

## **Chapter 5**

### **Access and Intersections**

#### **5-1 Access Control**

Driveway approaches and intersection location, spacing, and design are fundamental to the management of access and preservation of capacity provided for in the roadway design. The functional classification of each roadway addresses the appropriate level of access control for that roadway. The Engineer may be required to furnish an access plan that will be used by the County to review what impact the proposed access will have on the road system.

Design criteria used for residential, minor or major driveway approaches are outlined below. Roadway intersection design criteria are to be used whenever an approach roadway intersects another road, or if traffic signalization is warranted as defined in the current edition of the *Manual on Uniform Traffic Control Devices*. All roadway intersections, public or private, will use roadway intersection design criteria.

When a three or more lane approach is requested, a traffic engineering study along with a signing, striping, and traffic channelization plan shall be completed by the Engineer.

The adequacy of all criteria given in this section to the particular situation in question should be checked by a proper engineering analysis. These criteria are minimum guidelines only and may be modified according to traffic volumes and mix, topography, design speed, design vehicle requirements, and other conditions.

##### **5-1.1 General Criteria**

The County Engineer shall provide specific geometric requirements for residential driveway approaches, minor driveway approaches, and major driveway approaches. Roadway and driveway approaches, public or private, should be designed so as not to interfere with drainage.

For intersections and driveway approaches, the following general design criteria shall apply:

- A. Intersections shall not be located on curves with radii that are less than the minimum required for 5 mph above the design speed. Intersections shall be located a sufficient distance along or away from all curves to provide and maintain proper sight distance for vehicles on the intersecting road or driveway approach and on the through road.
- B. Intersections within a local road system should be of the “T” type. For lower speed-facilities of minor or cul-de-sac classification, “L” type intersections are acceptable. Four-leg intersections are not desirable but may be permitted if it

meets sight distance requirements and the approval of the Development Engineer.

- C. The intersection of two local roads should be designed to operate without any traffic control device (e.g., Stop or Yield signs) whenever possible.
- D. Multi-leg intersections (i.e., those with more than four legs) are not permitted.
- E. Whenever a potential feasible access exists to any property from two or more roads, the County Engineer may refuse access to the higher classified road.
- F. Whenever a potential feasible access exists to any property from both a public road and private easement, the County Engineer may refuse access to the public road.
- G. Access to corner lots should be from the lesser-classified road at the greatest distance possible from the intersection.
- H. The number of intersections should be minimized as much as possible, particularly as classification of the affected roads increases. Intersection spacing should be maximized wherever possible.
- I. New access locations internal to the platting of property shall be unified whenever possible to create the fewest number of access points onto a road if they access roads of a classification higher than a local road minor. Lots of record in existing formal plat subdivisions, short plats and large lots not served by a minor or major driveway approach shall be permitted a minimum of one residential driveway approach.
- J. Entering sight distance for a proposed intersection (public or private) or driveway approach shall be in accordance with Section 3-1.
- K. Access to the abutting property shall be controlled along the access centerline from the right-of-way or easement into the property for a distance of 80 feet on a major driveway approach and 20 feet on a minor driveway approach unless otherwise approved by the County Engineer.
- L. The minimum distance between the paved edge of a driveway approach and the face of an obstruction, including above-grade utility appurtenances, shall be no less than 4 feet without curbing and no less than 3 feet with curbing on the approach.
- M. The outer edge of a proposed driveway approach or roadway shall not be constructed closer than 70 feet to a bridge, culvert, or other structure that may warrant end protection using guardrail in accordance with the most current criteria adopted by the Washington State Department of Transportation.

Notwithstanding the requirements of this section, the number and location of driveway approaches and intersections may be more restrictive than described herein if deemed necessary by the County Engineer. The County Engineer shall base the determination on existing and projected traffic volumes and channelization/signalization on the existing County road, turning movements generated by the existing and/or proposed project(s), the amount of lot frontage along the road, and other applicable traffic design criteria, as well as other driveway approaches in the vicinity of the proposed access.

In order to minimize the number of conflicts between vehicles entering and exiting the roadway and vehicles traveling along the roadway, the Engineer is encouraged to exceed the minimum distances between a proposed driveway approach or proposed road intersection and existing intersections and driveway approaches along either side of the roadway.

## **5-2 Driveway Approaches**

No person, party, firm, corporation, or entity shall construct, repair, alter, maintain or use any approach from any abutting property to any public or private road located in unincorporated Pierce County, permanently or on a temporary basis, without first obtaining or having a Driveway Approach Permit from the County. A copy of each Driveway Approach Permit shall be available for inspection at the site during the life of the permit. Any change of use or any improvement that increases the traffic volumes using an existing driveway approach will require the obtaining of a new Driveway Approach Permit and must otherwise comply with all standards.

No driveway approach shall be permitted to undeveloped parcels of land without first securing, in writing, the approval of the County Engineer.

Driveway approaches are deceptively simple in appearance and often do not receive the design consideration that they merit. Commonly overlooked design issues include inadequate radii at the intersection with the roadway, excessive approach grades and grade changes within the driveway approach area, inadequate width, and inadequate entering sight distance.

Driveway approach design needs to address the type of vehicle composition anticipated, traffic volume, and land use activities being accessed. Driveway approach placement needs to be carefully determined to minimize interference with normal roadway operation. Closely spaced driveway approaches are discouraged.

The design of the driveway approach is broken into three general classifications, which are:

- Residential Driveway Approach serves up to two single-family residences or one duplex unit and infrequently used accesses such as drainage pond maintenance accesses.

- Minor Driveway Approach serves multi-family and commercial uses with approach traffic volumes of up to 1,500 vehicle trips per day or up to 150 vehicles trips per peak hour, or for alleyways and shared access facilities (the design and usage criteria for the alleyway and the shared-access facility shall conform to the requirements contained in Pierce County Code 17B.20).
- Major Driveway Approach serves multi-family and commercial uses with an approach traffic volume of 1,500 or more vehicle trips per day or 150 or more vehicle trips per peak hour.

When multi-access points are allowed to serve one site, then each driveway approach should conform to the applicable driveway approach classification.

### **5-2.1 Residential Driveway Approach**

Residential Driveway approaches shall be constructed in accordance with the specific geometric requirements provided by the County Engineer. Grading and restoration of an access beyond the end of the driveway approach shall be done to provide a smooth, passable, and safe transition.

There shall be no more than one residential driveway approach onto any road for any one residence unless otherwise approved by the County Engineer. When it is shown by the applicant that there is a need for the additional residential driveway approach and that the safety on the road system will be improved by the granting of a second residential driveway approach, the County Engineer may approve the second residential driveway approach.

Residential Driveway approaches shall be constructed the maximum practical distance from an intersection. At least 35-foot separation shall be provided between a Residential Driveway Approach and either an arterial or local road feeder intersection; this distance is measured from the road right-of-way or easement/tract line of the adjacent intersection to the nearest edge of the access. In the case where adequate lot frontage is not sufficient to provide the required separation from an intersection, the driveway approach should be located the maximum practical distance away from the intersection.

When lots are created or altered, through a land use process, Residential Driveway Approaches will not be permitted onto roadways with either an arterial or local road feeder classification. Further, particularly when lots with minimal frontage are used, the layout and design of the lots should use creative techniques to maximize access spacing from intersections. Techniques for maximizing this spacing may include a shared facility with an adjacent lot away from the intersection; locating property lines such that any lot extends no further than halfway into an intersection; and, providing open space (or other use) tracts between lots at intersections. On local road minors or cul-de-sacs, Residential Driveway Approaches shall not be permitted to be located within an intersection area of a local road feeder. On a Neighborhood Street or Access Lane, lots must be designed to achieve access locations as far as practical from the center of a roadway intersection.

For existing lots with no alternative access to a lower classified roadway, Residential Driveway Approaches on a local road feeder or an arterial roadway shall be located a minimum of 10 feet from the side property line, as measured from the property line to the nearest edge of the access.

### **5-2.2 Minor Driveway Approach**

Minor Driveway Approaches shall be constructed in accordance with the specific geometric requirements provided by the County Engineer. Grading and restoration of the access beyond the end of the driveway approach shall be done to provide a smooth, passable, and safe transition to the existing facility.

Minor Driveway Approaches shall be located a minimum of 125 feet from an intersection. Along an arterial roadway they may also be located directly across from a local road minor or cul-de-sac intersection. Physical site conditions and spacing of existing driveway approaches may cause the County Engineer to require another location. The 125 feet is measured from the intersecting road right-of-way line to the nearest edge of the access. Access to a corner lot with a frontage less than 155 feet in width will be established on a case-by-case basis by the County Engineer, and the driveway approach shall be placed at such a location to maximize safety.

Minor Driveway Approaches on a local road feeder or an arterial roadway shall be located a minimum of 20 feet from the side property line, as measured from the property line to the nearest edge of the access. Alternatively located on the property line as a shared access.

### **5-2.3 Major Driveway Approach**

Major Driveway Approaches shall be constructed in accordance with the specific geometric requirements provided by the County Engineer. Grading and restoration of the access beyond the end of the driveway approach shall be done to provide a smooth, passable, and safe transition to the existing facility.

Major Driveway Approaches shall be located a minimum of 125 feet from an intersection. Along an arterial roadway they may also be located directly across from a local road feeder, minor, or cul-de-sac intersection. Physical site conditions and spacing of existing driveway approaches may cause the County Engineer to require another location. The 125 feet is measured from the intersecting road right-of-way line to the nearest edge of the access. Access to a corner lot with a frontage less than 155 feet in width will be established on a case-by-case basis by the County Engineer, and the driveway approach shall be placed at such a location to maximize safety.

The number, location, and size of Major Driveway Approaches shall be determined by the volume and type of traffic generated by the development, other driveway approaches in the vicinity of the proposed approach, the amount of lot frontage along the road, and channelization/traffic control on the road along the lot frontage. When multiple Major Driveway Approaches to one parcel or development are permitted, they shall not be less

than 125 feet apart, measured from centerline to centerline. A minimum of two driveway approaches (combination of minor and/or major) will be required for developments that will generate 3000 ADT or more unless other mitigating measures are approved by the County Engineer.

Major driveway approaches on a local road feeder or an arterial roadway shall be located a minimum of 30 feet from the side property line, as measured from the property line to the nearest edge of the access. Alternatively located on the property line as a shared access.

### **5-2.4 Construction Criteria**

All driveway approaches shall be constructed in accordance with the applicable Pierce County detail contained in the Pierce County *Standard Drawings*.

Driveway approaches along roadways being widened or reconstructed shall, where practical, be improved to current standards, but in no case shall be less than pre-existing substandard conditions.

### **5-2.5 Temporary Driveway Approach**

Temporary Driveway Approaches require permit approval from the County Engineer for all purposes including, but not limited to, logging or other temporary access needs to a parcel of land.

Temporary Driveway Approaches shall be located such that the required entering sight distance for the road being accessed is met. In the event entering sight distance is not achievable, traffic control shall be provided in accordance with the MUTCD whenever the access is in use. The County may also set requirements for traffic control as needed dependent on the type of vehicles entering the County road system (i.e., large trucks may require flaggers even though entering sight distance is available).

Temporary Driveway Approaches in general shall be gravel, but the County may require paved approaches to avoid damage to the existing roadway edge, or to minimize the tracking of gravel onto the road surface.

All Temporary Driveway Approaches must be removed and the right-of-way restored within 90 days from the date of permit approval. One 90-day extension may be granted by the County Engineer provided the written request for extension is submitted 15 days in advance of the original permit expiration date, and provided that good cause for delay is demonstrated.

Restoration of the County right-of-way means to restore the County road, shoulder, and storm drainage system to the condition they were in prior to construction of the Temporary Driveway Approach.

Removal of the Temporary Driveway Approach means to permanently close the approach by blocking, berming, fencing, or other method suitable to the County.

No site work may commence until a permit for the Temporary Driveway Approach has been issued by the County Engineer and the temporary approach has been constructed and inspected.

Prior to approval of a Temporary Driveway Approach, a financial guarantee shall be provided in accordance with Title 17A “Construction and Infrastructure Regulations – Site Development and Stormwater Drainage”.

## 5-3 Roadway Intersections

Roadway intersection guidelines encourage the preservation of capacity and safe operation of roadways. The following subsections provide the guidelines for roadway intersection location and design.

### 5-3.1 Spacing

The minimum distances between any roadway approach onto any other roadway, measured from centerline to centerline of the roadway, should apply for either same side or opposite sides of the primary street:

<b>Local Roads Intersecting Local Roads</b>	<b>125 Feet</b>
<b>Local Roads Intersecting Arterials</b>	<b>250 Feet</b>
<b>Arterials Intersecting Arterials</b>	<b>1/4 Mile</b>
<b>Alleys Intersecting Local Roads or Arterials*</b>	<b>60 Feet</b>

Table 5-3.1

\*Alleys may not intersect arterials; some existing conditions may be acceptable at the approval of the County Engineer.

A new Local Road Feeder roadway that creates a four-leg intersection shall be permitted along an arterial roadway when located directly opposite either a local or arterial roadway; it shall also be permitted along a local (non-arterial) roadway when located opposite an arterial roadway.

A new Local Road Minor roadway that creates a four-leg intersection shall be permitted only along an arterial roadway when located directly opposite a local (non-arterial) roadway.

A new Arterial roadway that creates a four-leg intersection opposite a local (non-arterial) roadway requires the approval of the County Engineer.

## Expedited Deviation Acceptance Criteria

If spacing criteria cannot be met for frontage and existing roadways, the following deviation acceptance criteria should be followed:

Define roadway classification and posted speed of the roadway to be accessed by using Table 5-3.2

Roadway Classification	Spacing (Min)
<b>Local Roads Intersecting Local Roads</b>	<b>125 Feet</b>
<b>Local Roads Intersecting Arterials (Arterial Speed &lt; 35mph)</b>	<b>125 Feet</b>
<b>Local Roads Intersecting Arterials (Arterial Speed ≥ 35mph)</b>	<b>250 Feet</b>
<b>Arterials Intersecting Arterials</b>	<b>1/4 Mile</b>
<b>Alleys Intersecting Local Roads (Local Roads ≥ 25mph)</b>	<b>60 Feet</b>

Table 5-3.2

IF, spacing (Table 5-3.2) and ESD (Section 3-1) requirements are not met, deviation is required.

IF, spacing (Table 5-3.2) and ESD (Section 3-1) requirements are met:

- Spacing shall be approved through Development Engineering
  - Spacing should be maximized between existing accessing infrastructure, public and private.
- Corner radii may be reduced per Table 5-3.3, upon approval by Development Engineering.
- Must use turning template to show reduced radii can accommodate design vehicle.

Speed of Accessing Roadway	Radii
<b>25 mph Local Roads</b>	<b>25 Feet</b>
<b>25 mph Arterials</b>	<b>35 Feet</b>
<b>≥ 30 mph Arterial Roads</b>	<b>35 Feet</b>

Table 5-3.3



### 5-3.2 Angles

Proposed roads should intersect one another at 90-degree angles. In order to achieve the desired vehicle orientation to the roadway being entered, a minimum tangent length shall be provided between the roadway intersection and the beginning of any horizontal curve for the entering road. This minimum tangent length shall be 50 feet from the point of intersection of the roadways to the point of curvature of the horizontal curve. If a 90-degree angle is not possible, the variation shall not be more than 15 degrees without the approval of the County.

### 5-3.3 Corner Radii

At road intersections, the following typical ranges of flow line radii are permitted:

<b>Local Road - Local Road Intersection</b>	<b>25-30 Feet</b>
<b>Local Road - Arterial Intersection</b>	<b>30-35 Feet</b>
<b>Arterial - Arterial Intersection</b>	<b>35-40 Feet</b>

Corner radii outside of the above ranges should be considered if the anticipated composition of traffic warrants such a need.

### 5-3.4 Grades

When either of the road centerline profile grades within 35 feet of an intersection have a gradient of 8 percent or more, an intersection detail drawn to a scale of 1" = 20' must be included as a detail on the road construction plans. The detail will show spot elevations every 10 feet on the road centerline, around the curb return, and grate elevations for drainage structures in the intersection. The intersection plan must be clearly detailed to show flow line grades and how surface drainage will be controlled at the intersection. Curb return data for lesser gradients shall be shown on the road construction plans.

At the intersection of different classifications of roads (e.g., a secondary arterial with a collector arterial), the centerline slope and typical cross section of the higher classified road should be carried through the intersection with the lower classified road matching in a manner which will not interfere with the smooth movement of traffic in the travel lanes of the higher classified road.

Where two roads of the same classification intersect, the centerline grade shall be matched at the center of the intersection with cross slopes varying through the intersection to allow drainage. All classes of local roads shall be treated as the same classification for purposes of this paragraph.

Roadway intersections shall be designed with landings that shall not exceed 1-foot difference in elevation for a distance of 30 feet approaching an arterial or 20 feet approaching a local road, measured from the nearest right-of-way (extended) or private road easement/tract (extended) of the intersecting roadway.

Profile grades for all road intersections (existing or proposed) shall be designed and constructed so that adequate entering sight distance is available at the intersection.

### **5-3.5 Islands and Turning Roadways**

When necessary for the channelization of traffic at an arterial intersection, the design of traffic islands and turning roadways should conform to the criteria contained in the *AASHTO Green Book*.

### **5-3.6 Extending Dead End Public Roads**

Private road approaches shall not be directly extended from the end of a public road along the same alignment. Private road approaches to a public road at the public road terminus shall meet the “L” or “T” intersection criteria. In the event that there is not an existing public turnaround available (public cul-de-sac, public “T” intersection, or looped public road system) at the terminus of the existing public road, the “L” or “T” intersection area shall be dedicated to the public.

Minor and major driveway approaches shall not be directly connected to the end of a public road. Minor and major driveway approaches must connect to public roads at approximately a right angle to the roadway centerline in accordance with the applicable driveway approach standard details.

## **5-4 Railroad Crossings**

The roadway width across a railroad should be the same as the roadway width on each side of the crossing. Appropriate grade crossing controls should be provided (including advance warning signs) commensurate with the design speed of the facility and sight distance required. Maximum practicable sight distance at the crossing itself is desirable, especially on a mainline crossing where train speeds are high. Approval of any design affecting a railroad crossing shall be obtained from the Washington State Utilities and Transportation Commission prior to being approved by the County.

## **5-5 Gates**

Standards for vehicular gates are intended to assure that:

- Emergency vehicles and users can safely and quickly gain ingress and egress.
- Vehicle queuing at a gate does not impact traffic on the road being exited.

Gates proposed to be located across:

- Private roads.
- Shared access facilities.
- Driveways that provide emergency vehicle access
- Easements for tracts that provide vehicular access

Shall comply with the standards and process contained in Appendix A.

Gates proposed to be located across:

- Driveways that do not provide emergency vehicle access.
- Driveways which solely access low intensity agricultural activities such as crops or livestock.
- Accesses for stormwater facility maintenance.

Must only comply with the gate setback standards contained in Appendix A.