works.

k. Where single or clustered mailboxes or other objects are within a sidewalk, the sidewalk shall be widened to provide clearance equal to the required sidewalk width. For retrofit installations where specifically approved by Public Works, the sidewalk clear space may be reduced to 48 inches minimum, provided that all other PROWAG requirements are satisfied. All existing mailboxes shall be set on new posts at the time of sidewalk construction.

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l. Sidewalks to be constructed in conjunction with street improvements or to be provided as part of a development may be deferred at the City's option until building construction **except for the following situations** *(the sidewalks listed below must be installed by the contractor in conjunction with street or development construction)*:

1) Arterial or collector streets fronting corner lots.

2) Sidewalks along streets from which vehicular access to the fronting lot is restricted *(including but not limited to the higher classification frontage of a corner lot where driveway access is restricted)*.

3) Sidewalks fronting existing structures.

4) Offsite sidewalks not abutting the property within the development.

5) Pedestrian walkways not along public streets.

6) Sidewalks fronting non-buildable tracts or parcels.

7) All required ADA pedestrian curb ramps within or adjacent to public or private streets, as well as necessary sidewalks for ADA compliant pedestrian access to CBU or other mailboxes as required.

a) USPS Approval of Mailbox Location Required. Mailbox location(s) must be acceptable to the local postmaster, and CBU mailbox location(s) must provide for ADA compliant access *(see PWDS 1.11.e.1 for design engineer responsibility to obtain information required in order to determine acceptable CBU location)*.

Installation of mailboxes within the curb radius at street intersections is prohibited.

b) A pedestrian curb ramp must be located within 50 feet of the CBU (Oregon Structural Specialty Code 1111.4.1).

m. Grading Work Required for Deferred Sidewalks. In all cases where the construction of a sidewalk is deferred, all grading work required for future construction of the deferred sidewalks shall be completed by the developer at the time of street and utility construction, including weepholes through the curb for future rain drain pipes.

n. Non-Compliant Sidewalks to be Replaced. Existing sidewalks on the frontage of development property which do not meet City standards *(width or condition)* or ADA standards shall be replaced in conjunction with new development or redevelopment of property.

Existing non-compliant sidewalks beyond the frontage of new development or redevelopment property *(and which provides primary or sole ADA pedestrian access to or from the development property)* shall be replaced to the extent required by City

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Development Code standards, land use conditions, or as required by other agencies with jurisdiction.

o. Sidewalk Grades & Vertical Alignment. Except for pedestrian street crossings *(see Section 2.16, Intersections & Pedestrian Crossings)*, the sidewalk grade for pedestrian access routes contained within the public right-of-way shall not exceed the general grade of the adjacent street.

p. Sidewalk/Pathway Separation from Vehicle Route (Vertical or Horizontal): Where sidewalks or pathways are parallel to and adjacent to a drive aisle, driveway or street *(public or private)*, they shall be raised six inches above *(ie. vertical separation)* the parallel adjacent vehicle driving surface and curbed, OR be separated from the adjacent parallel driveway/street by a 3 foot minimum landscape strip *(ie. horizontal separation)*, a landscape berm, bollards, or other physical barrier.

If a raised path is used, the ends of the raised portions must be equipped with ADA compliant curb ramps where it transitions down to a vehicle driving surface.

If approved by the Public Works Director on a case-by-case basis, sidewalks or walkways on the same grade as the adjacent parallel driving surface may be allowed subject to a full depth curb being installed for separation *(extruded curbs for separation are not acceptable in such cases)*. Wheel stops *(per City details)* used for separation between same grade vehicle & pedestrian areas are allowed only for parking spaces.

q. End of Sidewalk Configuration & Sign. Temporary transitions acceptable to the City shall be provided at points where sidewalks terminate, except where otherwise approved by Public Works and the City Engineer *(typically limited to cases where the pedestrian access route does not continue beyond the end of the sidewalk, and subject to a "**sidewalk ends**" sign being installed on a post conforming with ODOT detail TM240, which post is also shown on Detail 212).*

r. Sidewalk Maintenance, Clearances. City standards require that "*Maintenance of sidewalks, curbs, and planter strips on either side of a sidewalk is the continuing obligation of the adjacent property owner.*"

1) Trimming and/or maintenance of trees, landscaping, shrubs, hedges or other growth along a sidewalk *(as required to prevent growth from extending past the edge of the sidewalk and obstructing the clear width of the sidewalk)* shall be the ongoing responsibility of the owner of the property immediately adjacent to the sidewalk location.

s. Fall Protection for Drop along Sidewalk Edges. A 4 foot tall vinyl coated chain link fence or equivalent fall protection railing shall be provided at locations where there is greater than 12-inches vertical drop along the edge of public sidewalks, or where there are slopes greater than 2H:1V within 2 feet of the edge of the sidewalk.

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Unless the sidewalk width is increased so that the fence/rail does not reduce the available sidewalk clear width, posts shall be installed behind the sidewalk or attached to the vertical concrete thickened edge or retaining wall along the drop area. The post and rail system shall be designed and constructed to meet the structural loading conditions under Section 1607.9.1 of the Oregon Structural Specialty Code.

2.22 CLEAR VISION AREA

a. Clear vision areas shall be maintained at each driveway access to a public street and on each corner of property at the intersection of two streets, a street and an alley, or a street and a railroad.

b. No fence, wall, hedge, sign, or other planting or structure that would impede visibility between two (2) feet and eight (8) feet shall be established in the clear vision area. Measurement shall be made from the top of curb or, where no curb exists, from the street centerline grade.

c. The clear vision area shall consist of a triangular area, two sides of which are right-of-way lines or a right-of-way line and access easement line. Where right-of-way lines have rounded corners, the right-of-way lines shall be extended in a straight line to the point of intersection and so measured. The third side of the triangle shall be a line connecting the non-intersecting ends of the other two lines.

d. For single use residential driveways, the clear vision area shall consist of a triangular area, two sides of which are the curb line and the edge of the driveway. Where no curbs exist, the future location of the curb based on full street improvements shall be used.

e. The following measurements shall establish the clear vision areas:

CLEAR VISION AREA MEASUREMENTS	
Type of Intersection	Measurement Along Each Lot Line or Drive Edge[1]
Controlled Intersection (Stop sign/signal)	20 feet
Uncontrolled Intersection (≥60' r/w)	30 feet
Uncontrolled Intersection (<60' r/w)	40 feet
Commercial/Industrial Driveways	20 feet
Common Use Residential Driveways & Alleys	20 feet
Single Residential Driveways	10 feet
[1]At the intersection of different classification streets, the measurement shall apply to the measurement along the right-of-way line as specified	

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for each street classification.

f. The preceding provisions shall not apply to the following:

1) A public utility pole.

2) A tree trimmed *(to the trunk)* to a line at least eight (8) feet above the level of the intersection.

3) An official traffic sign, street sign, warning sign or signal.

4) A place where the natural contour of the ground is such that there can be no cross visibility at the intersection.

2.23 CUL-DE-SACS, TURNAROUNDS

a. Cul-de-sacs shall be as short as possible and shall have a maximum length of 400 feet long and serve no more than 18 dwelling units unless otherwise approved by the Planning Commission and the Fire Code Official.

b. The City standard details show the minimum requirements for cul-de-sac turnaround areas. Other turnaround geometries may be used when conditions warrant and the City Engineer approves the design and application of its use. Cul-de-sacs in commercial or industrial developments shall provide adequate turnarounds for the type of vehicle serviced by the street, as approved by the City Engineer.

c. The minimum curb radius for transitions into cul-de-sacs bulbs shall be 25 feet and the right-of-way radius shall be sufficient to maintain the same right-of-way to curb spacing as in the adjacent portion of the street.

d. The finished pavement grade from the center point of cul-de-sac turnarounds to the curb shall not be less than two and one-half percent negative (-2.5%).

e. Cul-de-sac curb profiles shall be provided with a smooth vertical alignment. Curbline grade changes in excess of 1% shall use a vertical curve, with a K-value not less than 3.

2.24 STUB STREETS, VEHICULAR NON-ACCESS PROVISIONS

a. Stub streets which allow for future extensions shall include a reserve strip *(or vehicular non-access easement to the City)* at the terminus of the right-of-way provided by deed or plat conveyance to the City. The reserve strip or easement shall be at least one foot in width and extend the full width of the right-of-way.

b. Vehicular Non-Access Easement or Reserve Strip *(along non-access frontages)*. A vehicular non-access easement to the City *(or a reserve strip tract to the City)* is also required along public or private street frontages or common driveways where

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vehicular access is not allowed *(such as the non-access frontage of corner lots, one end of double frontage lots, street right-of-ways fronting on undeveloped property, non-access frontages along common driveways, etc.)*. Where a reserve strip to the City is allowed, it may be counted as part of the required right-of-way width

c. A paved turn around shall be provided for stub streets with lengths greater than 300 feet, or as required by the Oregon Fire Code (*150 foot maximum length without turnaround per OFC D103.4, unless otherwise approved by the Fire Code Official*).

d. Permanent barricades shall be placed at the end of all stubbed roads without a cul-de-sac turnaround. Vehicular access from the end of stub streets is prohibited unless explicitly authorized in writing by the City *(specific City Council approval typically required for any such permanent vehicular access from the end of stub streets)*.

2.25 PAVEMENT WIDTH TRANSITIONS

a. Transitions shall typically be provided beyond the limits of full or ¾ street improvements being constructed *(where connecting to an existing street with a different width)*.

b. Narrower to Wider Transition. Street width transitions from a narrower width to a wider width *(based on the direction of traffic flow in the travel lane adjacent to the taper)* shall be designed with a minimum 10:1 taper.

c. Wider to Narrower Transition. Street width transitions from a wider width to a narrower width or lane alignment transitions *(based on the direction of traffic flow in the travel lane adjacent to the taper)* 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 *(EP = Edge of Pavement or face of curb)*

Delineators *(style approved by the City)*, shall be installed to mark the edges of the transition from wider street width to narrower street width.

d. Transitions & Shoulders to be Full Depth. Transition paving shall be the full depth rock & pavement section required for the adjacent street, and shall include a full depth gravel shoulder a minimum of 1 foot wide.

e. Sawcutting & Bench Grind. The existing pavement along the transition shall be sawcut 1 foot minimum from the existing edge of pavement *(unless other widths are required by the City Engineer based on existing conditions)*, and the joints between the existing and new asphalt shall include an edge grind per City standard details.

f. Delineators. If delineators are installed to define the configuration, maximum spacing of

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delineators shall be the numerical value of the design speed, in feet *(ie. thirty-five (35) foot spacing for thirty five (35) MPH)*.

g. Barricades. In situations where a tapered transition cannot be provided *(due to inadequate ROW width, etc.)*, a barricade shall be installed at the end of the wider section of the street and a taper length shall be delineated prior to the barricade as approved by the City. The barricade shall conform to City & MUTCD Standards.

2.26 SUBSURFACE DRAINAGE

a. Subsurface street drainage must be considered in the design of each street *(including but not limited to a means to drain any water in the baserock into each catch basin)*.

Subsurface drains shall be designed and constructed per the standard drawing details or the recommendations of the geotechnical report, or where there are existing known groundwater issues in the area, or if groundwater issues are discovered during construction.

b. Subsurface drains shall connect and drain into the storm drainage system at catch basins, curb inlets, gutter inlets, manholes or road side ditches. Surcharge from the storm drainage system shall not be allowed to back up into the subsurface drains. Alternative subsurface drainage measures may be used if approved by the City.

2.27 ACCESSIBLE ON-STREET PARKING

a. Accessible on-street parking shall be provided as required by PROWAG, or as required by any planning approval for development projects, whichever is more stringent *(note: all PROWAG requirements and/or exceptions are not included herein)*.

b. Where on-street parking is provided on the block perimeter *(block perimeter is defined as both sides of a street between two adjacent cross street intersections)* and the parking is metered or designated by signs or pavement markings *(PROWAG R211.1)*, ADA accessible parking spaces shall be provided in accordance with PROWAG Table R211 *(exception: not required in exclusively residential areas)*. If individual spaces for signed on-street parking are not marked, each 20 feet of street is counted as one parking space.

Alterations. Where marked or metered parking on part of the block perimeter is altered, the minimum number of accessible parking spaces required is based on the total number of marked or metered parking spaces in the block perimeter. The removal of parking to provide curb extension at an intersection or midblock crossing triggers PROWAG for the on-street parking in the vicinity to achieve the minimum number of accessible spaces.

1) Accessible on-street parking spaces shall conform with the requirements of PROWAG *(typically 24 ft x 13 ft for parallel accessible parking spaces,*

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except where on-street parking is altered but the adjacent pedestrian circulation path is not, see PROWAG R310.2.1), and shall conform with City parking space dimensions, whichever is more stringent. Parking spaces shall not encroach on the travelled way.

2) Accessible on-street parking spaces shall be located as close to an accessible curb ramp as possible. Unless the accessible on-street parking spaces are provided adjacent to the intersection *(ie. at the block end)*, an accessible curb ramp shall be installed at the accessible parking location.

3) Access aisles adjacent to head-in or angled on-street parking shall be a minimum of 8 feet in width. Parallel accessible on-street parking will require a 5 feet wide access aisle between the parking space and the curb.

4) Access aisles shall extend the full length of the parking spaces they serve, where access aisles are required by PROWAG standards. Access aisles *(a minimum of 8 feet in width)* shall extend from the accessible on-street parking space to the accessible curb ramp.

5) Slopes within the accessible on-street parking space and access aisle shall not exceed 2% in any direction.

6) The center 50% of the sidewalk next to the accessible space shall be clear of obstructions such as signs, parking meters, etc. *(PROWAG R310.2.4)*.

2.28 PARKING LOTS & LOADING ZONES

a. The number of off-street parking spaces which may be required are not specified herein, but are controlled by local land use regulations or state standards as may be applicable. The following dimensional, layout, access & other physical standards apply to parking lots or loading zones which are provided in conjunction with development or construction *(whether such parking lots or loading zones are required by the local land use regulations or are provided at the option of the developer)*.

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b. Minimum pavement sections for parking lots or loading zones shall conform to the following, over compacted subgrade:

PARKING LOT MINIMUM PAVEMENT SECTIONS		
Classification	Pavement Thickness (inch)	Baserock Thickness (inch)
Parking Lot Access Route & Delivery/Loading Zones	3 (AC)	10
Parking Lot	2½ (AC)	7
The minimum pavement sections shown assume competent compacted subgrade and normal light traffic loading, and may not be adequate for all locations, soil conditions or types of development. The developer and/or design engineer shall be responsible to verify adequacy of proposed sections for the use intended. See PWDS 2.30 for requirements where use of durable non-paved surfaces is proposed.		

c. Access routes through parking lots which are to be used (1) by delivery trucks, service vehicles or fire trucks, or (2) by automobiles in excess of 500 vehicles per day, shall conform to the minimum access route section outlined above.

d. Parking Lot Layout Dimensions. The dimensions for the design and layout of parking facilities shall conform to the minimum requirements shown on the City standard details. In the event of discrepancies between the minimums in the PWDS standard details and the minimums in the development code, the larger minimums will typically apply as determined by the City *(ie. for instance, if minimum parking space dimensions in the PWDS are greater than minimums listed in the development code, the larger space requirements will control since the greater size will still comply with the minimum under the development code. The same applies to minimum drive aisle widths required in the development code, the PWDS or the Oregon Fire Code)*.

e. Minimum Slopes. Parking lots and associated driveways shall maintain adequate drainage facilities to prevent water ponding or ice formation, and to prevent stormwater from sheet flowing across sidewalks. In general, this requires a minimum cross slope of two percent (2%) perpendicular with contour lines, except where flatter slopes are required for ADA compliant pedestrian walkways. In no case shall cross slopes less than one percent (1%) be allowed at any point. All drainage facilities shall conform to the requirements of Division 3 of these PWDS.

f. Parking Lot Curb Style.

1) Extruded curbs may typically be used for parking lots or driveways, except as summarized below.

2) Curbs abutting head-in parking stalls shall be a Type C or Type A curbs, unless wheel stops are provided *(with front [vehicle side] of wheel stop set 2*

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feet from the curbline or edge of the pavement).

3) Drainage Collection Curbs. Type C or Type A curbs shall be used for drainage collection curbs in locations where curb failure will result in surface drainage flow entering onto adjacent property without a drainage easement or a defined drainage channel.

g. Parking Lot Curb Radius. Curves and corners along vehicular travel lanes within the parking facilities shall have a minimum curb radius of 15 feet except for emergency access lanes, where a minimum curb radius of 28 feet shall be required, unless a smaller radius is approved by the Fire Code Official *(OFC 503.2.4 & OFC Fig D103.1).*

h. Overhang Over ROW or P/L Prohibited. Bumper guards, bollards or other barriers shall be installed so that no portion of the largest design vehicle projects or encroaches into the right-of-way or over the adjoining property *(assuming 3 foot truck bumper overhang).*

The developer's engineer shall also verify any specific zone/development code setback from property line *(or right-of-way line)* with the City Planner.

i. Sidewalk/Walkway Width with Head-In Parking. Sidewalks or walkways abutting head-in parking stalls shall be a minimum of 6 feet wide *(excluding curb width)*, unless wheel stops are provided *(front [vehicle side] of wheel stop to be set 2 feet from the face of curb).*

j. Curb Overhang Allowance, Standard Parking Space Reduction. For purposes of sizing single loaded parking stalls *(without wheel stops)* which abut 6-inch Type C curbs AND 6 foot wide sidewalks *(or which abut lawn, planter or landscape areas)*, a maximum 1 foot bumper overhang may be assumed for standard size parking stalls *(ie. standard parking stall length may be reduced by a maximum of 1 foot from the length listed on the City standard details).*

1) Reduced Length Parking Spaces to be Labeled on the Drawings. Where this curb overhang allowance is utilized *(and the length of certain standard parking spaces are thus reduced)*, a note shall be included on the parking layout sheets clearly defining which of the standard parking spaces are designed utilizing this reduction allowance *(it should be noted that head-to-head parking spaces may not take advantage of this length reduction).*

2) Length of compact parking stalls are not to be reduced.

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k. Parking Lot & Driveway Lighting. Parking lots and associated access driveways shall be provided with security lighting configured to minimize the intrusion of lighting across property lines onto adjacent property *(see PWDS 1.11.e.1.k)*.

1) Parking areas shall have lighting to provide of 0.2 foot-candles to 4.0 foot-candles of illumination over parking spaces and walkways, measured at ground level. The uniformity ratio must be 20:1 or less. Where enhanced security is demonstrated to be necessary, the Planning Commission may approve a range of 0.5 foot-candles to 7.5 foot-candles, with a maximum uniformity ration of 15:1.

2) Lighting must be directed downward and shielded.

3) Light poles within 50 ft of a residential district or residential use, riparian zone, or wetland must not exceed 12 feet. The City may require house side shields where deemed appropriate.

4) Freestanding lighting structures cannot be taller than 35 feet in the industrial district, and 25 feet in all other districts unless otherwise approved in writing by the City Engineer.

5) The use of laser source light or any similar high intensity light is prohibited. The operation of searchlights is prohibited.

6) Wall pack and/or bollard lights may be utilized as the sole source of driveway & parking lot lighting only in locations or at heights where they will not be obstructed by vehicles to light the parking lot, and it is demonstrated that wall pack lights will not shine onto adjacent property.

l. Delivery and/or Loading Zones. Delivery and/or loading zones shall be sized & configured as required under local zoning/land use regulations, and shall have limits marked on the pavement & be signed for such use.

1) If any on-street delivery/loading zone is proposed, such area is NOT allowed to infringe on or block standard vehicular travel lanes along public streets or public alleys, unless specific & detailed approval is granted for a delivery/loading zone on the street or alley by all agencies with jurisdiction *(including approval under the applicable City land use or variance process)*, including conditions specifying the maximum time vehicles can be parked in the loading zone, and specifying times, if any, when use of the loading zone is NOT allowed.

2) In no case shall delivery/loading zones be allowed to block designated fire lanes.

3) The limits of any on-street loading zone shall be marked on the pavement with durable pavement markings per City standards.

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Paint may be used to mark the limits of loading zones located outside of public right-of-ways.

4) If a delivery/loading zone in an alley or public street is approved as noted above, and if it will block or partially block a vehicular travel lane, construction drawings shall be submitted for approval showing the dimensioned location and size of the proposed delivery loading zone. The drawings shall call out durable pavement markings, as well as signage designating the maximum time any single vehicle can be parked in the loading zone, as well as the times of day and/or specific days when loading is NOT allowed *(based on time limits as dictated by the City)*.

   a) Unless otherwise approved in writing by the City, the maximum time an on-street loading zone may be occupied by any vehicle shall be 90 minutes, and the on-street loading zone may be occupied for no more than 4 hours during any one day, with use of the on-street loading zone prohibited from 7 a.m. to 9 a.m. and from 4 p.m. to 6 p.m.

m. Use of durable non-paved parking lots shall be subject to approval by the City on a case-by-case basis, subject to meeting all City standards & requirements as summarized below for driveways or other vehicle maneuvering areas on private property.

n. Required Provisions for Electric Vehicle Charging. As required under HB 2180, OAR 918-460-0200, the State of Oregon created requirements *(implemented by the BCD under permanent rules adopted on 6/30/2022)* for certain newly constructed buildings
*(**A**-commercial buildings under private ownership,*
***B**-multifamily residential buildings with five or more residential dwelling units {excluding townhouses as defined under ORS 197.758, consisting of "dwelling unit(s) constructed in a row of . . . attached buildings, where each dwelling unit is located on an individual lot or parcel and shares a common wall with an adjacent unit"}, or*
***C**-mixed use buildings consisting of privately owned commercial spaces and five or more residential dwelling units)*
in order to provide the necessary infrastructure *(consisting of installed conduit and electrical service capacity per ORS 455.417 or space to provide additional future service capacity)* for the future installation of level 2 electric vehicle chargers at 20 percent of the building's associated parking spaces *(parking in garages or in parking lots)*.

Furthermore, ORS 455.417 and OAR 660-012-0410 requires that cities located within Oregon's 8 defined metropolitan areas *(including Jefferson)* must require certain defined buildings *(see building type list below)* to provide the necessary infrastructure *(as defined above)* for the future installation of level 2 electric vehicle chargers at 40 percent of the building's associated parking spaces.

Site plans submitted for review by Public Works must identify which parking spaces

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are designated for service by the EV charging infrastructure, as well as showing / dimensioning the alignment for the required conduit *(and showing location of proposed junction boxes per NEC standards)* to serve the parking spaces identified for EV charging.

Show & label conduit(s) *(# & size)* from the building *(or power service location adjacent to a transformer)* to the proposed or future level 2 EV charging stations to serve the designated parking spaces *(conduits shall terminate in junction boxes conforming to NEC standards)*.

Add a note summarizing the total number of parking spaces provided, as well as the number *(and percentage)* designated to be served by future EV charging station(s).

In general, these EV charging requirements apply to "newly constructed buildings and newly constructed garages or parking areas located on the site and serving the following building types, excluding townhouses as defined in ORS 197.758":

1) Commercial buildings under private ownership *(20% for building permits submitted after 7/1/2022)*;

2) Multifamily residential buildings with five or more residential dwelling units *(20% for building permits submitted after 7/1/2022, and 40% for building permits submitted on or after 4/1/2023)*; and

3) Mixed-use buildings consisting of privately owned commercial space and five or more residential dwelling units *(20% for building permits submitted after 7/1/2022, and 40% for building permits submitted on or after 4/1/2023)*.

o. Parking Lot Marking. All parking space and loading zone limits shall be permanently marked on the surface. All compact parking spaces shall be permanently labeled *(pavement markings or signs as applicable)*.

p. EV Charging Stations must be ADA Accessible to the extent required by State or Federal rules. If EV charging stations are required to be ADA accessible *(federal ADA Access Board guidelines)*, all parking spaces where EV charging stations are installed as part of the project or where conduits are stubbed for future EV charging use must meet dimensional, slope and access standards for ADA parking spaces *(even if the parking spaces designated for future EV charging stations are not designated or signed for ADA parking at the time of construction)*.

2.29 DRIVEWAY SPACING & LOCATION

a. Unless otherwise allowed by the Public Works Director, no more than one driveway per property, unless it is a corner Property, shall be permitted in residential zones.

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b. Driveways for corner properties *(corner lot)* shall be located on the lowest classification street and as far from the intersection as possible, unless the Public Works Director allows a second driveway under the following requirements.

1) Driveways shall be set as far away from the intersection as possible.

2) Two driveways will not be allowed along a common street frontage.

3) Driveways shall meet all site distance requirements.

c. Residential driveways of adjoining properties shall have a minimum of 15 feet clear between the edges of the driveways.

d. Location of all driveways serving commercial, industrial or multifamily facilities shall be approved by the City.

2.30 DRIVEWAYS, DRIVEWAY APPROACHES, ALLEYS

a. Driveways shall conform to the City standard details. Curb removal for driveways shall be by saw cutting or grinding that produces a smooth surface.

b. Sidewalks crossing driveway approaches shall be concrete per City standards.

c. Driveway & Alley Approaches & Adjacent Surfacing.

1) Hard Surfacing Between Street & Sidewalk. All driveway or alley approaches shall be paved or otherwise hard surfaced as specified *(from the street to the sidewalk, as well as behind the sidewalk)*.

Driveway approaches on curbed streets shall be constructed of concrete, and shall be a minimum of 6-inches thick *(8-inch minimum for commercial, industrial, public or multi-family type driveways)*.

Driveway approaches *(between the street & sidewalk)* on turnpike *(non-curbed)* segments may be either concrete or asphalt.

2) Hard Surfacing Behind Sidewalk. A minimum of 10 foot paved or concrete extension beyond the back of sidewalk shall be provided for new or replacement sidewalks *(including sidewalks which cross existing gravel driveways, alley approaches, etc.)*.

In cases where durable non-paved surfaces *(other than gravel)* meeting City standards are allowed, driveways and alleys shall be provided with a minimum 10 foot paved or concrete extension of the approach beyond the back of sidewalk location in all cases *(measured from back of future sidewalk location for turnpike streets)*.

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3) Driveway approaches shall be constructed to meet current ADA and PROWAG standards at all locations where sidewalks cross or will cross the driveway.

Truncated Domes at Certain Driveways. Per PROWAG standards effective 9/3/2024 (R305.2.8), *"Where driveways are controlled with yield or stop control devices [signs] or traffic signals, detectable warning surfaces shall be provided on the pedestrian circulation path where the pedestrian circulation path meets the driveway"*

4) Alley Approach Configuration. Unless otherwise approved or required by the City, sidewalks through alley approaches shall be depressed through the alley approach, so that the vehicle transition path from the gutter line grade to the sidewalk grade is lessened to the extent feasible *(fully depressed alley approaches are typically only allowed on ascending alleys or where a catch basin is provided just uphill from the alley approach).*

d. Driveways Not to Block Drainage. Driveways shall be constructed so that they do not block drainage along the street.

e. Driveways & Other Vehicle Maneuvering Areas shall be Paved. All driveways, parking areas, AND other vehicle maneuvering areas on private property shall be paved with asphalt, concrete or comparable surfacing, except where the use of durable non-paving material is approved by the City on a case-by-case basis, where proposed or required to reduce surface water runoff and protect water quality *(NOTE: plain gravel surfaces are NOT considered to be "durable non-paved surfaces" for purposes of this requirement).*

Where durable non-paved surfaces are proposed within driveways, parking areas, or other vehicle maneuvering areas on private property, such surfaces shall meet the minimum requirements summarized below, subject to case-by-case approval by the Public Works Director and the City Engineer.

f. Durable Non-Paved Vehicle Maneuvering Surfaces.

1) Durable non-paved vehicle maneuvering areas shall be subject to review and approval by the Public Works Director, and will require a maintenance agreement acceptable to the City be recorded against the property.

2) The type of durable non-paved surface proposed shall allow for the installation of permanent marking of parking spaces, driving lanes, fire lanes & turnarounds, etc. *(ie. where permanent surface painting is not feasible, permanent colored surface delineators specifically designed for use with the durable non-paved surface proposed shall be provided and installed).*

3) Durable non-paved vehicle maneuvering areas shall be concrete pavers over compacted baserock specially designed for commercial/industrial loading, or shall be the TrueGrid ProPlus Commercial/Industrial Grade Paver system

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(AASHTO H20/HS20 rated, 2'x2' square x 1.8" thick interlocking black HDPE panels, cylindrical cells for maximum column strength, 3 point male/female locking tabs–6 per side, integral S-flex expansion joints, 0.15" min cell wall thickness, 0.25" min thickness at cell connections, no staking required for slopes < 10° [~17.5%]), or approved equal.

a) Granular rock sections under durable non-paved surfaces shall be designed for the heaviest design vehicle loads *(including for fire trucks where vehicle lanes are required for fire apparatus access to the buildings)*, with the design stamped by a licensed professional engineer.

(1) The minimum baserock sections required in the PWDS for different uses assumes installation over competent compacted subgrade, and may not be adequate for all soil conditions. The development team shall be responsible to verify adequacy of proposed minimum sections for the use intended. Thicker baserock sections shall be provided where installation over uncompacted subgrade *(for infiltration purposes)* is proposed.

b) If open-graded angular rock is proposed under the durable non-paved surface *(based on site specific infiltration testing per City standards)*, geotextile fabric *(drainage fabric from the current ODOT QPL for OSSC Table 02302-1)* shall be required between the subgrade and open-graded base stone, as well as providing drainage fabric between the open-graded base stone and the top wearing surface.

(1) Where open-graded angular rock is proposed, a perforated pipe overflow system shall be provided where overflow would otherwise flow onto adjacent private property or across sidewalks.

c) Where permanent colored surface delineators are required, they shall be yellow TrueGrid SuperSpot or equal, in order to meet City standards that permanent maintenance free parking delineation be provided.

d) Wheel Stops installed shall be compatible with the type of durable non-paved surface installed *(TrueGrid wheelstops where TrueGrid system is used)*.

e) Pavement and other hard surfaces shall be installed before installation of the durable non-paved surfaces.

f) Signs shall be provided to designate any compact parking spaces located on durable non-paved surfaces, if any are provided *(marking or signing of compact spaces is required by City standards)*.

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g) All ADA accessible parking spaces *(and pedestrian walkways serving such accessible parking spaces)* shall be hard surfaced with pavement or concrete.

h) All dumpster enclosures *(and loading pads in front of dumpster enclosures)* shall be shall be hard surfaced with pavement or concrete.

g. Common Use, Commercial & Industrial Driveways.

1) Common/Multiple use, multi-family, public, commercial or industrial type driveways *(as well as any driveway exceeding 10% slope)* shall be paved completely *(see provisions under PWDS 2.31 for fire lane paving)*.

2) Common driveways serving multiple lots and flag lot driveways over 150 feet in length shall be provided with an emergency turnaround meeting the requirements of Public Works, or as required by the Oregon Fire Code.

h. Alley Surfacing. New alleys shall be paved *(AC pavement or concrete)*.

i. Minimum Alley Slope. Paved alleys flatter than 1% shall be provided with a concrete gutter, consisting of Type A curb & gutter for shed or crown sections, and a concrete valley gutter for inverted crown sections *(alley gutter slopes flatter than 0.5% are not allowed)*.

j. Alleys *(or unimproved street ROW)* Used as Driveways or for Vehicular Access.

1) Existing alleys or unimproved street right-of-ways used as driveways *(vehicular access)* for new structures or remodeled/reconfigured existing structures (*whether or not land use approval is required*) shall be paved to City standards from the improved public street from which vehicular access is taken, along the entire portion of the alley or unimproved ROW used as a driveway or vehicular access (*including turning/backing areas as applicable*).

2) Pavement width shall meet applicable minimum width required for commercials/industrial driveways, common driveways or fire lanes, or as required by applicable City approvals, whichever is greater.

k. The angle between a driveway centerline and the parallel vehicle travel lane shall be between 75 degrees and 105 degrees.

l. Maximum Driveway Slope. Maximum slope of driveways shall not exceed 15%. See requirements regarding driveway design for future street improvements.

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m. Driveways to Accommodate Future Street Improvements.

1) For driveways connecting to a street that has not been improved to its ultimate width, the driveway profile (*ie. vertical profile*) shall be designed to allow for future street widening without reconstruction of the driveway.

a) Driveways on turnpike *(or streets narrower than current City standards)* shall be constructed such that the surface of the driveway matches the future back of sidewalk elevation.

Future back of sidewalk elevation to be based on design street width and cross slope per current City standards, assuming the future street will be centered in the future right-of-way *(unless otherwise directed by the City)*.

b) This requirement applies both to new driveways and to existing driveways reconstructed in conjunction with street improvements.

2) See also 2.30 provisions above regarding driveway grades constructed so that it does not block drainage along the street.

n. Driveways on Turnpike Streets.

1) Extend paved driveway approaches to the ROW as a minimum in conjunction with turnpike street construction.

2) Driveway Approach Connection Radius. Driveways connecting to turnpike *(non-curbed)* street sections shall be include a paved radius adequate to ensure that the wheel path of design vehicles will not go beyond the hard surfacing when entering or exiting the driveway *(10' typical minimum for residential driveways, larger radius required for commercial/industrial/public/multi-family driveway approaches as applicable based on largest design vehicle wheel path)*.

o. Setback to Garage. Unless otherwise approved in writing by the City, single family residential garages or carports shall be set back a minimum of 20 feet from property lines, or from the edge of an access easement where common driveways cross properties, or from the edge of a driveway or sidewalk which serves multiple units on the same property, whichever is further *(ie. in order to accommodate full size pickups or service vehicles without encroaching into a vehicle travel path or sidewalk)*.

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2.31 PRIVATE STREETS, COMMON DRIVEWAYS, FLAGLOTS, FIRE LANES

a. Private Streets.

1) Pavement Required, Minimum Sections. Private streets serving more than 4 residences or dwelling units shall be paved and constructed to the same cross sectional specifications *(AC & rock sections)* as public streets for similar uses.

2) Required Width. The width of private street shall match the minimum width specified for public streets serving similar uses, unless narrower widths are approved by the City in conjunction with the land use approval process *(residential private streets shall meet the minimum width for residential cul-de-sacs, depending whether on-street parking is proposed on one side or both sides)*.

3) Minimum Paved Width. For private streets approved without on-street parking, the minimum width shall not be less than 24 feet minimum *(except where wider widths are required by the OFC, development code or land use approvals)*.

4) Sidewalk Requirement *(Private Streets & C/I Driveways)*. Private streets or common commercial/industrial driveways shall be provided with sidewalks or pedestrian walkways *(serving all structures)* meeting PWDS and ADA requirements and as required by City code and/or planning approval.

5) Separate Tract. Private streets serving more than a single legal lot of record shall be located within a separate tract *(5 feet minimum wider than the street & sidewalk widths)* under the common ownership or under the control of all lots/parcels taking legal access from the private street, and shall have a recorded maintenance agreement and a recorded fire lane easement conforming to OFC requirements.

6) Maximum Cross Slope. Unless otherwise approved by the City Engineer and the Fire Code Official, cross slope for common driveways, private streets and fire lanes *(including within fire lane turnarounds)* shall not exceed limits for public streets *(typically 5% maximum)*.

7) Private Through Streets Prohibited. Private streets shall provide access only to abutting lots, shall not provide access to other streets or roads *(public or private)*, shall not block access to other public or private land, and only where determined by the City that street extension to serve other property or to provide connectivity with other streets will not be possible or necessary in the future.

b. A turn-around shall be required for any private residential street, common driveway, fire lane or flagstem driveway which has only one outlet and which is in excess of 150 feet long, or which serves more than two residences, or as required by the Oregon Fire Code. Non-residential private streets serving more than one ownership shall provide a turn-

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around if in excess of 200 feet long and having only one outlet, or as required by the Oregon Fire Code. Turn-arounds for private streets shall be either a circular turn-around with a minimum paved radius of 35 feet, or a tee or hammerhead turnaround conforming to the City standard details, or as required by the Oregon Fire Code.

c. Pavement sections and widths for common driveways, flaglot drives or partition access easements shall conform to the following:

MINIMUM PAVEMENT WIDTH AND SECTIONS

Classification[4]	Minimum[1] Paved Width[2]	Pavement Thickness (inch)	Baserock Thickness[5] (inch)
Common Drives serving 2 to 4 residences[3]	20 ft	3 (AC)	9
Fire Lane minimum *(match street section where more than 4 residences, or match parking lot access route where applicable)*		6 (PCC)	2
Flag Lot Driveway	12 ft	2½ (AC)	6
(wider widths & thicker sections required for fire lanes)		6 (PCC)	2
Driveway Access Easement crossing another property	16 ft	2½ (AC)	6
(wider widths & thicker sections required for fire lanes)		6 (PCC)	2

[1] – Wider pavement widths may be required by the local Fire Code Official or where necessary to meet Oregon Fire Code (OFC) requirements *(20' minimum typical)*. Fire Lanes shall be designed to support 75,000 lb fire apparatus per OFC D102.1. Also, OFC 503.1.1 requires that a fire lane *(ie. fire apparatus access road)* extend to within 150 feet of the furthest point on any building exterior 1st story wall. See PWDS 2.30 for maximum slopes for driveways, and OFC D103.2 for maximum slope along fire lanes.

2 – Paved width shall be measured from the face of curb where curbs exist.

[3] – A recorded access easement & maintenance agreement is required for shared driveways or private streets.

[4] – All common residential driveways & private streets shall be designated as fire lanes and signed for no parking, and shall meet the fire apparatus access road requirements of the Oregon Fire Code where applicable. Where a private street is provided, a sidewalk along at least one side is required, configured to provide pedestrian access to all lots, parcels and/or buildings utilizing the private street (see PWDS 2.31.a).
Provide PUE along one side of street easement for franchise utilities.
See PWDS 2.24 for vehicular non-access requirements where applicable.

[5] – Minimum baserock thickness assuming subgrade compacted to 95% of Modified Proctor and passes a proof-roll with a fully loaded 10 yard rock truck. Thicker baserock sections over geotextile fabric are required otherwise.

Note: Easement widths for fire lanes or driveways across other property, or tracts containing private streets, are to be a minimum of 5 feet wider than the paved width (see also Detail 220).

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d. Flaglot Drive Earthwork & Grading. As a minimum, all grading for single flag lot drives shall be completed by the developer at the time of street and utility construction, whether or not paving is required at the time of street construction.

e. Common Use Driveway Paving & Fire Lane Paving. Common use driveways and fire lanes shall be paved by the developer at the time of street and utility construction to ensure that they are serviceable prior to building permit issuance per Oregon Fire Code requirements (OFC 501.4), unless an exemption/variance is granted in writing by the Fire Code Official and the Public Works Director *(based on extraordinary extenuating circumstances)* to allow paving to be deferred but to occur prior to occupancy *(permanent gravel driveways or fire lanes are not allowed)*. Paving of fire lanes which also serve as utility maintenance access lanes shall not be deferred.

1) If such a written exception is granted to defer paving *(based bonding approved by the City, tied to a written agreement to complete the paving by a specified date)*, the common driveway and/or fire lane shall be improved with granular baserock to a sufficient depth to accommodate all truck and construction loads during building construction *(typically corresponding to the City's standard baserock section plus over-excavation baserock section as a minimum)*.

A performance bond *(per G.10.d.4)* shall be provided to the City to guarantee the deferred paving is completed prior to occupancy of any structures served by the driveway or fire lane.

2.32 PUBLIC STREET LIGHTING

a. Street Lighting Required. Street lighting location drawings shall be provided as part of *(& shown on)* the street design and/or the development design process, in consultation with Public Works and the power company, at the developer's cost *(where street lighting meeting City standards does not already exist)*. Street lights shall be located as near as possible to lot line extensions and not in the middle of lots, as well as at other designated locations.

b. Spacing and location of street lighting shall be approved by the City **based on City spacing and location standards** or a photometric design acceptable to the City, subject also to the location and spacing standards summarized herein.

The detailed power & conduit design by the power company and installation costs of street lights shall be paid for by the developer, including any redesign costs required to comply with City spacing or location standards. Any street light fees *(ie. costs under the tariff option noted for each style of street light as applicable, based on the City standard street light details)* or line extension fees shall be the responsibility of the developer.

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c. Street Light Location & Spacing. Street lights shall be placed at all street intersections *(public or private)*, street corners and at cul-de-sac bulbs *(or at temporary turnarounds, if approved in lieu of cul-de-sac bulbs)*. In addition, street light spacing shall not exceed 200 feet or 3 lot widths, whichever is less, unless otherwise approved by the Public Works Director.

As noted above, lesser spacing must be used whenever required in writing by the City, based on public safety concerns or where required by a photometric design, or where required to meet other location standards.

1) Unless otherwise approved by Public Works and the utility company, street lights shall be installed a minimum of 1 foot behind curbline sidewalks.

2) Street lights may be installed between the curb and property line sidewalks provided the street light is a minimum of 3-feet behind the face of curb and 1 foot from the sidewalk.

d. Relocation of Street Lights. Any street light relocation, if requested by a resident or developer *(or where relocation is required in conjunction with new development)*, must be approved by the Public Works Director, and the resident or developer will be responsible for the cost of such relocation.

e. Pedestrian Lighting. Where pedestrian paths or offsite sidewalks are required in conjunction with a development project, street lights or pedestrian lighting *(acceptable to the Public Works Director)* shall be provided along the sidewalks or paths where adequate lighting does not already exist.

2.33 BARRICADES AND GUARDRAILS

a. Guardrails shall be provided on all streets with adjacent downhill slopes which drop 6 feet or more at greater than 3H:1V slopes.

b. Guardrail installation shall be based on information found in AASHTO publication "Guide for Selecting, Locating and Designing Traffic Barriers."

c. Guardrails shall be designed and constructed per ODOT's "Standard Drawings for Design and Construction.

d. Permanent barricade installation shall be based on the "Manual of Uniform Traffic Control Devices." Red and white reflectorized barricades shall be used at the end of a street, conforming with Detail 225. White and black reflectorized post mounted 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 signs shall be used at the end of the sidewalk or pedestrian/bike path, mounted on a post conforming with ODOT detail TM240, which post is also shown on Detail 212.

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2.34 BIKEWAYS

a. Bikeway locations shall be determined by the City, as summarized in the TSP. 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 ODOT.

b. A bikeway may be constructed adjacent to the curb within the pavement area.

c. Structural sections of bikeway facilities on streets shall conform to that of the street or be integral with the curb.

d. Bikeways not within a street shall be constructed as concrete multi-use paths per PWDS 2.21, with a minimum usable width of 8 feet, unless wider widths are required by the City per the TSP or development code.

e. Design Standards regarding horizontal alignment, grade, sight distance, intersections, signing, marking, structures, drainage and lighting shall conform to the AASHTO Standards. When bikeways are integrated with a curb, all inlet grates shall be designed to protect the bicyclist from the grate or opening.

2.35 STREET SIGNS

a. Street signs shall be installed on all new or reconstructed public and private streets. Street names for all newly platted streets shall be approved by the City.

b. All street signs *(material, color, wording, etc.)* shall conform to OSSC (ODOT/APWA) Specifications, City Standards, and the Manual of Uniform Traffic Control Devices (MUTCD). Location and type of signs shall conform with MUTCD and City Standards.

c. Signs along County or State right-of-ways shall be approved by the County or ODOT as appropriate.

d. All signs shall be ordered, installed and paid for by the developer. Street names and sign types shall be approved by the City prior to placement of the sign order.

2.36 CUTTING EXISTING STREETS & RESTORATION REQUIREMENTS

a. Any street pavement cuts shall be repaired to PWDS standards and details, including any work by or for franchise utility companies. Finish pavement grades at transition to existing pavement shall match existing pavement grades or be feathered past joints with existing pavement as required to provide a smooth, free draining surface. Pavement surface shall be a smooth, well-sealed, tight mat without depressions or bird baths. Bony or open graded pavement surfaces, pavement which does not drain, or pavement with cracks or discontinuities along edges between new pavement and existing pavement or curbs shall be repaired to the satisfaction of the City, prior to final acceptance of the work.

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b. Unless otherwise approved in writing by Public Works, sawcuts or trenches within arterial or collector streets shall meet same requirements *(below)* as for cutting new streets *(ie. pavement less than 5 years old)*.

c. Street cuts in PCC concrete streets or concrete driveway aprons shall be restored as required by the City Engineer.

d. Pavement more than 5 years old. All trench cuts, widening or extending of existing paved streets *(those which do not meet the overlay/inlay requirements below)* shall be include a bench grind along the joint between the new AC and existing AC per City standard details *(to avoid a full depth joints)*, unless otherwise specifically approved by the City Engineer and Public Works for driveway cuts, private street cuts or public streets where existing asphalt is inadequate to support the bench grind.

1) Where utility work or other improvements along a street result in more than 50% of the paved road width being removed or damaged, a full width overlay *(or grind & inlay covering the entire width of the street)* shall be provided, limits as summarized below and as outlined in PWDS 2.13.

e. Pavement less than 5 years old. **No street under City jurisdiction shall be cut by a contractor, developer or utility company within 5 years of construction, reconstruction or overlay unless approved by the Public Works Director and authorized in writing by the City Council.** This time period may be extended in one (1) year increments by resolution by the City Council on a case-by-case basis. In the event that the City allows a street to be cut within the time limit outlined herein, the trench in AC pavement shall be restored as follows:

1) Unless otherwise approved in writing, the trench shall be backfilled above the pipe zone with a Controlled Low Strength Material (CLSM) backfill *(with an unconfined compressive strength less than 200 psi)* as approved by the Public Works Director. The mix design shall be submitted to the City and approved prior to cutting the street.

2) The trench edges shall be over-cut square and straight to a minimum width of 6-inches from each edge of the trench following completion of the backfill and prior to the final patch work.

3) An asphalt wearing course of Class C mix shall be placed in two lifts to a minimum compacted depth of 4-inches or the depth of the existing pavement, whichever is greater.

4) After the trench cut is plugged as noted above, the street shall be repaved with an overlay or an inlay based on the minimum requirements summarized below, and as approved by the City Engineer and the Public Works Director.

a) The overlay shall cover the cut area to a minimum compacted depth of 2-inches and extend a minimum of 50 feet beyond the cut area in each direction along the street. Unless otherwise approved by the City

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Engineer and the Public Works Director, the overlay shall encompass the entire paved width of the street. A 2-inch deep edge grind shall be provided along all gutter or curblines to allow the new pavement to match gutter or curb grades and at each end to allow the new pavement to match existing pavement grade. Edge grinds shall be tapered to allow the full overlay depth at all locations. Butt grinds at the end of overlays shall be a minimum of 25 feet in length.

b) As an alternate to a full width overlay, a grind and inlay may be provided as follows. The grind & inlay shall be 2-inch minimum, or half the pavement depth, whichever is greater *(3" maximum)*. Unless otherwise approved by the City Engineer and the Public Works Director, the grind & inlay shall extend a minimum of 15 feet in each direction *(parallel with curbline)* beyond any trench cut, and all inlays shall extend a minimum of 5 feet *(perpendicular to curb)* beyond any trench cut limits, with pavement limits extended as required to ensure that pavement joints do not fall in a wheel track. If the minimum inlay limits extend beyond the street centerline, it is to encompass the entire street width.

5) The overlay *or inlay* shall meet all requirements as outlined in PWDS 2.13, Overlays. A strip of pre-tacked paving fabric shall be installed over all trench patch joints *(PetroTac or equal)*.

If this work is performed by a private party, a warranty/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 said pavement patches for a period of two (2) years, and during that time shall repair to the City's satisfaction any of the patches which become settled, cracked, broken or otherwise faulty."

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