Whatcom County Development Standards

CHAPTER 5:

ROADS AND RELATED WORK

PURPOSE

The general purpose of these Development Standards is to provide consistent standards and procedures under which the physical aspects of development will be implemented. The purpose is to provide:

- A safe, efficient, cost-effective, aesthetically-pleasing, and environmentally-sensitive system for the movement of motor vehicles, bicycles and pedestrians that is economical to maintain.
- Standard road design and construction elements.
- Standard requirements for the location and installation of utilities and other road-related features.
- Road geometrics and design elements conforming to current federal, state, and local requirements.

These Standards are intended neither to provide for all situations nor to be static in form or content. They are intended to assist, but not to substitute for, competent work by design professionals. Revisions to these Standards may be made when warranted by changed conditions or needs.

These Standards are not intended to limit any innovative or creative design effort. However, all variances from these Standards are subject to the approval of the County Engineer, or other designated official, based on satisfactory evidence that the proposed variance will produce an equivalent or superior result.

These Standards are to be followed except for those urban growth areas (UGA) where the applicable city standard will apply. For those instances where there is no city standard the appropriate county standard will prevail.

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SECTION 501 – REGULATORY AUTHORITY

The State of Washington has enacted regulations and delegated powers to Whatcom County to control and regulate activities affecting the public and private roads systems. These regulations and powers are set forth in:

RCW 36.70 Planning Enabling Act

RCW 36.75 Roads and Bridges

RCW 36.86 Roads and Bridges – Standards

The authority for this chapter is derived by the adoption of Chapter 12.08 of the Whatcom County Code and several County ordinances, including:

Whatcom County Ordinance 80-001 Trail Permit

Whatcom County Ordinance 88-079 Revocable Encroachment Permit

Whatcom County Ordinance 94-018 Development Standards

Whatcom County Ordinance 94-022 Stormwater Management

Whatcom County Ordinance 96-049 Road Naming System

Whatcom County Ordinance 97-056 Critical Areas Ordinance (CAO)

Title 20 Whatcom County Zoning Regulations

Title 21 Whatcom County Land Division Regulations

On this basis, all development within Whatcom County is subject to the road standards provisions of this Chapter unless specifically exempted.

SECTION 502 – TECHNICAL ADMINISTRATOR

Whatcom County has designated a Technical Administrator to review and enforce both the administrative and technical aspects of the road standards. For the purpose of the provisions of this chapter, the County Engineer has been designated as the Technical Administrator. The County Engineer may delegate various review and technical functions. This designation is limited to the requirements established in this chapter.

SECTION 503 – EXEMPTIONS

Whatcom County ordinances recognize certain circumstances where the requirements of this chapter would be inappropriate. These circumstances include very low levels of development or activities that are covered under other ordinances and regulations. For this reason, the applicable County ordinances have fully or partially exempted certain development activities from the requirements of this chapter. In most cases, these activities are subject to other ordinances, restrictions and requirements.

The following activities are exempt:

1. Development undertaken by the Washington State Department of Transportation (hereinafter called "WSDOT") in State Highway rights-of-way when regulated by Chapter 173-270 WAC, the Puget Sound Highway Runoff Program.

2. Agricultural Activities, as defined in RCW 7.48.300.

3. Forest Practices (except Class IV General Forest Practices).

Because these exemptions are general in nature, owners are encouraged to discuss proposed projects with County staff to determine which regulations and requirements apply.

SECTION 504 – GENERAL CONSIDERATIONS

A. Shortened Designation

These Whatcom County Road Standards shall be cited routinely in the text as "Standards."

B. Applicability

These Standards shall apply to all public and private development actions in unincorporated Whatcom County. Moreover, persons involved with the following actions or permits shall be required to demonstrate compliance with the requirements of these Standards prior to County approval and/or commencement of construction work:

1. Flood Control Zone Permits.
2. Substantial Development Permits as required by the Whatcom County Shorelines Substantial Management Program.
3. Short and long subdivision approvals, lot line adjustments, and exemptions.
4. Industrial and commercial building permits.
5. Planned unit developments and binding site plans.
6. Conditional use and Major development permits, administrative approvals and variances.
7. Revocable Encroachment permits.
8. Trail permits.
9. County construction, reconstruction, and gravel road conversion projects done by private contract or by county forces. Routine county rehabilitation, restoration and resurfacing work, and emergency repairs are excluded.
10. Forest practices, as defined in Chapter 76.09 RCW, where (a) the application therefore submitted to the Washington State Department of Natural Resources, as now or hereinafter amended, indicates that the lands will be converted to a use other than commercial timber production, or (b) the forest practice is to occur on lands that have been platted after January 1, 1960, as provided in Chapter 58.17 RCW (see RCW 76.09.240).

C. References

These Standards, when implemented, are intended to be consistent with:

1. Whatcom County Code
   - Title 15, Buildings and Construction
   - Title 16, Environment
   - Title 17, Flood Damage Prevention
   - Title 20, Zoning

- Title 21, Land Division Regulations
- Title 22, Land Use and Development
- Title 23, Shoreline Management Program

2. Whatcom County Comprehensive Land Use Plan
3. Washington State County Design Standards as adopted per RCW 43.32.020
4. WSDOT "Local Agency Guidelines"
5. State of Washington Shoreline Management Act
6. National and State Environmental Policy Acts
7. State of Washington Growth Management Act
8. Whatcom County Bicycle Plan, adopted May 6, 2003 or current revision.

D. Adopted County Specifications

Except as otherwise provided in these Standards, design detail, workmanship, and materials shall be in accordance with the relevant sections of the following:

1. All chapters of the Whatcom County Development Standards
2. WSDOT "Standard Specifications for Road, Bridge and Municipal Construction" - current edition. These will be referred to as "State Standard Specifications."
3. WSDOT "Standard Plans for Road and Bridge Construction" - current edition, hereinafter referred to as "State Standard Plans."
4. WSDOT "Design Manual" – current edition.

E. Other County Specifications

The following specifications may also be followed when specifically cited by these Standards, when required by a higher level funding authority having jurisdiction, or in the absence of specific standards when applicable and approved by the County Engineer.

1. "U.S. Department of Transportation Manual on Uniform Traffic Control Devices for Roads and Highways" - current edition as amended and approved by WSDOT, hereinafter referred to as "MUTCD."
2. "Standard Specifications for Highway Bridges" - current edition adopted by the American Association of State Highway and Transportation Officials, hereinafter referred to as the "AASHTO Bridge Specifications."
3. "WSDOT Highway Hydraulic Manual" - current edition, hereinafter referred to as "WSDOT Hydraulic Manual.".
4. "WSDOT Construction Manual" – current edition.

5. "Urban Hydrology for Small Watersheds-Technical Release No.55 - U.S. Department of Agriculture, Soil Conservation Service, 1975," hereinafter referred to as "SCS Technical Release No. 55."

6. "NOAA Atlas 2 Precipitation-Frequency Atlas of the Western United States – Vol. IX, Washington," Soil Conservation Service - current edition.

7. "Storm Drainage Control - Storm Water Management Practices," King County Department of Public Works, Division of Public Works, Division of Hydraulics - current edition.

8. "Urban Storm Water Management-Special Report No. 49 American Public Works Association."

9. "Uniform Building Code," - current edition, hereinafter referred to as "UBC."

10. "A Policy on Geometric Design of Highway and Streets" - current edition AASHTO.

11. "Geometric Design Guide for Local Roads and Streets, Parts I and II, current edition AASHTO," hereinafter referred to as the "AASHTO."

12. "Highway Functional Classification-Concepts, Criteria and Procedures," U.S. Department of Transportation, current edition.

13. "Pedestrian Facilities Guide Book," WSDOT, 1997.

14. ITE - Traffic Calming: State of the Practice (Aug. 1999).

F. Variances

Administrative Variance Procedure. Alternatives to any specific requirement of the development standards may be considered through an administrative variance procedure. The Technical Administrator will be responsible for reviewing applications for variances to the development standards and shall be responsible for making variance determinations. Variances to Whatcom County Development Standards may be issued upon receipt of technical documentation acknowledging that minimum performance requirements will be met.

1. Criteria for Variance Approval

    a) The resulting Variance provides an equivalent outcome, conforming to the minimum performance requirements, and the objectives of safety, function, environmental protection, and facility maintenance are fully met, based upon sound engineering principles; and

    b) there are special physical circumstances or conditions affecting the property such that the strict application of these provisions would deprive the applicant of all reasonable use of the parcel of land in question and every effort to find creative ways to meet the intent of the minimum performance requirements have been made; and

c) the granting of the variance will not be detrimental to the public health and welfare, nor injurious to other properties in the vicinity; and

d) the variance is the least possible exception that could be granted to comply with the intent of the minimum performance requirements.

2. Any variance request must be made to the Technical Administrator. The Technical Administrator will establish the minimum informational requirements that shall be specified for each issue. No variance shall be issued which has the overall impact of reducing safety standards, levels of service, or which will not comply with the intent of Whatcom County regulations.

3. An administrative variance to the Standards will be subject to a fee per the Uniform Fee Schedule.

G. Appeals

The applicant may appeal any Final Decision of the Technical Administrator. The appeal shall be made to the Technical Advisory Committee (TAC). Refer to 12.08.027. (I. Appeals).

H. Issuance of Building Permits

Building Permits may be issued prior to substantial completion of the required development improvements if the County Engineer, with the concurrence of the Building Official, finds that the issuance and subsequent building construction does not interfere with emergency accessibility or the completion of improvements. In this case, occupancy will not be allowed until the improvements are completed.

I. Severability

If any of these Standards, as established by ordinance, shall be found invalid, all other parts shall remain in effect.

SECTION 505 – ROAD TYPES AND GEOMETRICS

A. General

County roads are classified as urban and rural. Within the classifications of urban and rural, county roads are further divided by the function they provide as indicated in Sections 505.B through D (definitions are provided in Section 515). Classifications of roads are determined in part by rights-of-way, road width, and other geometric factors. The classification is further refined based on the function of these roads with secondary consideration(s) given to access/intersection spacing, and average daily traffic (ADT).

B. Rural Roads

Rural roads serve rural land areas and land-uses outside the Urban Growth Areas. They typically require a shoulder and use open ditch(es) for drainage. These routes are generally classified by function and ADT, as shown in Tables 505-1 and 505-2.

C. Urban Streets

Urban streets serve single and multi-family residential, commercial, industrial and similarly dense developments that are normally within the Urban Growth Area. Urban streets typically require curbs and gutters with catch basins and underground drainage systems. These routes are generally classified by function and ADT, as shown in Tables 505-1 and 505-2.

Certain exceptions to the curb/gutter and shoulder/open ditch standards may apply where site-specific conditions warrant it.

Table 505 - 1 - Arterial Roads

CLASSIFICATION		PRINCIPAL ARTERIALS		MINOR ARTERIALS		COLLECTOR ARTERIALS OR COLLECTORS			
FUNCTION		Inter-community highways connecting largest community centers and facilities.		Intra-community highways connecting community centers and facilities.		Intra-community highways connecting residential neighborhoods with community centers and facilities			
Access		Controlled with very restricted access to abutting properties.		Controlled with infrequent access to abutting properties.		Partially controlled with limited access to abutting properties.			Controlled with infrequent access to abutting properties.
Land Use Area		**Rural**	**Urban**	**Rural**	**Urban**	**Rural**			**Urban**
Subcategory		--		--		Major	Minor		--
Intersection Spacing		2–5 miles		2-3 miles	Under 2 miles	Under 2 miles			
ADT [1]		>8000	>10,000	>2000	>4000	>2000	400-2000	<400	1001-4000
CRITERIA									
Design Speed (mph) [2]		40-55	40-55	40-55	40-55	40-50	35-50	35-50	35-50
Maximum Superelevation (%)		6	6	6	6	4	4	4	4
Horizontal Curvature		See Section 505.I							
Maximum Grade (%)[3]		9	9	10	10	10	10	10	12
Standard Sight Distance		See Section 505.H							
Minimum Traveled Way (Ft)	2-Lane	24	24	24	24	24	24	22	24
	4-Lane	46	46	44	44	--	--	--	--
	5-Lane	58	58	56	56	--	--	--	--
Minimum Roadway Width	2-Lane	40	34[5]	40	34[5]	40	36[4,5]	32[4,5]	34[4,5]
	4-Lane	62	56[5]	60	54[5]	--	--	--	--
	5-Lane	74	68[5]	72	66[5]	--	--	--	--
Type of Curb, Shoulder, & Drainage [7,8] (width in Ft)		8' shoulder & ditch [6]	Vertical curb, gutter, & storm sewer	8' shoulder & ditch [6]	Vertical curb, gutter, & storm sewer	8' shoulder & ditch [6]	6' shoulder & ditch [6]	6' shoulder & ditch [6]	Vertical curb, gutter, & storm sewer
Minimum Rights-of-way (Ft) [9]	2-Lane	60	60	60	60	60	60	60	60
	4-Lane	80	70	80	60	--	--	--	--
	5-Lane	100	80	100	80	--	--	--	--
Bicycle Facilities Required		Yes – see Drawing 508.C-1	Yes – see Drawing 508.C-1	Yes – see Drawing 508.C-1	Yes – see Drawing 508.C-1	Yes – see Drawing 508.C-1	Yes – see Drawing 508.C-1	Yes – see Drawing 508.C-1	Yes – see Drawing 508.C-1
Parking Allowed		No	No	No	No	Yes	Yes	Yes	Yes
Standard Structural Section		See Drawing 505.B-3	See Drawing 505.D-1	See Drawing 505.B-3	See Drawing 505.D-1	See Drawing 505.B-3	See Drawing 505.B-3	See Drawing 505.B-3	See Drawing 505.D-1

1. ADT shall be based on a study area build-out or design life of the roadway with a minimum 20-year traffic projection.
2. Design speed is a basis for determining geometric design and other geometric elements, but does not imply posted or legally permissible speeds.
3. Maximum grades may be exceeded, subject to the County Engineer's approval, provided that:
   a) No practical alternative exists.
   b) Grades exceeding the maximum listed above may be approved by the County Engineer, but shall not exceed 18%.
   c) Any grade of 12% or over shall extend no further than 600 feet without being interrupted by an intersection or a switch-back, with a maximum 8 foot difference in elevation over a distance of 100 feet.
   d) Any grade over 15% shall be paved with grooved Portland cement concrete.
4. No Parking allowed without additional 8 feet for parking one side or an additional 16 feet for parking on both sides.
5. Includes additional pavement to provide for two 5-foot bikeways.
6. Shoulder width specified shall be paved, including 1-foot gravel shoulder.
7. Rural shoulder widths shall be used when ¾ frontage improvements are required.
8. Shoulders shall be widened 2 feet where guardrail is planned.
9. Rights-of-way widths shall increase where warranted by geometric requirements.

Table 505 - 2 - Residential Roads

CLASSIFICATION	NEIGHBORHOOD COLLECTOR		LOCAL ACCESS		MINOR ACCESS	
FUNCTION	Streets connecting two or more neighborhoods and typically connecting to higher classification roads or other collectors.		Streets providing circulation within neighborhoods typically connecting to neighborhood collectors.		Permanent cul-de-sacs or loops, with low traffic, providing circulation and access to off-street parking within residential developments.	
Access	Restricted, lots front Local Access where feasible.		As needed, with minimal restrictions.		As needed.	
Land Use Area	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**
Intersection Spacing (Ft)	300		150		150	
ADT [1]	>1000	>1000	161-1000	161-1000	≤ 160	≤ 160
CRITERIA						
Design Speed (MPH) [2,12]	35-45	35-45	25-45	25-45[12]	25-35	25-35[12]
Minimum Superelevation (%)	2	2	2	2	2	2
Horizontal Curvature	See Section 505.I.					
Maximum Grade (%) [3]	12	12	15	15	15	15
Standard Sight Distance	See Section 505.H.					
Minimum Traveled Way (Ft)	24	22	22	24	20	24
Minimum Roadway (Ft)	36[4, 6]	32[4, 6]	30[6]	28[14] / 24[13]	26[6]	24[14] / 22[13]
Type of Curb, Shoulder, & Drainage (width in Ft) [7,8]	6' shoulder & ditch[5]	Vertical curb, gutter, & storm sewer	4' gravel shoulder & ditch	Rolled or Vertical curb, gutter, & storm sewer	3' gravel shoulder & ditch	Rolled or Vertical curb, gutter, & storm sewer
Minimum Rights-of-way (Ft) [9]	60	60	60	50	50	40
Minimum One-way (Ft) [10]	14	14[11]	14	14	14	14
Roadway Pocket Parking (Ft)	See Drawing 505.C-2.					
Traffic Calming Devices	NA	NA	NA	Section R	NA	Section R
Bicycle Facilities Required	Yes – see Drawing 508.C-1	Yes – see Drawing 508.C-1	No	No	No	No
Parking Allowed	Yes	Yes	Yes	Yes	Yes	Yes
Standard Structural Section	See Drawing 505.B-2	See Drawing 505.C-3	See Drawing 505.B-1	See Drawing 505.C-1	See Drawing 505.B-1	See Drawing 505.C-1

1. ADT shall be based on a study area build-out or design life of the roadway with a minimum 20-year traffic projection.
2. Design speed is a basis for determining geometric design and other geometric elements, but does not imply posted or legally permissible speeds.
3. Maximum grades may be exceeded, subject to the County Engineer's approval, provided that:
   a) No practical alternative exists.
   b) Grades exceeding the maximum listed above may be approved by the County Engineer, but shall not exceed 18%.
   c) Any grade of 12% or over shall extend no further than 600 feet without being interrupted by an intersection or a switch-back, with a maximum 8-foot difference in elevation over a distance of 100 feet.
   d) Any grade over 15% shall be paved with grooved Portland cement concrete.
4. Includes additional pavement to provide for two 5-foot bikeways.
5. Shoulder width specified shall be paved, including 1-foot gravel shoulder.
6. No parking allowed without additional 8 feet for parking on one side or an additional 16 feet for parking on both sides.
7. Rural shoulder widths shall be used when 3/4 frontage improvements are required.
8. Shoulders shall be widened 2 feet where guardrail is planned.
9. Rights-of-way widths shall increase where warranted by geometric requirements.
10. Each lane shall be considered one-way when medians are used.
11. Includes 5-foot bicycle lane.
12. Design speeds may be reduced based on limitations imposed by traffic calming.
13. Add 7 feet for pocket parking per side.
14. On street parking allowed.

D. Commercial and Industrial Streets

Streets serving commercial/industrial-zoned property shall meet the standards shown in Table 505-3. All other streets whose volumes exceed 5% AWDT Truck Traffic shall also meet the standards shown in Table 505-3.

Table 505 - 3 - Commercial and Industrial Streets

Land Use Area	Urban	Rural
Design Speed (mph)	35	35
Maximum Grade (%)	10	10
Minimum Traveled Way (Ft.)	24	24
Minimum Roadway (Ft.)	40	24 ft. + shoulder
Type of Curb, Shoulder, & Drainage	Vertical curb, gutter, & storm sewer	Paved shoulder (see Tables 505-1 & 505-2 for width) with ditch section
Minimum Rights-of-way (Ft.)	60	60
Inside Radius (Ft.)	35-55	35-55
Standard Structural Section	See Drawing 505.D-1	See Drawing 505.D-2

The width must be sufficient to accommodate both through traffic and local truck movements such as backing, turning, and positioning for loading. A roadway base and surfacing design will be required to determine surfacing depths (see Section 510.C). The street ends shall be a cul-de-sac and conform to Section 505.L-1 as a minimum, or larger to accommodate truck traffic.

E. Private Roadways and Driveways

This section applies to roads that are privately owned, generally within an easement providing direct access to private land(s) for local traffic movement and connect to local public access, collector or arterial roads. Private roads are maintained with private funds and where the county, municipality or WSDOT performs no maintenance.

1. Criteria for Authorization: All new roads shall be public; however, private roads may be permitted when so provided in appropriate ordinances or at the discretion of the County Engineer when:

    a) Covenants have been approved and recorded with the County which provide for maintenance of the private roadways and associated parking areas by the owners in the development, including placing of liens for non-payment of fees, and/or road maintenance agreement(s) on the face of the Long Plat, Short Plat, or Binding Site Plan.

    b) Provision is made for the roadways to be open at all times for emergency and public service vehicle use.

    c) The private road is not needed as a public road and will not obstruct public street circulation.

d) Intersection spacing between private roads shall be consistent with the spacing shown in Section 505.M.

e) The roads are within a private community with a corporate identity, Homeowners Association, Common Interest Community, or similar, as identified by the State of Washington.

2. Private Roadway or Driveway Design (Residential Use Only)

a) Geometrics: (See 505 Road Types and Geometrics, Tables 505-1 & 505-2 for other road geometric requirements)

Table 505 - 4 - Private Roadway or Driveway

Private Roadway or Driveway								See also Standard Drawing(s)
Designation	Setting	Incremental Grade, %	Minimum Surface Treatment	Minimum Roadway Width, ft	Unobstructed Minimum Vertical Clearance, ft	Minimum Turning Radii, ft		
						Inside	Outside	
Driveway[1]	Rural & Urban	<12	CSTC[2]	12	13.5	25	40	505.E-6
		12 to <15	Paved[3]					
		15 to 18	Grooved PCC[4]					
Private Roadway	Rural	<12	CSTC[2]	20[5]	13.5	25[6]	45[6]	505.E-1
		12 to <15	Paved[3]					
		15 to 18	Grooved PCC[4]					
	Urban	<12	Paved[3]	20[5]				505.E-2
		12 to <15	Paved[3]					
		15 to 18	Grooved PCC[4]					

[1] Driveway serves up to 20 ADT (or two dwelling units)
[2] Crushed surfacing top course
[3] Either Portland Cement Concrete (PCC) or Hot Mix Asphalt (HMA)
[4] Portland Cement Concrete
[5] See Standard Drawing(s) for when additional width is required
[6] See also 505.I.3 – Horizontal Curves

b) Additional County fire code requirements for "Fire Apparatus Access Roads" are contained in WCC 15.04.010 and as amended in WCC 15.04.040 and include:

- Turnouts - for driveways less than 20 feet wide, see Drawing 505.E-5.

- Turnarounds - Establish turnarounds for driveways and roadways greater than 150 feet in length per Drawing 505.E-6, 505.L-1, or 505.L-2 as applicable (Subject to other related codes and standards, i.e. Title 20.80).

- Fire Hydrants - Where a fire hydrant is located on a Fire Apparatus Access Road, the minimum roadway width shall be 26 ft. for a length of 40 ft. centered on the fire hydrant.

- Bridges - At the discretion of the Fire Marshal all bridges shall meet the requirements in Section 513 *Bridges and Associated Retaining Walls*.

- Security Gates and Emergency Accesses - The County Fire Marshal requires a separate permit for any security gate or emergency access restricting device/system.

- Access Approach Surfacing Requirements - All fire apparatus access approaches shall have an approved paved/hard surfaced apron unless otherwise directed pursuant to this Section and Section 508 *Roadside Features*.

- Additional or Alternative Measures - The County Fire Marshal may consider or require additional or alternative fire protection measures on a case by case basis.

F. P.U.D. Streets

All streets within planned unit developments shall be consistent with street and rights-of-way widths, geometrics and other requirements for street design and construction of these Standards. The minimum rights-of-way and pavement width for private and public access streets exclusively serving the needs of a planned unit development may be reduced if adequate consideration is made during the review of a planned unit development proposal of the following factors:

1. Provision of off-street parking.
2. Restriction of on-street parking.
3. Provision of adequate clearance for emergency vehicles.
4. Provision of clear vision at intersections.
5. Minimum sidewalk on one side of the street provided that an alternative bicycle and/or pedestrian path is substituted for the other sidewalk.
6. The traveled roadway needs to be adequate for the anticipated traffic volume(s).
7. Provisions of adequate utility easements outside of roadway.
8. Future revision or extension of street is not contemplated.

G. Expressways and Other Higher Classification Roads

In the instance where State or Federal standards exceed these Standards, State and Federal standards shall govern.

H. Sight Distance

All intersections and all access point connections must meet the Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) requirements set forth in Sections 505.H.1 and 505.H.2 of this chapter. Sight distance requirements for both stopping and intersection as referenced in the following sections are based on passenger car operations and do not in all cases account for heavy vehicle operating characteristics.

1. Stopping Sight Distance (SSD) is the sum of two distances: the distance traveled during perception and reaction time and the distance to stop the vehicle. Roadway geometrics shall be designed to provide stopping sight distance equaling or exceeding the values given in Table 505-5 at all points along the traveled ways and on all intersecting traveled ways. Stopping sight distance is measured from an eye height of 3.50 feet to an object height of 0.50 feet within the traveled way lanes respectively (see Drawing 505.H-1).

Table 505 - 5 Minimum SSD on Level Ground or on Grades

Design Speed (mph)	Stopping Sight Distance (SSD) (ft)						
	Level	Down Grade			Up Grade		
	0%	-3%	-6%	-9%	3%	6%	9%
25	155	158	165	173	147	143	140
30	200	205	215	227	190	184	179
35	250	258	271	288	237	229	222
40	305	315	333	354	289	278	269
45	360	378	401	428	345	331	320
50	425	447	474	508	405	389	375
55	495	520	553	594	470	450	433

Note: Source of Table and equation below is WSDOT Design Manual. (June 2009)

For stopping sight distances on grades not listed, interpolate between the values given or use the following equation:

$$SSD = 1.47Vt + \frac{V^2}{30\left[\left(\frac{a}{32.2}\right) \pm \frac{G}{100}\right]}$$

SSD = Stopping Sight Distance (ft)
V = Design Speed (mph)
t = Perception/reaction time (2.5 seconds)
a = Deceleration rate (11.2 ft/sec^2)
G = Grade (%)

2. Intersection Sight Distance (ISD) is the length of roadway visible to the driver of a vehicle entering an intersection. This section defines the required lengths of the traveled way lanes visible to a driver of a vehicle entering or crossing an intersection to permit the driver to anticipate and avoid potential collisions. Intersection sight distances shall be designed to equal or exceed the values given in Table 505-6 unless

the intersection/access connection has been determined to be a low volume approach pursuant to Section 505.H.2.b.

Intersection sight triangles (see Drawing 505.H-1) shall be provided at all intersections/access connections to allow the drivers of stopped vehicles a sufficient view of the traveled way they are about to enter or cross in order to complete all legal maneuvers before an approaching vehicle on the through traveled way would reach the intersection/access connection. The intersection sight triangles shall be clear of obstructions (including but not limited to vegetation, cut banks, signs, landscaping, fencing, parking, buildings, and other improvements) that might block a driver's view of potentially conflicting vehicles.

Typically the County will not allow any portion of the intersection sight triangle to cross over private property. In certain situations, at the discretion of the County Engineer, a recorded sight triangle easement over the private property with assigned maintenance responsibilities may be allowed.

a) The line of sight used to determine intersection sight triangles is formed as measured 18 feet (min) from the edge of the traveled way from an eye height of 3.50 feet to an object height of 3.50 feet within the respective traveled way lanes and at the minimum linear distance shown in Table 505-6 based on the appropriate design speed and using the appropriate design vehicle (see Drawing 505.H-1). If there is significant truck traffic on any leg of the intersection, as determined by the County Engineer, the design shall use the current version of the WSDOT Design Manual for the County Engineer designated design vehicle.

Table 505 - 6 - Minimum Sight Distance at Intersections

Design Speed (mph)**	Intersection Sight Distance (ft)*
25	280
30	335
35	390
40	445
45	500
50	555
55	610

Source: Derived from Equation in WSDOT Design Manual (ex. 1310-27a July 2010) and repeated below.

*Distances are rounded up to the nearest multiple of five and are based on the passenger car (P) as the design vehicle

** Design Speed is applied to the intersecting/cross road segment based on the leg being analyzed.

Intersection Sight Distance Equation:

$$S_i = 1.47Vt_g$$

Where:
S_i = Intersection Sight Distance (ft)
V = Design speed of the through roadway (mph)
t_g = Time gap for the minor roadway traffic to enter or cross the through roadway (sec)

Intersection Sight Distance Gap Times (t_g)

Design Vehicle	**Time Gap (t_g) in Sec**
Passenger car (P)	7.5
Single-unit trucks and buses (SU & BUS)	9.5
Combination trucks (WB-40, WB-50, &WB-67)	11.5

Note: Values are for a stopped vehicle to turn left onto a two-lane two-way roadway with no median and grades 3% or less.

The t_g values listed may have the following adjustments:

Crossing or right-turn maneuvers: All vehicles subtract 1.0 sec

Multilane roadways:
Left turns, for each lane in excess of one to be crossed and for medians wider than 4 ft:
Passenger cars add 0.5 sec
All trucks and buses add 0.7 sec
Crossing maneuvers, for each lane in excess of two to be crossed and for medians wider than 4 ft:
Passenger cars add 0.5 sec
All trucks and buses add 0.7 sec
Note: Where medians are wide enough to store the design vehicle, determine the sight distance as two maneuvers.

Crossroad grade greater than 3%:
All movements upgrade, for each percent that exceeds 3%:
All vehicles add 0.2 sec

b) A Low Volume Approach (LVA) is an intersection/access connection designed to accommodate a stopped vehicle on the low volume approach leg where the ADT is 160 (16 single family users or equivalent) or less, to enter onto a roadway where there is less than 1000 ADT. In the case of an LVA, the line of sight for the intersection sight triangle is formed as measured 15 feet (min) from the edge of the traveled way from an eye height of 3.50 feet to an object height of 3.50 feet within the respective traveled way lanes and at a minimum linear distance as shown in Table 505-5, and as referenced on Drawing 505.H-1. The LVA shall not be used where the low volume approach leg has significant truck traffic, as determined by the County Engineer.

It should be noted that although the distance for the LVA sight triangle segment along the traveled way may correspond to the values shown in the SSD - Table 505-5 for a given design speed, the intersection and stopping

sight distance elements are measured in uniquely different ways as referenced in Sections 1 & 2 above. A permitted LVA location shall meet or exceed both the LVA intersection sight triangle and the stopping sight distance criteria.

3. Passing Sight Distance (PSD) for the use in design should be determined on the basis of the length needed to complete normal passing maneuvers in which the passing driver can determine that there are no potentially conflicting vehicles ahead before beginning the maneuver. Passing sight distance for arterials and collectors shall equal or exceed the values given in Table 505-7. Sight Distance is measured from an eye height of 3.50 feet and an object height of 3.50 feet.

Table 505 - 7 - Minimum Passing Sight Distance

Design Speed (mph)	Passing Sight Distance (ft)
25	900
30	1090
35	1280
40	1470
45	1625
50	1835
55	1985

Note: Source of table is WSDOT Design Manual. (June 2009)

4. Other Considerations:

   a) Provide design stopping sight distance at all points on the roadway including the through traveled way and all intersection/approach connection legs within the functional intersection area.

   b) The County Engineer may require Decision Sight Distance (see WSDOT Design Manual) to be used when warranted by conditions or based upon his/her judgment.

   c) Use of landscaping plants in median areas or within any portions of the sight triangles or along the sight lines shall be evaluated as to height, spread, and the foliage density of the proposed plants at maturity.

5. Documentation of Sight Distance

   To verify the various acceptable sight distance elements, the County Engineer may require a developer to evaluate and document the existing sight distance conditions. The evaluation and documentation of the sight distance elements may be required to be completed by a Professional Civil Engineer or Professional Land Surveyor and shall include the following:

   - Plan, profile, and cross-section drawings along the sight line
   - The eye height to object height lines of sight
   - Design speed, operating speed and/or speed study data
   - Right-of-way and easement limits (existing and proposed)

- The sight triangle areas and associated topography
- Additional information as may be necessary to make a determination

When the County Engineer determines from the documentation presented that a location has insufficient sight distance, a plan to improve the location in order to satisfy the various elements of the sight distance sections of these standards will be required.

I. Roadway Alignment

Horizontal and vertical alignments are the primary controlling elements for roadway design. It is important to coordinate these two elements with design speed, sight distance, drainage, intersection design, and aesthetics, land use, physical and environmental features, and availability of rights-of-way in the early stages of design.

1. Design Considerations for Arterial/Collector Roads and Streets

    a) Make the roadway alignment as direct as possible and still blend with the topography while considering developed and undeveloped properties, community boundaries, and environmental concerns.

    b) Make the roadway alignment consistent by using gentle curves at the end of long tangents using a transition area of moderate curvature between the large radius curves of rural areas and the small radius curves of populated areas, making horizontal curves visible to approaching traffic.

    c) Avoid minimum radii and short curves unless restrictive conditions are present and are not readily or economically avoidable. On two-lane highways, minimum radii will result in tangent sections long enough for needed passing.

    d) Avoid any abrupt change in alignment and design reverse curves with an intervening tangent long enough for complete superelevation transition for both curves.

    e) Avoid the use of curves in the same direction connected by short tangents (broken back curves); substitute a single larger curve.

    f) Avoid compound curves in the road alignment if a simple curve can be obtained.

2. Design Considerations for Local/Minor Access Roads and Streets

    a) Local streets should be designed to carry low traffic volumes at low speeds and to function safely while minimizing the need for extensive traffic regulations, control devices, and enforcement. A successful design will result in traffic calming and reduce the need for future installation of traffic calming measures.

b) Street design should be responsive to topography and should avoid or minimize impacts to natural features, water-related resources, and wildlife corridors.

c) Minimum radii curves may be used to slow traffic.

d) Tangents between reverse curves and superelevation are not a necessity for low speed residential streets.

e) Local street alignment should be designed to efficiently and safely accommodate the typical emergency vehicle.

f) Street alignment should be pedestrian and bicycle friendly.

g) Roadways should be compatible with the aesthetics of the neighborhood.

3. Horizontal Curves - The Design Engineer shall employ horizontal curves consistent with design speed(s) shown in Tables 505-1 and 505-2. A lower design speed may be used by administrative variance in special instances where restrictive conditions are present and mitigated appropriately, including signage and other traffic control measures per MUTCD.

   Design speed is the governing element of horizontal curves.

   Use the following factors to determine the radius for a curve:

   a) Stopping sight distance where sight obstructions are on the inside of a curve. The following are examples of sight obstructions: median barrier, bridges, walls, cut slopes, wooded areas, buildings, and guardrail. See Section 505.H for minimum stopping sight distance for the selected design speed.

   b) Superelevation is the rotation or banking of the roadway cross-section to overcome part of the centrifugal force that acts on a vehicle traversing a curve.

   c) Avoid simultaneous changes in vertical and horizontal alignment.

   d) Areas of historically-sustained ice and snow conditions may require a modified composite side friction factor.

   e) For very low volume (ADT $\leq$ 400) Local/Minor Access Roads and Streets with design speed of $\leq$ 25 mph, a Low Speed, Low Volume Reduced Radius Corner, as shown in Drawing 505.I-1, or a Low Speed, Low Volume Corner Knuckle as shown in Drawing 505.I-2, may be used.

      The minimum horizontal curve radius shall be determined as follows (see Tables 505-8 & 505-9):

$$R = V^2 \div 15\,(0.01e+f)$$ *(from AASHTO – A Policy on Geometric Design of Highways and Streets, 2011)*

Where:
R = Minimum Horizontal Radius centerline, in feet
V = Design speed in miles per hour (mph)
e = % Superelevation
f = Composite side friction factor

Radii shall be rounded to the nearest multiple of five (5) feet. Curves are to be expressed using radii in feet.

Table 505-8 – Local and Minor Access Road Design Values

		Minimum Radius for Given Superelevation (ft.)			
Design Speed	**Max. f**	**0%**	**2%**	**4%**	**6%**
25	0.252	165	155	145	135
30	0.221	275	250	230	215
35	0.197	415	375	345	320
40	0.178	600	540	490	450

Source: AASHTO – A Policy on Geometric Design of Highways and Streets, 2001.

Table 505-9 – Arterial and Collector Road Design Values

		0% Superelevation		2% Superelevation	
Design Speed	**Max. f**	**e+f**	**Minimum Radius (ft.)**	**e+f**	**Minimum Radius (ft.)**
25	0.165	0.165	255	0.185	225
30	0.160	0.160	375	0.180	335
35	0.155	0.155	530	0.175	470
40	0.150	0.150	710	0.170	630
45	0.145	0.145	930	0.165	820
50	0.140	0.140	1190	0.160	1040
55	0.130	0.130	1550	0.150	1345

Source: Derived from Exhibit 3-14, Page 145 , AASHTO – A Policy on Geometric Design of Highways and Streets, 2001.

4. Vertical Curves – Symmetric, parabolic curves shall be used.

The minimum length of vertical curve shall be computed from the formula:

$$L = KA$$ *(from AASHTO – A policy on Geometric Design of Highways and Streets, 2001)*

Where:
L = The length of vertical curve, in feet
K = Constant
A = The algebraic difference in grades, in percent

K is a constant for each design speed and its selection for crest vertical curves is based on stopping sight distance requirements. For sag vertical curves, K is based on

headlight stopping distance. The following K values (shown in Table 505-10) for crest and sag curves at various design speeds shall be used:

Table 505-10 - Design Values K Values

Design Speed (mph)	Crest Curve	Sag
25	12	26
30	19	37
35	29	49
40	44	64
45	61	79
50	84	96
55	114	115
60	151	136

Source: AASHTO – A Policy on Geometric Design of Highways and Streets, 2001.

Vertical curves shall be of sufficient length to provide minimum sight distance, refer to Section 505.H for minimum sight distance.

5. Minimum Street Grades – Straight sections of roadway shall have a minimum grade of 0.5% provided that roadways with grades between 0.5% and 0.8% shall have an integral curb and gutter (see Section 508.F). Straight sections of roadway may have a grade less than 0.5% if the pavement is Portland cement concrete.

J. Side Slopes

1. Earth side slopes in cut or fill sections shall be constructed no steeper than 2 (H) to 1 (V) and a maximum of 15 vertical feet. Steeper slopes or other measures may be allowed based on a geotechnical engineering report. Areas prone to or showing signs of instability will require a geotechnical engineering report.

2. Side slopes shall be stabilized by grass sod or seeding, or by other planting or surfacing materials acceptable to the County Engineer.

3. Side slopes shall meet the clear zone requirements specified in Section 505.S of this chapter.

K. Medians

Medians are an optional design feature and shall be additional to, not part of, the specified width of traveled way. Medians shall have vertical curbs and be a minimum of five (5) feet in width from back of curb to back of curb (see Drawing 505.K-1).

Medians may be grassed, landscaped, or surfaced with aggregate. Medians shall be designed so as not to limit turning radii or sight distance at intersections. Plants used for landscaping shall: have no branches or foliage between two (2) feet and seven (7) feet in height above the road surface; trees shall have a maximum trunk diameter (caliper) of four (4) inches at maturity; and not extend beyond the back of curb. Additional rights-of-way shall be provided for the median. The Homeowners' Association or individual homeowners shall maintain any vegetation and

associated irrigation. For further details on landscaping see Section 508.M and Whatcom County's approved plant list in Appendix I.

L. Street and Road Ends

1. Cul-de-sacs shall be provided at all public street ends (see Drawing 505.L-1).

   Criteria:

   a) Minimum rights-of-way width across bulb section shall be l00 feet. Minimum pavement width across bulb: 88 feet in urban curb and gutter section (flow line to flow line); 80 feet in the rural areas with a 5/8 inch minus crushed surfacing top course shoulder of four (4) feet in width and a drainage ditch section beyond the shoulder.

   b) Cul-de-sac Island - Optional feature providing at least 20 feet of paved travel way in a curb and gutter section around circumference. The island shall have concrete vertical curb and be grassed or landscaped. It shall be maintained by the Homeowners' Association or adjoining lot owners.

2. No maximum length is given on cul-de-sacs; however, for roads greater than 1000 feet, turnarounds shall be provided at the approximate midpoint or at 1000 foot intervals, whichever is less.

3. Cul-de-sacs will serve no more than 50 residential units or 500 ADT.

4. Turnarounds (other than cul-de-sacs). Turnarounds may be used on private roads and non-maintained County rights-of-way, provided the street serves single-family detached dwelling units, including Accessory Dwelling Units, is over 150 feet in length and does not exceed 120 ADT. All other residential uses may use the provision of turnaround(s) with appropriate internal circulation patterns.

   Minimum length per leg shall be 60 feet from the centerline as shown on Drawing 505.L-2.

5. Temporary Dead Ends. Where a street is temporarily dead-ended, provisions for a turnaround must be provided where the road is longer than 150 feet. The turnaround may be a hammerhead or a cul-de-sac with gravel crushed rock surfacing.

6. Partial cul-de-sac (eyebrows). The use of eyebrows on residential streets may be provided within the public rights-of-way to facilitate driveway access. Residential access from an eyebrow may not exceed six (6) dwelling units. Eyebrows shall conform to the provisions of Section 505.L-1 (a and b).

M. Intersections

Intersections of roads shall be designed in accordance with the following criteria:

1. Angle of intersection 85° to 95°

2. Minimum centerline radius (2-lane) 55 feet

3. Minimum curb radius 35 feet
   (reduce to 25 feet for minor and local accesses)

4. Minimum property line radius 25 feet

5. Minimum stopping sight distance See Section 505.H

6. Minimum centerline offset of adjacent roads/streets from an intersection or low speed curve:

   a) All access streets crossing or connecting to access streets: 150 feet.

   b) Access streets, neighborhood collectors and collector streets, crossing or connecting to any neighborhood collector, collector or arterial; or arterials intersecting arterials: 300 feet.

7. On sloping approaches at an intersection, landings shall not exceed three percent for a minimum distance of 30 feet approaching an arterial or collector, or five (5) percent for a minimum distance of 20 feet approaching a residential street, measured from the nearest edge of travel way of the intersecting street.

N. Connections of State Highway and New Roads

The developer shall prepare and submit to the County Engineer a design of the proposed State Highway Intersection acceptable to the WSDOT. WSDOT approval of the proposed design must be received prior to the filing of the plat or construction. Improvements of the State Highway are to be the responsibility of the developer, and they may either be constructed or a bond posted to cover the cost of such improvements. The bond shall be furnished to the County Engineer or to WSDOT in the amount as determined by the County Engineer and WSDOT.

O. Railroad Grade Crossings

"At-grade" crossings are discouraged and should not be allowed unless the applicant can demonstrate that they are the only feasible alternative.

The crossings shall be designed in accordance with the current WSDOT Design Manual. Standard signs and markings in accordance with the MUTCD shall be installed at all railroad-street grade crossings.

Flashing light signals and gates which indicate the approach or presence of trains shall be installed at those railroad-street crossings where studies which are required by the County Engineer indicate the need of warning beyond that provided by standard signs and markings.

P. Dedications and Easements

1. Rights-of-way shall be dedicated for streets and other improvements as required per Sections 505.B through G to accommodate motorized and non-motorized transportation, parking, and utility requirements. The minimum rights-of-way

requirements for all roads and streets shall be in accordance with the widths indicated in Section 505.

Rights-of-way widths greater than 60 feet may be required along state routes or county roads where geometric factors warrant.

2. Easements shall be provided for all public systems or public utilities when they cannot be located within the public rights-of-way.

3. Non-Motorized Access Easements (see Section 508).

4. In short subdivisions, minimum private roadway easement width shall be 30 feet or as shown on Drawing 505.E-1 and 505.E-2. In addition, rights-of-way may be required to be dedicated as permitted by State law as a condition of approval of the short subdivision to provide additional width to conform to minimum standards where the short plat abuts an existing public street or to provide rights-of-way for the extension of existing public streets or new streets to provide compatibility with the area's circulation system.

Q. Frontage Improvements

Improvements to roadways adjacent to a development, including offsite transitions to the existing roadway (tapers to be not less than 10:1), shall be consistent with Section 507 - Road Design and Construction Plans, and shall comply with the following provisions:

1. Rural Frontage Improvements are equal to one-half the total pavement width for the road classification with appropriate shoulder along the subject property together with a minimum 10-foot paved lane and a four (4)-foot gravel shoulder to the opposite side of the subject property (three-quarter frontage improvements). An overlay of two (2) inches minimum Class B asphalt concrete may be required, unless the applicant submits an engineering report demonstrating that the existing pavement surface is structurally competent for the design loads.

2. Urban Frontage Improvements are equal to one-half the total pavement width for the road classification with curb, gutter and sidewalk installed along the subject property together with a minimum 10-foot paved lane and a four (4)-foot gravel shoulder to the opposite side of the subject property (three-quarter frontage improvements). An overlay of two (2) inches minimum Class B asphalt concrete may be required, unless the applicant submits an engineering report demonstrating that the existing pavement surface is structurally competent for the design loads.

3. Urban Growth Area and Water and Sewer Service Extensions: projects using city services may be required to use city standards and participate in traffic impact fees and/or mitigation.

R. Traffic Calming Devices

Traffic calming consists of safe physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users.

Traffic calming is encouraged in neighborhoods on local and minor urban access streets to promote safe and pleasant conditions for motorists, bicyclists, pedestrians, and other non-motorized means of transportation on residential streets.

All traffic calming devices shall be designed by a professional engineer and approved by the County Engineer.

Traffic calming objectives include:

- Achieving slow speeds for motor vehicles.
- Reducing collision frequency and severity.
- Increasing the safety and the perception of safety for non-motorized users of the street(s).
- Reducing the need for police enforcement.
- Enhancing the street environment (e.g., streetscape).
- Increasing access for all modes of transportation and,
- Reducing cut-through motor vehicle traffic.

Any of the following traffic calming measures can be used separately or in combination:

1. Raised Crosswalks are raised and flat-topped with crosswalk markings and signage for pedestrian crossings, providing a level street crossing from sidewalk to sidewalk. Raised crosswalks are generally only used with some form of intersection control such as a stop sign or traffic signal.

2. Textured Pavement, such as brick or stone surfaces, cause drivers to have a slightly bumpy ride over an extended distance, while improving the aesthetic quality of the street environment.

3. Traffic Circles are islands, placed in intersections around which traffic circulates. These should be constructed with vertical curbs. Some may use rolled curb with short distance of textured surface to accommodate larger truck turns. Traffic circle landscaping involves consideration of irrigation and long-term maintenance.

4. Roundabouts require traffic to circulate counterclockwise around a center island. Unlike traffic circles, roundabouts are used on higher volume streets to allocate rights-of-way among competing movements.

5. Chicanes are curb extensions or islands that alternate from one side of the street to the other, forming S-shaped curves.

6. Other reasonable engineered traffic calming techniques.

S. Clear Zone

1. Analysis - Clear zone is that roadside border area starting at the edge of the traveled lane that is available for safe use by errant vehicles. The available clear zone is the distance measured in feet normal to the roadway beginning at the edge of the traveled way to the closest part of any fixed object. Traffic control signs and luminaries with breakaway supports are not considered hazardous for the purpose of defining the

available clear zone distance. The required clear zone is a function of the posted speed, side slope, and traffic volume. Clear zone distances, as found in Chapter 700, Roadside Safety, of the WSDOT Design Manual shall be used as a guide for evaluation and placement of roadside features within the county rights-of-way.

In urban conditions, with travel speeds of 35 mph or less, it is desirable to place any rigid object as far away as possible from the edge of the travel lane, such as beyond the sidewalk or at the edge of the right-of-way. Where this cannot be accomplished, the minimum clear zone distance is established at 10 feet beyond the edge of traveled way or 24 inches beyond the face of the curb.

For travel speeds greater than 35 mph, clear zone distances are contained within Chapter 700 of the WSDOT Design Manual.

2. Hazards - There are three general categories of hazards: embankment hazards, objects, and water.

    a) Embankment Hazards - Evaluation of embankments for guardrail installations shall be in accordance with Chapters 700 and 710 of the WSDOT Design Manual. Height and slope of embankments are the basic factors in determining barrier needs for a fill section. The preferred mitigation, over the installation of a traffic barrier, is the flattening of the side slopes where it is feasible.

    b) Objects - When feasible, objects that are hazards, as determined by the County Engineer, should be removed. Other mitigative measures include relocating an object outside of the clear zone, reducing the hazard such as using an appropriate breakaway feature, and installing a traffic barrier or earth berm.

    c) Water - Open water with a depth of two (2) feet or more and located within the clear zone shall be considered a hazard and require mitigation.

T. Traffic Barriers

Traffic barriers are used to reduce the severity of accidents that may occur when an errant vehicle leaves the traveled way. However, traffic barriers are obstacles that the vehicles will encounter and shall only be used when justified by accident history or the criteria in Section S of this chapter.

Traffic barriers shall be designed and installed consistent with the performance standards specified in the WSDOT Design Manual, Section 710.

U. Special District Road Widths

In recognition of the need to reduce stormwater runoff by limiting new impervious area in the locations designated special districts, developers shall work with design professionals to reduce stormwater runoff by presenting low impact alternatives to the standard road design.

Drawings 505.U-1 to 505.U-5 show recommendations for road widths based on users in the areas designated special districts.

The county engineer shall review low-impact alternatives to the standard road design by evaluating the number of users, terrain, land use, geometry, parking, emergency vehicle access, and other factors as warranted to reduce stormwater runoff in the special district areas.

SECTION 506 – TRAFFIC IMPACT MITIGATION

A. Section-Specific Definitions

"Deficiency": The difference between the on-site or off-site condition that actually does exist and the on-site or off-site condition that should exist per WCC, WCDS, County Council-adopted level of service standards, or County Executive-approved criteria.

"Development Impact": The degree or extent that a development creates a new public deficiency and/or worsens an existing public deficiency.

"Existing": Exists as of the development's land use regulation vesting date (i.e., the County-determined complete application date).

"Mitigate or Mitigation": To eliminate or lessen a development impact.

"Private": Privately owned, controlled, and/or maintained (e.g., access easements, private roads, private roadway approaches to County roadways within public road rights-of-way).

"New": Non-existent as of the development's land use regulation vesting date (i.e., the County-determined complete application date).

"Private Deficiency": A deficiency in which the County does not have a legitimate state interest or the authority to regulate.

"Public": Publicly owned, controlled, and/or maintained (e.g., public road right-of-ways, County maintained roadways, County maintained stormwater systems).

"Public Deficiency": A deficiency in which the County has a legitimate state interest or the authority to regulate. See also Section 506.D.

"Public Funding": Monies from a governmental entity (e.g., Whatcom County, Lummi Nation, WSDOT).

B. General Principles

1. The County generally requires, as authorized under RCW 82.02.020, that developers mitigate their development impacts, including those that will adversely affect the level of service (LOS), safety, or operational efficiency of private or public roads that are under Whatcom County jurisdiction.

2. Under Washington State Case Law:

    a) The County is responsible to determine development impact mitigation measures.

    b) As a prerequisite to County-imposed development impact mitigation, the development must create a new, and/or worsen an existing, public deficiency. See also Section 506.B.4 below.

c) The County has the authority to require a developer to fully mitigate (i.e., eliminate) any new public deficiency.

d) The County does not have the authority to require a developer to mitigate an existing public deficiency that the development does not worsen.

e) The County has the authority to require a developer to mitigate its development impacts to an existing public deficiency only if the development worsens the existing public deficiency.

f) County-imposed development impact mitigation actions must solve, alleviate, or lessen the development impact.

g) County-imposed development impact mitigation actions must be roughly proportional to the development impacts.

h) The County has the authority to accept money in lieu of actual physical development impact mitigation actions if both the County and the developer mutually agree to same. Either the County or the developer can propose this option in lieu of physical development impact mitigation actions. Both entities, however, must agree to the option, and both entities must agree to the cost. See also Section 506.B.4 below.

i) A developer does not have the right to worsen an existing public deficiency without any mitigation.

j) Developers can, in their sole discretion, fully mitigate existing public deficiencies if they so choose, which in some situations could be their preferred solution.

3. The County requires that adequate transportation facilities are available or provided concurrent with development in accordance with RCW 36.70A "The Growth Management Act". See WCC 20.78 "Transportation Concurrency Management" for additional information.

4. Augmenting Section 506.B.2.b) and h) above:

   a) If the award date of a construction contract that involves public funding and that mitigates traffic capacity or LOS deficiencies on a development-impacted road is:

      i. Before the development's land use regulation vesting date, then the County does not have the authority to require developer physical impact mitigation, or to propose that the developer contribute monies to or otherwise subsidize said construction contract costs.

      ii. On or after the development's land use regulation vesting date, then the County does have the authority, as a condition to County approval

of the development, to require developer physical impact mitigation, or alternatively, to propose and/or accept monetary contributions or subsidies to said construction contract costs.

b) If the current County Council-approved 6-Year Transportation Improvement Plan (6YTIP) reflects planned traffic capacity or LOS improvement and/or corrective work on a development-impacted road on or after the development's land use regulation vesting date, and if no voluntary agreement per Section 506.E.4 otherwise exists, then the County has the authority to require the developer to:

i. Postpone development mitigation work until after the County completes its work; and

ii. Post a security to guarantee completion of the mitigation work.

C. Assessment

1. *General.* The Technical Administrator will base the extent of any on-site and/or off-site development impact mitigation measures on an assessment of the proposed development's impacts. To facilitate this assessment:

a) All developers engaging in Sections 504.B.2 - 504.B.7 development actions shall submit to the Technical Administrator for review and approval a completed Preliminary Traffic & Concurrency Information Form per Section 506.C.2, and

b) If a development will generate more than 400 ADT, the developer shall submit to the Technical Administrator for review and approval a Traffic Impact Analysis Report (TIAR) per 506.C.3, and

c) The Technical Administrator has the authority to require that a developer submit to the Technical Administrator for review and approval a TIAR on any development from which discernible negative traffic impacts might result in order that the Technical Administrator may adequately assess the impacts of the development proposal on the existing and/or planned road system.

2. *Preliminary Traffic & Concurrency Information Form.* The Preliminary Traffic & Concurrency Information Form can be found in Appendix A. Submit one completed Form to the Technical Administrator for review and approval. The developer or the developer's designee may prepare the Form. The Technical Administrator will use the completed Form for concurrency evaluation exemption determination purposes (see WCC 20.78.030), and to determine the need for TIAR submission per Section 506.C.1.c.

3. *Traffic Impact Analysis Report* (TIAR). TIAR preparation guidelines, including concurrency evaluation, can be found in Appendix D. Developers shall provide to the

Technical Administrator the final County-approved TIAR in electronic PDF format plus one original signed hard copy.

D. Deficiency Determination Basis

1. For all newly created roads, all existing private and public urban roads, and all existing private rural roads, the Technical Administrator will use Table 505-1 and Table 505-2, and/or any County-approved TIAR, to establish what should exist for public deficiency determination purposes.

2. For all existing public rural roads, the Technical Administrator will use Table 506-1, and/or any County-approved TIAR, to establish what should exist for public deficiency determination purposes.

E. Mitigation

1. The Technical Administrator will review all development proposals to determine the mitigation measures that may apply as a result of development impacts to road system capacity, specific level-of-service, specific inadequate road conditions, access and traffic system circulation, and/or right-of-way widths. Mitigation measures shall be accomplished in accordance with WCDS, and could include, but are not limited to:
    - Right-of-way and/or easement dedication
    - Road construction
    - Traveled way or shoulder widening
    - Frontage improvements
    - Turn lane(s) addition
    - Structural roadway upgrade
    - Signalization installation
    - Signage installation
    - Lighting
    - Pedestrian and/or bicycle facilities
    - Transit improvements

2. Other developer responsibilities include road-related elements, such as sight distance, roadway width, surface condition, and other structural/functional elements that must be improved to assure that, following development, the road will function at the prescribed LOS. If the proposed development causes the LOS to fall below its designated level per the Whatcom County Comprehensive Plan, the developer shall mitigate the direct impacts of their development on public streets and intersections. A road's LOS is the ratio of the actual volume of traffic to its maximum traffic capacity. LOS is established in Chapter Six "Transportation" of the Whatcom County Comprehensive Plan.

3. As a prerequisite to Technical Administrator approval of proposed development construction documents, one of the following conditions must exist regarding any County-identified mitigation measures:

a) Said construction documents incorporate all mitigation measures (i.e., the developer will accomplish them coincident with the proposed development), or

b) Said construction documents incorporate some mitigation measures (i.e., the developer will accomplish them coincident with the proposed development) and the developer has executed a voluntary agreement (as described in Section 506.E.4.) with the County for mitigation measures that the approved development construction documents do not incorporate, or

c) The developer has executed a voluntary agreement (as described in Section 506.E.4.) with the County for all mitigation measures.

4. As an alternative to physically completing mitigation measures, either the developer or the County may propose that the developer pay the County for the cost of required mitigation. As stated in RCW 82.02.020 and per Section 506.B.2.h), this arrangement is voluntary and both the County and the developer must agree to it.

5. On a case-by-case basis, the Technical Administrator has the authority to require alternate mitigation measures that the County has selected to address specific development impacts that are nonetheless proportional to the impact(s) and reasonably related in cost to the legitimate purpose(s) to be served.

6. The County will not grant temporary or final occupancy, nor issue final approval, of the development until the developer either:

   a) Completes the required development impact mitigation measures, or

   b) Posts an approved security to guarantee completion of the required development impact mitigation measures.

7. The Technical Administrator has the authority to modify the mitigation measures for the new development while finding that the developer has satisfied the adequate provisions requirements for public roads, access, and mitigation of the transportation impacts of the development.

F. Technical Administrator-Generated Documentation

1. For each Technical Administrator-reviewed development proposal, the Technical Administrator shall create a record that includes the following development impact mitigation-related information:

   a) Development Proposal:

      i. Name.

      ii. Case/project number(s).

      iii. Land use regulations vesting date.

b) Development-impacted public deficiency(s):

   i. Description, e.g., "Subdivision internal road nonexistent", "Development-accessed existing public road lane width substandard for existing ADT."

   ii. Category (i.e., newly created or existing).

   iii. Development impact description(s).

   iv. County-proposed mitigation measure description(s).

c) For each County-proposed mitigation measure, a statement that:

   i. Explains how the County's mitigation requirement(s) is/are directly proportional to the impacts resulting from the development.

   ii. Mitigation is not based on hypothetical future development.

d) A summary statement that explains how mitigation is reasonably necessary as a result of the development. Substantial evidence must be provided to support mitigation requirements.

Table 506-1 Development Created and/or Worsened Deficiencies Determination Reference Table

			Existing Public Rural Roads (Revised: January 13, 2015)										
EVALUATION CRITERIA	Truck Traffic	Project, Trips/day	≤ 30									> 30	
		Existing	≤ 10%					> 10%				≤ 10%	> 10%
	ADT		≤ 400	> 400 & ≤ 1000	> 1000 & ≤ 2000	> 2000 & ≤ 3000	> 3000	≤ 400	> 400 & ≤ 1000	> 1000 & ≤ 2000	> 2000 & ≤ 3000	> 3000	> 0
		Project[1]	> 0										
ROAD REQUIREMENTS	Traveled Way, Total	Width[2], min, ft	16	18								20	
		Material	Paved										
	Shoulder, Each	Width[2], min, ft	0	1	2	3	0	1	2	3	4	2	3
		Material	Gravel			Paved	Gravel			Paved			
	Roadway Width[2], [3], min, ft		* OR *									NA	
			16	18	20	22	24	18	20	22	24	26	
Development Resultant Deficiency:			**Might** Worsen, and/or **Might** Create New									New	
Deficiency Mitigation Factor:		For worsened:	$ADT_{Project} / (ADT_{Project} + ADT_{Existing})$.									NA	
		For new:	1.00										

[1] If development will generate > 400 ADT, developer shall submit a *Traffic Impact Analysis Report* per WCDS 506.

[2] For EXISTING ROADS, value listed is nominal dimension. To satisfy nominal value, actual field measurement must not be less than 6" of nominal value in any location along a "road segment" (i.e., it lies between nearest two other public (County or State) road intersections, or a dead end road to nearest public road, and/or where cross sectional geometry changes by more than 1 ft, or surface material changes). For example, an existing County public road with traveled ways that measure 17' 4" wide in spots along a road segment does not qualify as 18' nominal for that segment.

[3] Value listed is total traveled way + shoulder(s) widths. If Development creates and/or worsens a deficiency, deficiency mitigation (using Deficiency Mitigation Factor(s) above) shall be based on Traveled Way and Shoulder widths values above, NOT Roadway width values above.

SECTION 507 – CONSTRUCTION PLANS

A. General

Plans are required for proposed road, utility, and site construction within county rights-of-way and private roads, unless Section 507.B. applies. Plan content and format are governed by these Standards. A complete set of engineered horizontal plans and vertical profiles, together with applicable stormwater and erosion-sedimentation control plans shall be prepared and submitted to the County Engineer.

Construction plans must sufficiently document and summarize the design assumptions, computations, and parameters that form the basis of the project design.

Final engineered plans (including stormwater and all grading and utility plans) must have the approval of the County Engineer prior to any construction. Recording of final plats/short plats or binding site plans shall not be granted prior to approval of the plans.

B. Construction Plan Waivers

The County may waive construction plan requirements, wholly or in part, based on certain criteria, which may include, but is not limited to, the following:

- No more than 5,000 square feet of impervious surface will be created within existing publicly maintained rights-of-way.
- No more than 20,000 square feet of impervious surface will be created within new or existing privately maintained rights-of-way or easement.
- No more than 30,000 square feet will be cleared and/or graded within the rights-of-way or easement.
- Existing or proposed road grade does not exceed 12%.
- Existing or proposed road has a standard cross section.
- The work does not intercept a stream or wetland, or otherwise impact natural surface drainage, as set in County Code regarding critical areas, shorelines, and surface waters.
- No utilities (water, sanitary sewer, utility poles, etc.) are impacted.
- Does not establish new or alter existing stormwater retention/detention facility within any rights-of-way or easement.
- A Stormwater Design Report is not required per Whatcom County Development Standards (WCDS) Chapter 2 - Stormwater Management.
- Whatcom County Development Standards drawings, submitted with required permits/approvals, are sufficient to describe the improvement(s) to be constructed

C. Plan Submittal and Review Process

The process of submitting engineered road, utility, and site plans to the County for the purpose of review and approval shall be in accordance with the procedure outlined below:

1. Initial Submission

    a) Plans shall include a brief project summary/narrative as needed for project clarity.

b) A single complete set on engineered road plans and specifications (check prints). See 'Road Plan Checklist' in Appendix E as a plan submittal guide. The checklist is used by County staff to review project proposals for meeting County codes/standards, constructability, County inspection, and record drawings.

c) All plan sets shall include the information per Appendix E Section A. *General Submittal Requirements*, No. 1 & 2; Section B. *Items Required on All Sheets*; and Section C. *Title Sheet*. County Engineer can require other Components of the Checklist, dependent on the project.

d) If required per Chapter 2 – *Stormwater Management*, WCDS, Stormwater Management Plans and Specifications shall be included with the road construction plan submission.

e) If applicable to project, design data for a typical set of construction plans and reports may include, but are not limited to, the following:
- Geotechnical and soil report.
- Wetland report
- Structural reports including foundation and stability calculations for retaining walls, bridges, embankments, etc.
- Topographic map.
- Traffic report
- Pavement design report
- Record drawings of existing utilities
- Street classification
- Design speeds

f) Preliminary check prints must be clearly identified as "PRELIMINARY" or contain such wording so it may be differentiated from the final plans. Preliminary plan set must be stamped, but need not be signed or dated by the Engineer of Record (refer. WAC 196-23-020 (2)).

g) The final plans shall include a professional certification note. Plan sheets shall be prepared, signed, and stamped by a professional engineer that has been retained by the developer. The professional engineer shall make the following statement:

"I hereby declare that these documents were prepared under my direct supervision and that the plans, specifications and design shown herein generally conform to accepted engineering standards and meet the requirements set forth under the Whatcom County Development Standards, except as specifically set forth under note _____, page _____, of these plans."

ENGINEER'S SEAL

_____
Engineer's Name and Registrations Number
Date _____, 20____

h) County Review Approval block shall be as follows on all construction plans and supporting documents with the final approved plans showing the acceptance signature of the designated representative of the County Engineer:

REVIEW APPROVAL

REVIEW IS FOR GENERAL COMPLIANCE AND CONSISTENCY WITH APPLICATBLE WHATCOM COUNTY CODES, REGULATIONS AND/OR STANDARDS

NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DATA, DIMENSIONS OR DETAILS

DEPARTMENT OF PUBLIC WORKS — ENGINEERING SERVICES

BY: _____ DATE: _____

Whatcom County shall not be responsible for the accuracy and adequacy of the design or dimensions and elevations on the plans. Whatcom County, through the acceptance of the construction plan or stormwater report and other supporting documents, assumes no responsibility for the completeness and/or accuracy of the construction plan or drainage report.

2. Revisions

a) Following a review by the County Engineer, the reviewed check prints ("redlines") will be returned to the Engineer of Record for any modifications that may be required.

b) Engineer of Record shall return revised construction plans to the County Engineer along with the previous full set of redlines.

c) For post approval change orders see Section 511.A.5, *Basis for Control of the Work*.

3. Final Submission

    a) Include one (1) complete set of revised engineered road plans, specifications and supporting calculations reflecting comments documented in the previous submissions.

    b) Plans shall be original drawings which are stamped, signed, and dated by the Engineer of Record. Submittal shall be on white bond paper stock.

    c) Include the last set of redlines.

    d) Upon approval by the County, the plans (final submission) will be signed by the County Engineer and returned to the Engineer of Record.

    e) The Engineer of Record shall return the number of copies to be determined by Public Works Engineering Services.

D. Record Drawings

1. General

    a) Record drawings (previously known as "as-built" plans) clearly indicate the "as-constructed" state of the project. Record drawings are required prior to final approval of all public infrastructure and private stormwater facilities.

    b) Record drawings shall reflect the same degree of detail as the original plan drawings, and shall reflect any deviations from or changes to the approved construction plans including, but not limited to, the following details:
        - Roadway centerline profiles and slopes; vertical and horizontal curves; and roadway widths.
        - Curb ramps.
        - All pipe slopes.
        - All catchbasins and manholes, inverts of inlets and outlets, rim elevations.
        - All detention pond elements, including elevations of any overflow structures, bottom of pond elevations at each corner and center, inlet and outlet pipe invert elevations, elevations at every 25 feet inside and outside of toe of berm and top of berm.
        - Control structure elements including size and elevation of all orifices, standpipe notches, bottom of structure, and top of lid.
        - Elevations on dispersion trenches at all pipe inlets and outlets.
        - Finished grade of areas changed by grading, with either spot elevations or new contours with actual top and toe of slopes.

2. Record Drawing Submission

    a) The applicant shall first submit a paper copy of the record drawing checkprints for County review. The record drawings shall be done on a copy of the original approved construction plans.

b) The County will review the checkprints and redline any necessary changes. The applicant shall then resubmit a checkprint of the revised record drawings to the County for approval.

c) Upon County approval of the record drawing checkprints, the applicant shall then submit the final record drawings on mylar or approved equal to the County Engineer.

d) The Professional Engineer shall execute the following certification on all pages of the final record drawings:

RECORD DRAWING CERTIFICATION

I hereby affirm, to the best of my knowledge and consistent with the industry standard level of care, that all infrastructure improvements shown on these Record Drawings reflect the work as constructed, that all modifications meet the performance standards of the original design approved by the County Engineer, and that all elements shown comply with Section 507.D. of the Whatcom County Development Standards Chapter 5 – Road Standards.

ENGINEER'S SEAL

_____
Engineer's Name and
Registration Number
Date_____, 20____

e) All final record drawings for public infrastructure, and private stormwater facilities when required by the County Engineer, shall be submitted to the County in a County approved digital format recorded in the current release of AutoCAD or compatible format. The digital record drawings shall generally conform to the current drafting standards adopted by the Washington State Chapter of the American Public Works Association (APWA).

SECTION 508 – ROADSIDE FEATURES

Public access easements shall be dedicated and safe non-motorized facilities provided wherever practical or necessary, within a one mile radius of community places such as schools, shopping, libraries, or other neighborhoods to facilitate pedestrian and bicycle circulation in addition to rights-of-way provided for a street. Access easements shall be a minimum of 10 feet wide. Structures shall be set back from the edge of the easement pursuant to Title 20. Improvements to the easements shall be consistent with this section. Fences may not be constructed within the access easements. Separated bicycle and pedestrian ways shall be seriously considered. For pedestrian facilities design specifications or conditions not covered below refer to WSDOT Design Manual Section 1025 Pedestrian Design Considerations.

A. Urban Pedestrian Facilities

1. Sidewalks shall be provided on both sides of all new arterial, collector, local access, andcommercial/industrial streets in urban areas.

2. Frontage sidewalks shall be provided on all arterial, collector, neighborhood collector, local access, and commercial/industrial streets in urban areas.

3. Sidewalks shall be provided on one side of all minor access streets in urban areas.

4. Walkways shall be provided on one side of existing perimeter public roads adjoining any development, which creates, in the professional judgment of the County Engineer, the potential for significant additional pedestrian movement and the roadway traffic has an ADT of over 400 vehicles.

5. Urban sidewalks shall be constructed with cement concrete. Cement concrete sidewalks shall be at least five (5) feet in width and four (4) inches or six (6) inches in depth, depending on location and curb type (see Drawing 508.A-1). Sidewalk construction shall conform to APWA and WSDOT standard specifications. Back of sidewalk drains shall be a minimum of four (4)-inch diameter perforated pipe and shall be required in cut sections of the roadway (see Drawing 508.A-2).

6. Facilities for the Handicapped: Ramps are required per RCW 35.68.075 (see Section 508.G). Where a sidewalk ends at a shoulder, a transition ramp shall be provided (see Drawing 508.A-3).

7. A handrail is required when the vertical drop is more than 30 inches, side slopes exceed 2(H):1(V), and the top of the slope is horizontally less than four (4) feet away from the edge of the sidewalk (see Drawing 508.E-1).

   Handrails shall be galvanized steel or aluminum. Horizontal rails and vertical supports shall be 1-1/2 inch diameter Schedule 40 Standard pipe and balusters shall be 3/4 inch diameter Schedule 40 Standard pipe. Vertical support posts shall be on eight (8)-foot centers maximum and balusters on four (4)-inch clear space maximum. Finished height of the railing shall be 42 inches above pedestrian walking surface. Provide slip joints at stairway expansion joints and at 24 feet on center maximum (see Drawing 508.E-2).

B. Rural Pedestrian Facilities

1. Walkways in rural areas shall be provided on at least one side of all new roads having a potential ADT greater than 160 vehicles.

2. Walkways shall be provided on one side of existing perimeter public roads adjoining any development which creates, in the professional judgment of the County Engineer, the potential for significant additional pedestrian movement and the roadway traffic has an ADT of over 400 vehicles.

3. Minimum walkway improvements shall be five (5) feet in width and surfaced with a two (2)-inch lift of compacted crushed rock material (5/8 inch minus) over an approved subgrade. When a walkway is incorporated into the road shoulder, the typical roadway section shall govern. Paved shoulders shall be required when walkway is combined with bikeway.

4. A handrail is required when the vertical drop is more than 30 inches, side slopes exceed 2(H):1(V), and the top of the slope is horizontally less than four (4) feet away from the edge of the walkway (see Drawing 508.E-1).

   Handrails shall be galvanized steel or aluminum. Horizontal rails and vertical supports shall be 1-1/2 inch diameter Schedule 40 Standard pipe and balusters shall be 3/4 inch diameter Schedule 40 Standard pipe. Vertical support posts shall be on eight (8)-foot centers maximum and balusters on four (4)-inch clear space maximum. Finished height of the railing shall be 42 inches above pedestrian walking surface (see Drawing 508.E-2).

C. Bikeway Classification and Applicability

1. Bikeways shall be provided when required per Table 505-1 or Table 505-2, or when called for in an adopted Whatcom County ordinance, or when a traffic analysis shows substantial bike usage that would benefit from a designated bike facility.

2. Bicycle facilities shall be designed and installed consistent with the performance standards specified in the WSDOT Design Manual - Section 1020 and shall generally conform with Drawing 508.C-1.

3. Selection of an appropriate facility shall ensure that the proposed facility will not encourage or require bicyclists or motorists to operate in a manner that is inconsistent with the Rules of the Road (RCW 46.61).

D. Driveway Approaches

1. Driveway approaches serve 20 ADT or less. All others shall be considered a road.

2. Requirements

   a) All driveway approaches within public rights-of-way shall have a Whatcom County Revocable Encroachment Permit.

b) Driveway approach construction or maintenance work shall not be allowed before issuance of a Whatcom County Revocable Encroachment Permit.

c) If a driveway easement is needed, the minimum easement width shall be 30 feet.

d) Driveways shall be setback five (5) feet from the property line and neighboring driveway edges shall be 10 feet or more apart.

e) Joint-use driveway approaches serving two adjacent parcels shall be encouraged and may be built upon formal written agreement of both property owners and approved by the County Engineer.

3. Specifications

a) Dimensions, slope and detail shall be as indicated in Drawings 508.D-1, 508.D-2, 508.D-3, 508.D-4, 508.D-5, and 508.D-6, and as further specified in the following subsections.

b) Conditions of Approval of New Driveway approaches:

i. Driveway approaches providing access onto arterial/collector streets shall be denied if a reasonable alternate access is available.

ii. All abandoned driveway approach areas on the same frontage shall be removed and shall be properly restored to match the adjacent section.

iii. Maintenance of driveway approaches, including stormwater culverts, shall be the responsibility of the owner(s) whose properties they serve.

iv. Every driveway approach must provide access to an off-street parking area located on private property. Every vehicle entering the driveway must be able to park, stand or load entirely off the street rights-of-way. In addition, use of the sidewalk, pathway or sight distance clear zone shall not be hindered or blocked. An adequate turn around area shall be provided for any driveway off an arterial/collector street, allowing vehicles to enter the traveled way in a forward motion.

v. No driveway approach shall be allowed to access into a designated pocket parking area.

vi. No vehicle shall be allowed to back out onto any street from an industrial, commercial or multi-family parking area.

vii. No driveway approach shall be constructed in such a manner that it causes a hazard to any existing stormwater inlet, culvert, street lighting standard, utility pole, traffic regulating devices or striping, fire hydrant, or other public facility. The cost of relocating any such public facility, when necessary to do so, shall be borne by the property owner/applicant. Said relocation of any public or private facility shall

be performed only through the agency holding authority for the particular structure involved.

viii. No surface stormwater shall be allowed to flow onto the County road surface.

ix. For single-family residences and joint-residential driveway approaches crossing an open ditch section, culverts shall be a minimum 12 inches in diameter or larger if so required to carry anticipated storm water flows. The culvert size shall be as approved by the County Engineer.

x. All commercial or industrial access approaches shall be designed and constructed to roadway intersection standards. The design will be based on a submitted traffic engineering analysis that considers, among other factors, intersection spacing, sight distance, and traffic volumes.

xi. If the accessed public road frontage length is 75 feet or less, or if the accessed public road frontage is an arterial or collector regardless of frontage length, only one driveway approach is allowed. On other accessed public roads with frontage length over 75 feet, more than one driveway approach is subject to County Engineer approval.

xii. Notwithstanding any other provision, driveway approaches will not be allowed where they are prohibited by a separate County Council action or where it is determined by the County Engineer or reviewing agency to create a hazard or impede the operation of traffic on the roadway.

4. Location and Width of New Driveway Approaches are as shown on Drawing 508.D-3. Driveway approach locations are to be measured from the closest edge of the intersection traveled way to the centerline of the driveway approach, as shown in Table 508-1.

TABLE 508-1 – Driveway Spacing From Intersection

Accessed Road Status	Distance from Intersection Traveled way, ft
< 501 ADT	60
501 – 1000 ADT	100
> 1000 ADT	120
Commercial or Industrial	300

E. Retaining Walls

Retaining walls for the containment of cut or fill embankments up to a maximum height of four (4) feet in stable soil conditions may be constructed without an engineered design (see Appendix G). For heights over four (4) feet, or when soil is unstable, or when specifically required by the Uniform Building Code (UBC), a structural wall designed by a professional engineer qualified in retaining wall design shall be submitted for approval.

1. Retaining walls may be constructed of rock, treated wood, compacted earth, concrete, pre-manufactured or engineered specialty items or other materials as approved by the County Engineer. Standard details for various types of retaining walls are provided in Appendix G.

2. The retaining wall shall be started by excavating a trench not less than six (6) inches in depth.

3. The wall backfill shall be uniform, free flowing, and have strength consistent for the intended use. The County Engineer may require independent testing to verify material suitability or placement.

4. All retaining walls shall provide for positive drainage.

5. The location of retaining walls shall not restrict sight distance as detailed in the Title 20, Official Whatcom County Zoning Ordinance.

6. When a sidewalk is to be built over a retaining wall, the top of the wall shall be sealed and leveled with a cap constructed of Concrete, Class 3000, in accordance with the applicable provisions in the WSDOT Standard Specifications - Section 6-02, but with reduced water content resulting in a slump of not over two (2) inches (see Drawing 508.E-1).

7. A handrail is required when the vertical drop is more than 30 inches, side slopes exceed 2(H):1(V), and the top of the slope is horizontally less than four (4) feet away from the edge of the sidewalk (see Drawing 508.E-1).

   Handrails shall be galvanized steel or aluminum. Horizontal rails and vertical supports shall be 1-1/2 inch diameter Schedule 40 Standard pipe and balusters shall be 3/4 inch diameter Schedule 40 Standard pipe. Vertical support posts shall be on eight (8)-foot centers maximum and balusters on four (4)-inch clear space maximum. Finished height of the railing shall be 42 inches above pedestrian walking surface (see Drawing 508.E-2).

F. Curb and Gutters

1. Rolled or vertical curb and gutter shall be utilized for street edges in urban areas.

2. Vertical curb shall be used for edges of all islands associated with paved surfaces and the tangent sections parallel to the sidewalk in a pocket parking section.

3. Thickened edge asphaltic curbs may be used on private streets when approved by the County Engineer.

4. Refer to Drawing 508.F-1 for details.

G. Curb Ramps

On all streets with curbs, a ramp section to facilitate passage of handicapped persons shall be installed at all street intersections where there is sidewalk and/or at other crosswalk locations

(see Drawings 508.G-1 through 508.G-5). Where a ramp is constructed on one side of the street, a ramp shall also be provided at a corresponding location on the opposite side of the street.

H. Survey Monuments

1. All existing survey control monuments which are disturbed, lost, or destroyed during construction or maintenance shall be replaced by a professional land surveyor retained by the responsible party at their own expense in accordance with Drawing 508.H-1. A licensed land surveyor shall file a land corner record with the County Auditor and the County Engineer showing methods used to reestablish the monuments' position and references.

2. Survey control monuments shall be placed or replaced in accordance with recognized good practice in land surveying, and in conformance with all applicable State and local regulations. The control and boundary survey shall be tied to the Washington State Coordinate system per RCW 58.29 if suitable control is available within one (1) mile of the survey.

3. Standard survey monument shall be cast in Class 3000 concrete, reinforced with a 5/8-inch (No. 8) reinforcing bar, and have a 2-inch minimum brass cap with a 2-1/2-inch shank. See Drawing 508.H-1.

4. A brass disc encased in concrete shall be placed at all points of curves, points of tangent, intersections, and as needed for intervisibility of monuments in streets.

5. An alternative plan of intervisible monuments may be proposed by the Surveyor subject to the approval of the County Engineer.

6. A signed and sealed statement from the land surveyor that all monuments have been set shall be provided to the County before release of the road maintenance security.

I. Mailboxes

The location, style and height of the mailbox shall be obtained from the local U.S. Postal Office. Adjustments to the location may be necessary to accommodate the following:

1. Mail box installation shall not be located in such a manner as to cause vehicles to stop on neighborhood collector or higher classified roads without the use of a dedicated pocket pullout area signed for no parking.

2. The installation shall not create a roadway obstruction or restrict sight distance.

3. When mailboxes are located in the sidewalk, individually or in clusters, sidewalk alignment shall be such that the distance from the back edge of the sidewalk to the mailbox is not less than five feet. See Drawing 508.I-1.

J. Guardrails

Guardrail shall be provided as specified in the WSDOT Design Manual, 710 "Traffic Barriers." Cross-sections shall be submitted to assure proper guardrail location. The guardrail shall conform to Standard Plans with related details.

K. Traffic Control

1. Signing - All traffic control shall be compliant with MUTCD and State Standards Specifications. All equipment and materials required for traffic control shall be furnished, installed and maintained by the developer to the satisfaction of the County Engineer until County acceptance. The developer shall install all signs as provided in the approved plans. The County may install signs within existing or proposed rights-of-way at the discretion of the County Engineer. The County shall be reimbursed for the cost of materials and installation by the developer.

2. Pavement Marking - Pavement markings including buttons, striping and delineators may be required to provide roadway safety. Such markings shall be provided by the developer. All work shall be approved by the County Engineer prior to installation. The County may install pavement marking within existing or proposed rights-of-way at the discretion of the County Engineer. The County shall be reimbursed for the cost of materials and installation by the developer. All materials shall comply with WSDOT Standards.

3. Work Zone Safety - Construction activities shall comply with appropriate federal, state and local requirements with regard to worker and public safety.

4. Maintenance of Traffic - Traffic control shall be maintained at all times. Existing travelways and accesses shall remain open and maintained in a safe condition at all times. Approval must be received from the County Engineer for all detours and road closures. A formal traffic control plan complying with MUTCD shall be submitted to Public Works for review and approval by the County Engineer (see Section 511.G). The County Engineer may require a signed and sealed traffic control plan prepared by a professional engineer if the project is deemed sufficiently complex. The County will ensure that the project is coordinated with emergency medical services and other agencies before any work proceeds.

L. Street Illumination

1. Requirements - Streetlights may be required in urban developments and commercial and industrial developments. Basic illumination shall conform to the guidelines of WSDOT Design Manual or equivalent, and shall be provided at intersections and at other locations and intervals as required by the County Engineer. All luminaries shall be maintained by the power supplier or owner/developer/association or by a public agency.

2. Plats - The design for streetlights, when required or requested in new urban plats, shall be submitted before the final plat is recorded. The County shall not be responsible for any cost of maintenance, replacement of operating costs of street light

systems, and the developer shall submit evidence that the lighting systems will be owned or operated by a public agency or private organization (including homeowner associations and/or a private utility company).

3. Commercial/Industrial - Streetlights required in commercial areas shall be provided at the time of construction. The developer or property owner shall be responsible for the maintenance, replacement, and operating costs of the lighting systems.

M. Landscaping

The following guidelines will be utilized in evaluating and administering proposed or existing landscaped areas within county road rights-of-way.

1. Design - When landscaped areas and such other features are proposed or required:

    a) Such plans shall show in detail the proposed areas, location and type of plantings, irrigation, stormwater, and other relevant factors.

    b) The landscape plan may be required to be prepared by a licensed landscape architect if the proposed areas are sufficiently extensive or sensitive.

    c) All median areas shall utilize low maintenance plantings. Refer to Whatcom County's approved plant list in Appendix I.

    d) Such plans shall be approved or rejected by the County Engineer based upon such factors as traffic safety and effect on road maintenance.

2. Maintenance -

    a) Maintenance of landscape areas and survival of the plantings shall be the responsibility of the developer and/or homeowners' association or successor owners of lots adjoining landscaped areas.

    b) Initial installation and maintenance for a two (2) year period shall be the responsibility of the developer, who shall secure such performance by filing an appropriate security (see Section 509.A). After the two (2) year period, maintenance responsibility shall either pass to a homeowners' association (where such an entity has been created) or to individual lot owners as appropriate.

    c) Plantings and other landscaping shall have a minimum vertical clearance of eight (8) feet over sidewalks and walkways. There shall also be at least a one (1) foot clear zone behind the back of sidewalks and walkways. Vertical clearance over streets and roads shall be a minimum of 14 feet.

    d) If not adequately maintained, the County may take such corrective action as deemed necessary. The corrective action will be at the expense of the developer/association/homeowner. In addition, the County may make corrective action based on traffic safety, which will also be at the expense of the developer/association/homeowner. Plantings or other improvements

within the rights-of-way installed by abutting property owners are subject to removal when the rights-of-way are needed for public use. The property owner(s) are responsible for removing any landscaping or improvements upon official notice.

N. Road Name Signs

All road names shall be approved by the County per Ordinance No.96-049 (or current) before installation. Refer to Drawing 508.N-1 for sign type and method of installation of road name signs.

SECTION 509 – SECURITIES

A. Deferred Improvement

1. In certain circumstances a Developer, who can demonstrate development project permit/approval/construction progress, may request to defer specific County-required improvements prior to completing construction on land division related developments (i.e. subdivisions, short subdivisions, general and specific binding site plans and planned unit developments). Improvements eligible for a deferral request under this section are generally limited to: ***final roadway markings and striping, final lift of hot mix asphalt surfacing and survey monumentation in roadways***. A Developer who seeks a deferral of specific improvements or construction activities under this section shall submit a formal request to the County Engineer. This request shall describe how either of the conditions below apply to the current project:

    a) Circumstances beyond the Developer's control prevent the Developer from completing all said County-approved improvements; or

    b) Deferring the completion of specific improvements would be in the best interest of the Public.

2. Upon receipt of a formal request to defer specific improvements, the County Engineer will review and evaluate the request against potential health and safety concerns, environmental or weather related constraints, permit/project expiration, code compliance and/or restrictions, and other Public interests. In order to facilitate this review, the Developer's request shall include:

    a) Development title

    b) County project permit number

    c) Request preparation date

    d) Project permit expiration date

    e) Civil drawing/plan approval date(s)

    f) Summary narrative of construction progress status as of the preparation date

    g) A list of the desired deferred improvement items that:

        i. Describes each deferred improvement item, and

        ii. Classifies each deferred improvement item as incomplete and/or defective, and

        iii. Quantifies each deferred improvement item (e.g., linear feet, square feet, cubic yards), and

iv. Provides the estimated monetary value to complete and/or to correct each deferred improvement item , and

v. Proposes an overall security expiration date, and

vi. Provides an estimated monetary amount to complete record drawings, when required.

h) Proposed type of security to be provided

i) An executed Extraordinary Inspection Request form covering the costs for County Staff review of the request.

3. If the County Engineer approves the deferred improvement request, the Developer shall provide a security that conforms to the following conditions:

   a) The security shall explicitly identify each County-approved deferred improvement, together with its corresponding target completion date; and

   b) The security value shall:

      i. be equal to 150% of the construction cost estimate, but not less than $5,000, as approved by the County Engineer, to complete all County-approved deferred improvement items;

      ii. include an amount calculated by the Developer's Engineer to ensure the completion of record drawings, when required.

4. A fee shall be collected at the time that a security is posted to cover the administration costs as set forth in the current Whatcom County Unified Fee Schedule.

5. Types of securities may include cash deposits, assigned savings, bonds, letters of credit, and other assurance devices as may be approved by the County Engineer. The security shall be of a form approved by the Prosecuting Attorney's office.

6. The security shall be for a period of up to one (1) year, which may be extended at the option of the County Engineer. The amount of the security shall be recalculated at the time of any extension.

7. If the deferred improvements are not completed in the specified time, the County Engineer shall issue written notice to the Developer and any Surety that the security is in default. This notice shall identify those item(s) that remain incomplete to the County's satisfaction and shall inform the Developer that the County may:

   a) demand forfeiture to the County of all, or a portion of, the security value required to complete and/or correct the deferred work item(s), to the satisfaction of the County Engineer; and/or

b) initiate vacation of the development; and/or

c) pursue other lawful remedies.

8. In the event that forfeiture of a security is necessary, all costs related to said forfeiture and completion of deferred improvements shall be deducted from the security amount prior to release of any residual monies.

9. The County Engineer will release the deferred improvement security when:

   a) Construction of the improvements to public facilities are provisionally accepted by the County Engineer; and/or

   b) Construction of the improvements to private facilities have been approved, and

   c) Any applicable warranty security is received.

10. Until the County fully releases the deferred improvement security, no occupancy permit, final inspection, or use of the lot(s) created by a land division related development shall be allowed.

B. Performance

The County Engineer may require a developer to post a performance security:

- to complete County-required improvements, and/or
- to repair developer-inflicted damage, and/or
- to stabilize and restore site conditions, to the satisfaction of the County Engineer,

when improvements impact public infrastructure, affect County-held permit responsibilities(i.e. NPDES Phase II Permit) or pose a potential risk to life, health or safety, as determined by the County Engineer and/or to provide record drawings. Said security shall conform to the following conditions:

1. The security value shall:

   a) be equal to 150% of the construction cost estimate, but not less than $5,000, as approved by the County Engineer, to complete all County-required improvements; and

   b) include an amount calculated by the Developer's Engineer to ensure the completion of record drawings, when required.

2. A fee shall be collected in an amount set forth in the current Whatcom County Unified Fee Schedule at the time that a security is posted to cover administrative costs.

3. Types of securities may include cash deposits, assigned savings, bonds, letters of credit, and other assurance devices as may be approved by the County Engineer.

Additionally, the security shall be of a form approved by the Prosecuting Attorney's office.

4. The County Engineer shall determine the security period, which may be extended. The amount of the security shall be recalculated at the time of any extension.

5. Performance securities assuring construction of the required improvements shall not be released until the facilities are provisionally accepted or approved and the warranty security has been received by the County Engineer. The performance security may not be replaced with a deferred improvement security.

6. In the event that forfeiture of a security is necessary, all costs related to said forfeiture and completion of secured improvements shall be deducted from the security amount prior to release of any residual monies.

C. Warranty

Prior to final approval/acceptance by the County of any County-required improvements and subsequent release of any associated deferred improvement and/or performance security, the developer may be required to post a warranty security device with the County Engineer's office that conforms to the following:

1. The security period shall be in effect for two (2) years from the effective date that the County Engineer shall determine; and

2. Types of securities may include cash deposits, assigned savings, bonds, letters of credit, and other assurance devices as may be approved by the County Engineer. The security shall be of a form approved by the Prosecuting Attorney's office; and

3. The warranty security shall be for an amount equal to $5,000 or 10% of the County-approved construction costs (whichever is greater); and

4. During the two (2) year warranty security period the developer is responsible to correct defects as may be determined by the County Engineer. The posted security shall ensure the corrections of defects in workmanship, materials, and maintenance of all constructed and approved facilities; and

5. The County may perform emergency repairs if there is a public hazard. If emergency repairs are performed:

    a) The County will be reimbursed for its work when the damage was caused by faulty workmanship, materials, or design; or

    b) If the emergency did not relate to workmanship, materials, or design, then the County will bear any cost associated with the repairs; and

6. At the end of the warranty security period, the warranty security shall be released after:

a) The warranty security holder submits a request for County inspection of improvements and release of the warranty security; and

b) Having received acceptable correspondence, the County staff performs a site inspection to verify improvements have been adequately maintained, to the satisfaction of the County Engineer; and

c) If the improvements have been adequately maintained to the satisfaction of the County Engineer, the County will issue appropriate documentation authorizing release of the warranty security.

7. The release of the warranty security shall be for the amount of the warranty security minus all costs attributed to the warranty security holder as set forth in paragraphs 4. and 5.a) above.

SECTION 510 – CONSTRUCTION – ROADWAY BASE AND SURFACING

A. General Requirements

A pavement surfacing design procedure must be performed for all public roads and private roads with ADT greater than 120. The minimum standards specified in Section 510.B may be used in place of performing a pavement design for residential access and private roads if the subgrade is determined to be suitable. The design life for all roads shall be a minimum of 20 years. The design procedure used must be approved by the County Engineer and must consider the following:

1. Traffic Loading - an estimate of the number and types of loading the roadway will carry for the design life. This estimate of loading must be established by a procedure accepted by the County Engineer and be expressed in 18-Kip Equivalent Single Axle Loads (ESALs).

2. Subgrade Support - a representative value for the stiffness and strength of the native material on which the road will be built. This value will be established by a procedure accepted by the County Engineer and be expressed as modulus of resilience (MR). When determining MR, soil sampling is to include obtaining a sufficient number of soil samples which adequately represents the subgrade MR and where significant changes in MR occur.

3. Construction of a soil log to a minimum depth of 5 feet below proposed subgrade and classify the soil per Unified Soil Classification System (USCS). See Appendix F.

4. Record the location of where the samples were obtained, normally by road centerline station and offset.

5. Analysis - a procedure for establishing the surfacing depth requirements of each lift of material for a given traffic loading and subgrade resilient modulus. This procedure must be approved by the County Engineer. The following procedure is deemed to have pre-approval: *Guide for Design of Pavement Structures*, 1993, by the American Association of State Highway and Transportation Officials (AASHTO).

B. Local and Minor Access Roads/Streets

The minimum thickness of road structural section on local access and minor roads and streets shall be as follows:

1. Surfacing: Hot Mix Asphalt (HMA) - Two-and-one-half (2-1/2) inch minimum compacted depth for local and minor access roads.

2. Roadway Bases – 10 inch compacted depth aggregate for gravel base or eight (8) inch minimum compacted depth crushed surfacing base course. Two (2) inch compacted depth crushed surfacing top course. Aggregate for gravel base shall retain a minimum of 60% on the U.S. No. 4 sieve.

3. Alternatives for Roadway Base - Asphalt treated base (ATB) may be substituted with the approval of the County Engineer for the typical roadway base. The ATB shall be placed in accordance with WSDOT Design Manual and Section 511.

4. Requirements on a Poor Subgrade - The minimum material thickness indicated on the standard roadway sections are not acceptable if there is any evidence of instability in the subgrade or the soils are classified CL, SC, MH, OH or Pt per USCS (see Appendix F). Both the soils analysis and the resulting pavement design shall be subject to review and approval by the County Engineer.

C. Arterials, Collectors, Neighborhood Collectors, Commercial & Industrial Streets

A Professional Engineer shall design the roadway section of arterials, collectors, neighborhood collectors, commercial and industrial streets. The Engineer shall conform to the requirements of Section 510.A.

D. Unopened Rights-of-Way

Requirements and definitions are provided in WCC 12.14 as adopted by Whatcom County Council dated January 10, 1980 (or current). See Drawing 510.D-1 for minimum improvement standards applicable to unopened public rights-of-way.

E. Gravel Road Conversions

Roadways within public rights-of-way that do not meet the current standards and/or may not be maintained by the County may be brought into compliance with the requirements set forth by these Standards by a third party. The third party may then request that a non-maintained road be adopted for maintenance. Adoption only occurs with the approval and acceptance by the County Council after being initiated through the Public Works Department.

1. Maintained Public Roads - Upon receipt of a petition by a majority of the abutting property owners on any section of road or portion thereof, the County Engineer will determine the appropriate road standard(s) and will prepare an estimated cost of construction for the roadway to said standard(s). The petition shall be accompanied by verification that the roadway is within county rights-of-way stamped by a licensed surveyor. If the petitioners agree to pay the estimated cost, the construction of the road to the design standards, see Drawing 510.E-1, shall be in accordance to the policy attached in Appendix H.

2. Rural Non-Maintained Roads within County Rights-of-way - The County Engineer, upon a petition of a majority of the property owners along a rural residential, agricultural or forest property road, may make a recommendation to the County Council for adoption of maintenance of roads within existing county rights-of-way. The road must meet current standards as determined by the County Engineer. The specific policy for this process is attached in Appendix H.

SECTION 511 – CONSTRUCTION INSPECTION

A. Basis for Control of the Work

1. Work performed in the construction or improvement of county roads, whether by or for a private developer, by county forces, or by county contractor, shall be done in accordance with these Standards and approved plans and specifications. It is emphasized that no work may be started until such plans are approved. The County Engineer shall approve any revision to such plans before being implemented.

2. The County Engineer is authorized to enforce the Standards as well as other referenced or pertinent specifications.

3. On all County contract projects, the term Engineer, as referenced in the WSDOT/APWA Standard Specifications, shall mean County Engineer.

4. When on other than county contract projects, the developer shall retain a consulting engineer to ensure facilities are constructed in accordance with the approved plans, specifications and approved change orders. For projects of this type, the term Engineer, as referenced in the WSDOT/APWA Standard Specifications, shall be the Consulting Engineer.

    a) The Consulting Engineer shall be a registered professional Civil Engineer in the State of Washington.

    b) The Consulting Engineer shall act as the owner's agent during the course of construction for all technical matters related to construction.

    c) The Consulting Engineer shall conduct and arrange for all inspections and testing of constructed facilities which are required by these Standards.

    d) The Consulting Engineer shall require all other testing, inspection, and construction surveillance, which in the engineer's opinion is necessary to assure that the required facility has been constructed in accordance with the approved plans, specifications and change orders.

    e) Construction shall be monitored, inspected and approved by the Consulting Engineer.

5. Changes from the approved plans and specifications shall require an approved change order. Change orders shall be authorized by the owner, approved by the Consulting Engineer and by the County Engineer, and shall:

    a) Be prepared by the Consulting Engineer in written form.

    b) Contain a description of, the nature of, and reason for the proposed change.

    c) Include appropriate drawings, details, and engineering analysis supporting the proposed change. The County Engineer shall determine the need for revised

drawings before approval of the requested revision. The County Engineer shall base the requirement for revised drawings on the complexity of the change and/or for general clarification.

d) Be copied and transmitted to the contractor, owner, and County Engineer.

e) All changes shall be reflected on the "As-built drawings" as specified in Section 507.D of this chapter.

B. Development Inspection

On all road and utility construction, proposed or in progress, which relates to public or private development and rights-of-way development, control and inspection shall be done to the satisfaction of the County Engineer. Unless otherwise instructed by the County Engineer, construction events, which require monitoring and/or inspection, shall adhere to the notification periods as shown in Table 511-1.

TABLE 511-1 - INSPECTION SEQUENCE

(Note: These are minimum mandatory inspections. Other inspections may be required)

Inspection	Description	Working days notice	Notes:
1	Pre-construction conference	3	Conference shall precede construction and include contractor, Consulting Engineer, utilities, and other parties affected. Plan approvals and permits must be in hand before the conference. An agenda may be required by the County Engineer before the meeting.
2	Temporary erosion/sedimentation control	1	Required before initial site work but after placement of TESC measures. All work shall be in accordance with Chapter 2 of the Whatcom County Development Standards and/or the approved plans.
3	Utility installation	1	During trenching and construction of retention/detention systems, placement of storm sewers and underground utilities.
4	Utility backfill and compaction	1	Before backfill and compaction of underground utilities.
5	Subgrade completion	1	At the stage that underground utilities and roadway grading are complete, to include placement of gravel base, if required.
6	Aggregate placement	1	To check placement and compaction of base course.
7	Curb and sidewalk forming	1	To verify proper forming and preparation prior to pouring concrete.
8	Curb and sidewalk placement	1	To check placement of concrete.
9	Crushed surfacing placement	1	To check placement and compaction of top course.
10	Paving	3	Notice in advance of paving with asphalt or Portland cement concrete.
11	Structural	3	Prior to each of the critical stages such as placing foundation piling or footings, placement and assembly of major components, and completion of structure and approaches. Tests and certification requirements will be as directed by the County Engineer.
12	Final construction inspection	15 days to respond	Upon completion of the approved construction, the developer or his agent shall request a final inspection in writing. The County Engineer shall respond with a letter of conformance or a construction deficiency list within 15 working days. Upon the successful completion of the final inspection, the developer shall conform to the requirements of Section 509.B.
13	Final maintenance inspection	30	Prior to end of the maintenance period, upon written request of the developer, the County Engineer shall inspect the improvements. Within 15 working days, the County Engineer shall respond with a letter of conformance or a construction deficiency list. If the deficiencies are not corrected pursuant to an approved timeline, the County Engineer shall exercise the authority vested under Section 509.B. If the Improvements are in conformance, the County Engineer shall exercise the authority vested under Section 509.B.

C. Embankment Construction Control in Development

The provisions of Section 2-03 of the WSDOT/APWA Standard Specifications apply in all respects to development construction unless otherwise approved by the County Engineer. The following elements are mentioned for clarification and emphasis:

1. Embankment and Cut Section Compaction - Compaction within the roadway structural sections shall meet a minimum 95% of maximum density in accordance with WSDOT/APWA Standard Specifications Section 2-03.3(14).

2. Testing for Density - Prior to placing any surfacing material on the roadway, it shall be the responsibility of the developer/contractor to provide density test reports reviewed and approved by a professional engineer. Optimum moisture content and maximum density shall be determined by methods cited in Section 2-03.3(14)D of WSDOT/APWA Standard Specifications or by other test procedures approved by the County Engineer. In fill sections, a minimum of one test shall be taken for every 1,000 cubic yards or fraction thereof and on each lift of embankment. In cut sections, the interval shall be every 100 feet of roadway. For work to be accepted, tests must show consistent uniform density as required by tests referenced above.

    a) In cases where tests do not meet the minimum standard, corrective action shall be taken such as adding water, aerating, replacing material, or applying more compactive effort as directed by the Consulting Engineer. Re-tests shall show passing densities before placing the next lift of subgrade fill.

    b) All test results shall be submitted to the County Engineer.

    c) Testing frequency may be modified based on site-specific conditions and approval of the County Engineer.

    d) For trenching in existing roads, see Section 512 of this chapter.

3. Finishing Subgrade - After the subgrade preparation has been completed, it shall be thoroughly checked by the developer or his agent using a level, string line, crown board, or other means to determine that the subgrade conforms to the typical section or special plan conditions prior to placing any surfacing material.

D. Aggregate Density

1. Prior to placing any surfacing material on the roadway, it shall be the responsibility of the developer or his agent to provide density test reports reviewed and approved by a professional engineer. Density shall be determined by methods cited in Section 4-04.3(5) of WSDOT/APWA Standard Specifications or by other test procedures approved by the County Engineer. The test interval shall be every 100 feet of roadway. For work to be accepted tests must show consistent uniform density as required by tests referenced above.

2. In cases where tests do not meet the minimum standard, corrective action shall be taken such as adding water, aerating, replacing material, or applying more compactive

effort as directed by the developer's engineer. Re-tests shall show passing densities before placing the next lift of aggregate.

3. Placement of aggregate shall comply with Division 4 of WSDOT/APWA Standard Specifications or by other procedures approved by the County Engineer.

4. All test results shall be submitted to the County Engineer.

5. Testing frequency may be modified based on site specific conditions and approval of the County Engineer.

6. For trenching in existing roads, see Section 512 of this Chapter.

E. Concrete Testing

1. Subgrade compaction shall be 95% of maximum density for curbs, gutters and rolled curb/sidewalk units. Subgrade compaction for all other sidewalks shall meet 90% of maximum density.

2. Concrete for curbs, gutters and sidewalks shall be Class 3000, furnished and placed in accordance with WSDOT/APWA Standard Specifications, Sections 6-02, 8-04 and 8-14. Weather precautions as set forth in WSDOT/APWA Standard Specifications Sections 5-05.3(14) and 6-02.3(6)A shall apply.

F. Asphaltic Concrete Pavement Testing

Paving shall be in accordance with WSDOT/APWA Standard Specifications and the following requirements:

The compaction shall be at least 91% based on a Rice theoretical maximum density, as determined in conformance with AASHTO Test Method T-209, see WSDOT/APWA Standard Specifications Section 5-04.3(10).

G. Traffic Control in Development Construction

1. Interim Traffic Control - The developer/contractor shall be responsible for interim traffic control during construction on or along traveled County roads. When road or utility work is to be performed on County roads that are open to traffic, the developer/contractor will be required to submit a traffic control plan as specified in Section 508.K. Traffic control shall follow the guidelines of Section 1-07.23 of the WSDOT/APWA Standard Specifications. All barricades, signs and flagging shall conform to the requirements of the MUTCD Manual. Signs shall be legible and visible and should be removed at the end of each work day if not applicable after construction hours.

2. Temporary Road Closures and Detours - When temporary road closures cannot be avoided the developer/contractor shall post "To Be Closed" signs a minimum of five days prior to the closing. The types and locations of the signs shall be shown on a detour plan. A detour plan shall be prepared and submitted to the County Engineer at

least 10 working days in advance and approved prior to closing any County road. In addition, notification shall occur as specified in Section 508.K-4.

3. Haul Routes - If the construction of a proposed development is determined by the County Engineer to require special routing of large trucks or heavy construction equipment to prevent impacts to surrounding roads, residences, or businesses, the developer/contractor shall be required to develop and use an approved haul route. When required, the haul route plan must be prepared and submitted to the County Engineer and approved prior to beginning or continuing construction. The haul route plan shall address routing, hours of operation, signage, flagging, and daily maintenance. If the developer/contractor's traffic fails to use the designated haul route, the County Engineer may prohibit or limit further work on the development until such time as compliance with the requirements of the haul route are achieved.

4. Haul Road Agreement - When identified as a need through the SEPA review process or by the County Engineer, a haul road agreement shall be obtained. This shall apply to the franchised utility, developer, or property owner responsible for the restoration and/or rehabilitation procedures to be performed during or upon completion of the haul operation. The County Engineer may require a security to guarantee the restoration and/or rehabilitation.

H. County Forces and County Contract Road Inspection

Road construction performed by County forces or by contract for the County will be inspected under the supervision of the County Engineer.

I. Call Before You Dig

Contractors are responsible for timely notification of utilities in advance of any construction in rights-of-way or utility easements. The Utility Notification Center phone number (1-800-424-5555) should be prominently displayed on the work site.

SECTION 512 – UTILITIES

A. General

1. Any Utility's use of county rights-of-way will be coordinated with the primary purpose of the rights-of-way which is to provide safe, efficient, and convenient passage for motor vehicles, pedestrians, and other modes of transportation. Locating electric utilities underground will be strongly encouraged, and may be required by other county regulations.

2. Utilities to be located within existing and proposed County road rights-of-way shall be constructed in compliance with these Standards and in accordance with the following:
   Whatcom County Code 12.16 *Revocable Encroachment Permits*
   Whatcom County Code 12.24 *Franchise Requirements*
   Whatcom County Code 12.27 *Accommodation of Utilities on Rights-of-way*
   Whatcom County Code 12.28 *Utility Construction*
   Whatcom County Code 12.30 *Fiber Optic Cable Systems*

3. To the extent that no conflict exists with these standards or county code, the Utility purveyor's standards will apply beyond existing or planned county road rights-of-way.

4. The County Engineer may require the Utility's authorized representative to submit plans detailing the nature, location, size, and type of utility to be installed. Plans shall conform to Section 507, *Construction Plans*, of these Standards. When required by the County Engineer, Record Drawings shall be submitted in conformity with the provisions of Section 507.D, *Record Drawings*, of these Standards.

5. Plans for new placement and replacement of existing utility poles and other utility structures shall be accompanied by written certification from a professional engineer (or from an agent authorized by the Utility to certify) that the installation conforms to these Standards and that the proposed work is in conformity with sound engineering principles related to roadway safety and environmental protection.

6. Any person or persons, corporation, district, municipality, city, town or Utility who shall desire to work within or temporarily use the county right-of-way, easement or county-owned land shall first procure from the department of public works a revocable encroachment permit. WCC 12.16.020.

7. Work may be performed on an emergency basis when regard for health or safety and the circumstances do not allow a valid encroachment permit to be issued prior to work within county rights-of-way, provided the County Engineer is notified at the earliest possible time. See WCC 12.16.070 *Emergency* for specifics.

8. An encroachment permit shall be required to occupy road rights-of-way by all Utility facilities.

9. No Utility facility shall be used for other than the purpose stated and permitted, unless written approval is granted by the County.

10. Requests for alternatives to these Standards will be processed in accordance with the variance procedure in Section 504.F, *Variances*.

11. Before commencing any excavation, all persons/contractors are responsible for timely notification per RCW 19.122.030, "…not less than two business days or more than ten business days before the scheduled date for commencement of excavation,…" of utility construction in rights-of-way or utility easements. Call the Utility Notification Center (One Call) phone number - 1-800-424-5555 or 811.

12. Utilities shall comply with the provisions of Section 511, *Construction Inspection*, of these Standards.

B. Securities

The County Engineer may require a performance and/or warranty securities as specified in Section 509, *Securities*.

C. Trench Excavation

General provisions for maintenance of traffic shall be in accordance with Section 508.K-4, *Traffic Control*, of this chapter. Trench excavations shall not be left open overnight on roads unless approved by the County Engineer.

D. Utility Locations

Utilities within the rights-of-way on new roads or in public roadways where existing topography, utilities or storm drains are not in conflict (or as required by WCC Title 21) shall be located as shown on the typical sections in Drawings 512.D-1, and as indicated below. Where existing utilities or storm drains are in place, new utilities shall conform to these Standards as nearly as practical and yet be compatible with the existing installations. Exceptions to the following may be approved by the County Engineer.

1. Below Grade Utilities

   Edges of utility trench shall be constructed within preferred area shown on Drawing 512.D-1, or as noted below:

   a) Horizontal Location

      i. Preferred: Backside of ditch or sidewalk, or in shoulder minimum three (3) feet from edge of traveled way, or outside road rights-of-way within separate easements on existing roads.

      ii. Allowed: See Drawing 512.D-1 for area if conflicts prevent preferred location shown.

b) Gravity systems (sanitary and stormwater) shall have precedent over other systems in planning and installation, except where non-gravity systems have already been installed under a previously-approved permit.

c) The preferred location for power and communication is underground.

d) All underground utilities shall have a minimum cover of 36 inches perpendicular to finished grades.

e) Mains, service connections, and stub outs to all parcels shall be completed prior to placing of surfacing materials.

f) If plowing-in cable, a minimum of five (5) feet from edge of pavement or back of curb shall be maintained.

g) No utility appurtenances (such as manhole covers, valve covers, access covers) or longitudinal trench patch shall be allowed in traveled way wheel tracks.

h) There shall be no appurtenances in sidewalks.

i) Street trees if present or planned shall be taken into consideration when placing utilities.

j) When allowed, the centerline of underground systems and appurtenances shall be located five (5) feet away from road centerline and where they will not otherwise disturb existing survey monumentation.

k) A common utility trench plan may be approved by the County Engineer.

2. Above Grade Utilities

Every new placement and replacement of existing utility poles and other utility structures at or above grade shall conform to the following:

a) Utility poles and other structures shall be as close to the edge of rights-of-way as practical, while maintaining clear zone requirements.

b) Roads with shoulders: Poles or appurtenances shall be located back of ditches and in accordance with the criteria in Drawing 512.D-1, unless protected by an approved traffic barrier or impact attenuating device (see WSDOT Design Manual Division 16 Roadside Safety).

c) Roads with sidewalks/curbs: Poles or appurtenances shall be located a minimum of two (2) feet from the back of sidewalk, or a minimum of two (2) feet from back of curb if sidewalk is not present (see Drawing 512.D-1).

d) The integrity of the proposed utility, provisions for public safety during the course of construction, and the safety/accident potential for the life of the installation shall be considered.

e) Locations of poles shall be compatible with driveway approaches, intersections, and other road features (i.e., they shall not interfere with sight distances, road signing, traffic signals, culverts, etc.). Utilities shall share facilities to the greatest extent possible.

f) An existing pole or other appurtenance, which incurs repeated damage, shall be relocated or protected by the Utility.

g) The minimum vertical clearance for overhead power, communication lines, and other above grade structures shall be in compliance with WAC 468-34-290 *Vertical clearance* and the WSDOT Design Manual.

E. Utility Installations

1. Utility installations shall be in accordance with Section 504.D. *Adopted County Specifications*.

2. New road construction or road reconstruction: Utilities, with connections, shall be installed or relocated prior to final road surfacing.

F. Open Cuts or Trenching in County Road Rights-of-Way

1. Permissibility Conditions.

   a) Open cutting in County maintained-roadways is not permissible unless (1) the constructor can demonstrate that an alternative work method (such as boring, jacking, or utility relocation outside of the paved area) is not feasible, or (2) the work will occur within four months prior to reconstruction or overlay of the County maintained-roadway. When open cuts are permissible, see Drawing 512.F-1.

   b) Trenching through Low Impact Development (LID) stormwater facilities (such as filter strips) is not permissible unless the constructor can demonstrate that an alternative work method (such as boring, jacking, or utility relocation) is not feasible. When trenching is permissible, the constructor shall replace the LID facility with the same in kind material and/or vegetation to ensure that project design assumptions for the LID facility continue to function as designed after utility construction.

   c) Open cutting or trenching in locations other than those described in paragraph 1.a) or 1.b) above is outright permissible within the County road right-of-way (such as in Trail Permitted roadways, private roadway and driveway aprons, or unopened rights-of-way).

2. When trenching or cutting is permissible, the following shall apply:

   a) If backfill material is 100% Controlled Density Fill (CDF), then no backfill layer minimum trench width dimension applies. Otherwise, the minimum trench width dimension shall be per Table 512-1.

Table 512-1 Pipe Trench Widths

Nominal* pipe, conduit, or cable size, in	Trench width, min, in
≤ 6	12
> 6 & ≤ 12	size + 12
> 12 & ≤ 15	size + 21
> 15	(1.5 x size) + 18

*Per material supplier.

b) County-Maintained Roadway Cutting: The existing pavement shall be first cut by an appropriate means to facilitate removal. Minimum width of the pavement cut shall be 3 feet. Immediately prior to placement of the permanent "patch", the existing pavement shall be saw cut along rectangular lines as shown on the approved plans. The pavement shall be removed so as to provide a firm, neat, straight, vertical edge to join. The Contractor shall be responsible for maintaining the edge. Additional saw cuts may be required to correct broken or damaged edges.

c) Backfilling:

i. Backfilling procedure shall be done in accordance with WSDOT/APWA Standard Specifications, Section 7-08.3(3).

ii. Material. If the cover (i.e., the vertical dimension between finished grade and the pipe or conduit crown or the top surface of some other underground facility, such as a concrete encased electric power duct bank) over any portion of horizontally oriented work is:

(1) Greater than or equal to 24":

a. For any work that lies either partly or totally under a County-maintained roadway section, use 5/8"-minus crushed rock, unless the County Engineer approves a request to use material that complies with WSDOT Standard Specifications Section 9-03. See also paragraph (1)c below.

b. For any work that does not lie either partly or totally under a County-maintained roadway section, use material that complies with WSDOT Standard Specifications Section 9-03. See also paragraph (1)c below.

c. The County outright permits the use of CDF as an alternative to the above two specifications, subject also to paragraph (2)a below CDF pigmentation, testing, and reporting requirements.

(2) Less than 24":

a. For any work that lies either partly or totally under a County-maintained roadway section or under a Trail Permitted roadway, use a 6" thick full trench width layer of pigmented CDF directly

above the work bedding material, unless the County Engineer approves a request otherwise. See also Drawing 512.F-1. The County Engineer will specify the CDF color (or not) based on the APWA uniform color code. A minimum of two (2) CDF test cylinders shall be taken per day. The 28-day CDF test strength shall be between 100 and 300 psi. The constructor shall submit test results to the County Engineer within 30 calendar days of test completion.

b. For any work that does not lie either partly or totally under a County-maintained roadway section, use either material that paragraph nos (1)b or (1)c above specifies.

d) It shall be the responsibility of the Utility/developer/contractor to provide compaction test reports. Reports shall reflect a minimum of two (2) tests for up to 100-ft in trench length, and a minimum of one (1) additional test for every 200-ft of trench length. Tests shall be at depths of 50 percent of the total trench depth and at the surface, or as directed by the County Engineer. Certified copies of all test results shall be provided to the County.

e) When a trench cannot be backfilled prior to opening road for traffic, appropriately sized steel sheet plates shall be used to cover trench opening with prior approval of the County Engineer.

f) Temporary Pavement Patching: A temporary two (2)-inch thick cold asphalt plant mix patch may be required to be placed and maintained over the trench area until final settlement is satisfactory to the County Engineer. The temporary patch shall be removed and the existing pavement cut before permanent repairs are made.

g) Permanent Pavement Repair: Generally, the structural section of the patch shall be equal to the section of the existing pavement. In no case shall the thickness of compacted asphalt concrete be less than two-and-a-half (2-1/2) inches. Full depth asphalt concrete patches shall be placed in layers not exceeding three (3) compacted depth inches.

h) Tack Coat: A tack coat shall be uniformly applied to all edges to be joined and lapping six (6) inches over the existing pavement. The lines from the new asphalt pavement shall be raked over the tack coat, feathered, and rolled or tamped to seal the joint. The joint shall be sealed per the WSDOT/APWA Standard Specifications.

i) Asphalt Concrete: Asphalt concrete used for patching shall be HMA class 1/2" and shall be furnished, placed, and compacted in conformance with WSDOT/APWA Standard Specifications.

j) Portland Cement Concrete: Portland cement concrete mix used for patching shall be Class 4000 and shall be furnished and placed in conformance with the WSDOT/APWA Standard Specifications.

k) Overlay: A disruption of one-sixth (1/6) or more of the traveled way is subject to an overlay at the direction of the County Engineer. An overlay may include up to the entire traveled way. See Drawing 512.F-2.

l) Restoration: Where the utility installation leaves less than half width of the existing pavement (traveled way), the entire pavement shall be removed and replaced. WCC 12.28.080.

3. Permanent pavement repair shall be performed according to Drawings 512.F-1 and 512.F-2 or as directed by the County Engineer.

4. For open cuts on existing private access approaches, the constructor shall either (1) restore the access approach surfacing in-kind, or (2) obtain a written agreement with the access approach property owner(s) for alternative access approach restoration techniques.

SECTION 513 – BRIDGES AND ASSOCIATED RETAINING WALLS

A. Bridge Design Criteria

Except as specified below, Whatcom County bridges, whether on public roads or on private roads, shall be designed and constructed to meet the minimum performance requirements and criteria set forth in the latest edition of "Standard Specifications for Highway Bridges," adopted by AASHTO and in accordance with the requirements of WSDOT Standard Specifications. Bridge and approach railings shall be provided in accordance with those references or with WSDOT Standard Plans. All new bridges shall be designed to carry an AASHTO HS 20-44 live load or greater. All bridge work is subject to flood and critical area review.

B. Definitions

Bridge: A structure including supports erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 feet between under copings of abutments or spring lines of arches or extreme ends of openings for multiple structures, which may include pipes, boxes, arches and multi-plate culverts, in series where the clear distance between openings is less than half of the smaller contiguous opening.

C. Bridge Geometrics

1. For public roads, and for private roads with an ADT of greater than 60, the bridge shall provide for the full width and configuration specified for the functional classification of the road being served. This may include the traveled way plus curb, sidewalks, walkway, and/or shoulder on one or both sides. Requirements for utilities shall be duly considered. Bridge roadway width shall be measured between curbs or between faces of rails, whichever is less, but in no case shall it be less than 24 feet.

2. For private roads with an ADT equal to or less than 60, a one-lane bridge with stop control on each side may be permitted based on the judgment of the Technical Administrator, provided that adequate sight distance is provided on both bridge approaches. Minimum curb to curb width in this case shall be 14 feet.

3. For private driveways with an ADT equal to or less than 10, a one-lane bridge may be permitted with stop control on each side, provided that adequate sight distance is provided on both bridge approaches based on the judgment of the Technical Administrator. Minimum curb to curb width in this case shall be 12 feet.

4. If in the judgment of the Technical Administrator, significant pedestrian, bike and/or horseback traffic can be expected, the Technical Administrator may require that the facilities for these other modes of traffic be separated from motor vehicle traffic.

5. Approach railings shall be made structurally continuous with bridge railings and shall meet specifications as cited in Section A above.

6. The height of bridge clearance above streams shall be as specified in Section 513.D.

D. Bridge Clearance Requirements

1. Bridge clearance over water features:

    a) All new bridges shall be designed to convey flows for runoff events up to and including the 100-year event while maintaining a no-rise condition to the upstream hydraulic surface. To assure this goal, the bridge must provide sufficient clearance (vertical clearance between the 100-year flood elevation and the low chord of the bridge) to allow for passage of debris.

    b) The minimum design clearance for all new bridges is three (3) feet between the 100-year flood elevation and the lower chord of the bridge. Estimation of the 100-year flood flow and channel hydraulics shall be in accordance with the most current version of the WSDOT Hydraulics Manual. Design clearance(s) less than three (3) feet may be allowed based on the judgment of the Technical Administrator.

2. Bridge clearance over the features:

    a) Bridge over roadway – minimum vertical clearance is 16.5 feet.

    b) Bridge over a railroad track – minimum vertical clearance is 23.5 feet.

    c) Pedestrian bridge over a roadway – minimum vertical clearance is 17.5 feet.

E. Design Submittal Requirements

The following elements shall be provided for review as part of a complete and comprehensive proposal for any bridge installation:

1. Hydraulic Report – The hydraulic report shall be prepared and stamped by a Professional Engineer licensed in the State of Washington with expertise in hydraulics and scour analysis. At a minimum, the report should include the following items:

    a) Basin hydrology evaluation, including the expected range of flows in the waterway.

    b) Channel hydraulics evaluation, including 100-year flood elevation relative to the bridge elevation and the corresponding maximum expected water velocity.

    c) Scour evaluation, including scour depth calculation, bridge foundation review, and design of mitigation measures if necessary.

    d) If situated in a floodplain, verification that a "no-rise" condition exists.

2. Geotechnical Report – The geotechnical report shall be prepared and stamped by a Professional Engineer licensed in the State of Washington with expertise in soils and foundation design. At a minimum, the report should include the following items:

    a) Soil boring at each bridge support (including intermediate piers if any).

b) Laboratory analysis of relevant soils properties.

c) Analysis of soil bearing properties.

d) Foundation type recommendation.

3. Structural Design – The structural design shall be prepared and stamped by a Professional Engineer licensed in the State of Washington with expertise in bridge design. At a minimum, the design should include the following items:

   a) Review of design criteria for compliance with Whatcom County Road Standards Section 513.

   b) All relevant calculations and analysis required by current AASHTO and WSDOT standards.

   c) Specifications for all necessary materials.

   d) Seismic and wind design.

   e) Statement confirming that items 1 and 2 above have been reviewed and incorporated within the design proposal.

F. Record Drawing Submittal

Upon completion of construction, the structural engineer of record shall submit the following information:

1. Record drawing specifying any deviations from the approved design pursuant to Section 507.

2. Construction inspection records pursuant to Section 511, documenting that the bridge was constructed in accordance with the plans and specifications. Required records include but are not necessarily limited to concrete air entrainment, water content, admixture content, and compressive test results, if applicable; material certifications for any steel members; and pile driving records if applicable.

3. Load Rating documentation, detailing the load carrying capacity of the bridge in accordance with AASHTO standards.

4. Future inspection and maintenance procedures – The structural engineer of record shall specify the inspection and maintenance frequencies and procedures for the bridge and all its components.

G. Bridge Approach Slopes

On streams with levees, the portion of the approach slopes subject to floodwaters must be connected to the existing levees and the approach slopes must be designed to meet Federal Emergency Management Administration (FEMA) levee construction and stability standards.

H. Bridge Retaining Wall Design Criteria

Bridge retaining walls shall be designed and constructed consistent with the minimum performance specifications of AASHTO as set forth in the latest edition of "Standard Specifications for Highway Bridges," and in accordance with the performance specifications of WSDOT Standard Specifications.

I. Bridge Maintenance and Inspections

The owner of the bridge shall have the responsibility of maintaining the bridge in a safe condition, taking into account any inspection(s) and maintenance procedure(s) listed from Section F-4 above. The owner shall also have the responsibility for compliance with any inspection, testing, frequency interval and/or reporting criteria listed within, or as a condition of, any County permit or project approval by the County.

SECTION 514 – ENFORCEMENT AND PENALTIES

The purpose of this section is to ensure that regulations and standards relating to construction activities are followed. Failure to comply with these Standards will be cause for withholding or withdrawing approval of permits or plans, forfeiture of security, and/or other penalties as provided by law.

Whenever any work is being done contrary to the provisions of these Standards, the County Engineer may order the work stopped. The notice shall be in writing and served on any persons engaged in the doing or causing such work to be done, or may be conspicuously posted at the site (see Section 514.B for procedure of stop work order). Any such persons shall forthwith stop such work until authorized by the County Engineer or the administrative authority to proceed with the work.

A. Offense and Penalty

Any person who engages in or is responsible for development activities, and fails to:

- Obtain a permit or project approval; or
- Comply with any permit conditions or requirements of approval; or
- Comply with the requirements of these standards,

commits a civil offense and may be fined a sum not to exceed $1,000.00 for the first time offense. The amount of the fine shall be referred to as the penalty.

1. Length of Offense – Each day, or portion thereof, of development activity conducted in violation of any of these regulations shall constitute a separate offense. An offense committed in violation of any of these regulations shall begin on the date that a Notice of Violation has been issued.

2. Notice of Violation and Stop Work Order – In the event any person violates any of the provisions of these Standards or fails to make corrections after being informed of such violation, the County Engineer shall issue a notice of violation to be delivered to the owner and the owner's agent, and a copy of which shall be conspicuously posted at the site. The notice shall describe the violation and may order all work to cease until authorized to proceed. Failure to comply with the order to stop work shall be a gross misdemeanor punishable upon conviction, by a minimum fine of $500 up to a maximum fine of $5,000, or one year in jail or both. Under no circumstance may the court defer or suspend any portion of the minimum $500.00 fine for any conviction under this section. Each day or part thereof of noncompliance with said stop work order shall constitute a separate offense.

3. Notice of Penalty – The penalty provided in this section shall be imposed by a notice in writing, either by certified mail with return receipt requested, or by personal service to the person incurring the same. The notice of penalty shall include the amount of the penalty imposed and shall describe the violation with sufficient detail to reasonably ensure all involved parties have an understanding of the act which caused the violation.

4. Restoration or Mitigation – If the construction or related activities have occurred on the site in violation of these standards, prompt corrective action, restoration or mitigation of the affected area will be required when appropriate to protect the health, life safety, and environment in and around development areas. If this provision is not complied with, the County may restore or mitigate the affected area and charge the responsible person the full cost of such activity.

5. Penalties – Penalties and fines shall be administered in the following manner:

6. First Offense – Any person who commits only one offense within a five (5) year period of time is guilty of a first offense.

7. Repeat Offense – Any person who commits an offense subsequent to a first offense shall be guilty of a repeat offense regardless of the location or type of offense set forth in Section 514.A of this section.

8. Penalty for Repeat Offenses – Repeat offenses shall receive a penalty that equals the sum of the fines for the first offense and all subsequent fines multiplied by a number corresponding to the number of offenses committed. Repeat offenses will be added to this formula until a five (5)-year period passes without an offense.

9. Remission of Fines – Within 20 days after the notice is received, the person incurring the penalty may apply in writing to the County Engineer for remission or mitigation of such penalty. Upon receipt of the application, the County Engineer may remit or mitigate the penalty upon whatever terms are deemed proper.

10. Authority of the Prosecuting Attorney – The prosecuting attorney may enforce compliance with this section by such injunctive, declaratory or other actions as deemed necessary to insure that violations are prevented, ceased or abated.

11. Other Available Relief – In addition to the civil remedies provided above, the County Engineer or the owner or owners of land affected by violations of the provisions of this section may bring such injunctive, declaratory or other actions as deemed necessary to ensure that violations are prevented or cease and to otherwise enforce the provisions of this section.

12. Appeals – Appeals of administrative decisions may be made pursuant to Section 504.G of these Development Standards.

B. Procedures for Issuing Stop-Work Orders

The following procedures have been developed in recognition of property owners' and County-permit applicants' rights to due process of law pertaining to the issuance of Stop-Work Orders (SWO) by the Whatcom County Public Works Department. These procedures include provision for an initial assessment of whether the situation requiring the issuance of an SWO is an emergency situation or a non-emergency situation. This initial assessment of the situation shall be documented and may require advisement by a Division Manager or Department Director.

1. Non-Emergency Situation – A situation may be assessed as non-emergency in those instances where there is a code violation but no associated imminent and significant threat to public safety or the environment. In a non-emergency situation, the County official shall issue a Correction Notice (CN). The CN may include the intent to issue an SWO no less than 10 (ten) business days following receipt of the CN. If the CN includes notice of the intent to issue an SWO, the CN shall include notice of the right to request an administrative deprivation hearing within 10 (ten) business days following receipt of the CN. The CN shall be hand delivered or sent by both certified and regular mail.

2. Emergency Situation – A situation may be assessed as an emergency in those instances where there is a code violation and an associated imminent and significant threat to public safety or the environment. In an emergency situation, the County official shall issue an SWO. The SWO shall include, in writing, notice of the right to request a deprivation hearing within 72 hours following receipt of the SWO and information on the normal code-specific consequences of violations and appeal procedures. If there is no person on site to receive the SWO, the SWO, along with notice of the right to request a deprivation hearing within 72 hours, and information pertaining to the normal code-specific consequences of violations and appeal procedures shall be sent by certified and regular mail.

3. Administrative Pre-deprivation Hearing – The deprivation hearing will be attended by the County official who issued the CN or SWO, and the Division Manager or Department Director.

   In a deprivation hearing for a non-emergency situation, the preliminary determination made by the County official and the intent to issue an SWO will be reviewed. A final determination will be made by the Division Manager or Department Director whether to uphold or annul the official's decision to issue an SWO. If the intent to issue an SWO is upheld, an SWO will be issued and the normal code-specific consequences of violations and appeal procedures shall apply. If the administrator determines that the intent to issue an SWO shall not be upheld, the notice of intent to issue an SWO shall be withdrawn.

   In a deprivation hearing where an emergency situation exists, the preliminary determination made by the County official to issue the SWO will be reviewed. A final administrative decision will be made by the Division Manager or Department Director whether to uphold or annul the decision to issue the SWO. If the issuance of the SWO is upheld, the normal code-specific consequences of violations and appeals procedures shall apply. If the administrator determines that the SWO was issued in error, the SWO shall be annulled and immediately withdrawn. In the event that the person in receipt of the SWO timely filed an appeal and had paid the appeal fee, and the administrator determines that the SWO was issued in error and that the SWO shall be annulled, the entire appeal fee will be refunded.

SECTION 515 – DEFINITIONS AND ACRONYMS

A. Definitions

The terms used in these Standards are defined below:

Access Approach

The improved access area between the edge of the public right-of-way and the edge of the traveled way.

Access Easement

Provides public and/or private access for pedestrians through private property and/or provides a public utility vehicular access to a public facility located outside of public rights-of-way.

Access Point

The location where the centerline of the access approach intersects with the edge of the traveled way.

ADT

Average Daily Traffic defined as the total volume during a given time period (in whole days), greater than one day and less than a year, divided by the number of days in that time period.

Applicant

Person(s), party(s), firm(s), corporation(s), or other legal entities or designees who make an application with the County. Also see definition for Developer.

As-built

See Record Drawing.

Asphalt Concrete

A high quality, controlled hot mixture of asphalt cement (a brownish-black solid or semi-solid mixture of bitumen) and well-graded aggregate compacted into a uniform dense mass. See Hot Mix Asphalt (HMA).

AWDT (AWT)

Average Weekday Traffic is an average 24-hour traffic volume occurring on weekdays (Monday through Friday) for some period of time less than one year.

Bridge

See Section 513.B.

Channel

A feature that conveys surface water and is open to the air.

Clear Zone

The total roadside border area, starting at the edge of the traveled way, available for use by errant vehicles. This area may consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a clear run-out area. The clear zone cannot contain a critical slope (slopes steeper than 3H:1V). Design Clear Zone is the minimum target value used in highway design.

Collector Arterial or Collector

A road whose function is to connect local traffic to a Principal or Minor Arterial. See Section 505 Table 505-1.

Concurrency

See Transportation Concurrency Management.

Controlled Density Fill (CDF)

A mixture of Portland cement, fly ash, aggregates, water, and admixtures proportioned to provide a non-segregating, self-consolidating, free-flowing and excavatable material that will result in a hardened, dense, non-settling fill.

County

Whatcom County, a municipal corporation and a charter county in the State of Washington. This shall also mean the Whatcom County Engineer.

County Engineer

The Whatcom County Engineer having authorities specified in RCW 36.75.050 and RCW 36.80, or the County Engineer's authorized representative.

County Road

A public road or street which is maintained by Whatcom County as part of the County's road system, as designated by the County Council.

Cul-de-sac

A road or street having one end open to traffic and being terminated by a circular vehicle turnaround and having as its primary function the provision of access to adjoining properties.

Design Hourly Volume, DHV

The DHV is generally the 30th highest hourly volume of the future year chosen for design. On the average rural road or arterial, DHV is about 15% of ADT. For urban areas, DHV is usually between 8-12% of the ADT.

Design Speed

- The speed to be utilized for road design purposes.
- For roads posted less than 30 mph, the design speed shall be the posted speed or proposed speed.

- For roads posted greater than or equal to 30 mph, the design speed shall be 5 mph higher than the posted or proposed speed.
- The proposed speed for new road facilities should be determined with respect to the topography, anticipated operating speed, the adjacent land use, and the functional classification of the road.

Design Vehicle

The specific vehicle used to determine the turning radius of an intersection. The design vehicle for county access roads is the single-unit truck (SU). For commercial and industrial roads the design vehicle is the semitrailer truck WB-40. For collector and arterial roads the design vehicle is the semitrailer truck WB-62. For County designated truck routes the design vehicle is the semitrailer truck WB-67.

Developer

Any owner, or the owner's authorized agent, of a proposed land, utility, building, or other development activity.

Development

Any activity that requires Federal, State or local approval for the use or modification of land or its resource. These activities include; but are not limited to, subdivision and short subdivisions, binding site plans, planned unit developments, variances, shoreline substantial development, clearing activity, fill and grade work, activity conditionally allowed, building or construction, revocable encroachment permits, and septic approval.

Drainage

The collection, conveyance, containment and/or discharge of surface and stormwater runoff.

Driveway

An access way on private property for residential vehicle conveyance serving 20 ADT or less. This definition revises section 508.D.2.e) when a driveway is considered a road.

Driveway Approach

See Access Approach.

Easement

An interest in land that entitles the grantee to a specified right of use or general use. This can include, but is not limited to: access, pedestrian paths, bicycle paths, utilities, or drainage.

Engineered

Designed by or under the supervision of a professional engineer, licensed in Washington State.

Erosion

The gradual wearing away of the land surface by running water, wind, ice or other geological agents, including such process as gravitational creep and the detachment and movement of soil or rock fragments by water, wind, ice or gravity.

Excavation

The mechanical removal of earth and rock material.

Franchise Agreement

An agreement entered into by an entity with Whatcom County to maintain and/or repair utilities in Whatcom County rights-of-way.

Frontage

That portion of a parcel adjacent to a public road that includes the vehicular access point(s).

Functional Intersection Area

The traveled way within the legs of the intersection, to include any queue or storage length plus the minimum stopping sight distance.

Grading

Any act which changes the elevation of the ground surface.

Highway

As used herein, a major road owned and maintained by the WSDOT.

Hot Mix Asphalt

Hot Mix Asphalt (HMA) class ½" previously known as Class B asphalt concrete.

Intersection

The general area where two or more public or private roadways join or cross at grade. Access and driveway approaches can be considered intersections; therefore some of the principles of intersection design can apply.

Landscape Architect

An individual licensed by the State of Washington to practice landscape architecture under RCW 18.96.

Landscape Areas

For the purpose of these guidelines, "landscape areas" means areas within County rights-of-way, easements or stormwater percolation areas intended or utilized for the planting of trees, shrubbery or other plants. Such areas include: median areas, planter strips and islands.

Level of Service (LOS)

A qualitative measure describing operational conditions within a traffic stream, generally described in terms of such factors as volume, speed, travel time, delay, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

Local Access Road/Street

Primary function is to provide direct access to adjoining properties. Provides for traffic circulation within and through a neighborhood and may access to higher classification roads and streets.

Low Impact Development (LID) Best Management Practices

Distributed stormwater management practices, integrated into a project design, that emphasize pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration. LID Best Management Practices facilities include, but are not limited to, bioretention/rain gardens, permeable pavements, roof downspout controls, dispersion, soil quality and depth, minimal excavation foundations, vegetated roofs, and water re-use.

Minor Access Road/Street

Primarily functions to provide direct access to adjoining properties. Provides for low-speed, low-volume traffic, and access to roads and streets of higher classification.

Minor Arterial

A road connecting two or more towns or communities, connecting two highways of equal or greater capacity, serving as the primary access to a large land area or other major traffic generators. Relatively high overall travel speeds, with through traffic encouraged and facilitated by movement preference at intersections. Access is controlled and infrequent to abutting properties.

Neighborhood Collector

Streets connecting two or more neighborhoods and typically connecting to higher classification streets or other collectors. Transit use is low while the neighborhood focus is for bicycle and pedestrian use. Direct driveway access is discouraged but may be provided to abutting properties only in the event that no other feasible alternative exists.

Perimeter Public Road

The road adjacent to the portion of a parcel that has no internal road access point.

Principal Arterial

A road which moves high volumes of traffic quickly across and between cities and/or towns. Access is normally limited to intersections with other arterials or collectors. Direct access to abutting property is prohibited or minimal. The level of fixed route transit service is high; bicycle and pedestrian activities are low.

Private Road

A privately maintained road within a private easement or other privately held legal tract, which generally serves private properties but may serve public ownership properties. A private road is not a driveway, see driveway definition.

Professional Civil Engineer (PE)

An individual licensed by the State of Washington to practice civil engineering under RCW 18.43.

Professional Land Surveyor (PLS)

A person licensed by the State of Washington to practice land surveying under RCW 18.43.

Public Road

A road, which serves the general public, is within public rights-of-way, and is either publicly or privately maintained.

Record Drawings

The final revision of a design drawing updated to include information from field verification showing the true condition or configuration of what has been built. The primary function is to document what was actually built, including dimensions, elevations, location, and calculations. The drawing is designated "Record Drawing" by stamp or lettering on the drawing. Formerly known as "As- built" drawings.

Rights-of-way

A legal right of passage primarily established for road use.

Road

An open access way for the passage of vehicles, pedestrians, and other non- motorized travel. Includes the combination of roadway and rights-of-way or easements and all improvements within those boundaries. The term "road" generally implies rural characteristics when used with a route classification (see "Street").

Roadway

The general term used to describe the strip of land, structure, and surface treatment over which vehicles travel. Roadway, as used herein, includes the area between the outside edges of shoulders, or between curb faces, and excludes ditches, curbs and sidewalks.

Rural

The general land use classification that identifies those areas outside the Urban Growth Area as defined by the Whatcom County Comprehensive Plan.

Sediment

Fragmented earthen material that originates from the weathering and erosion of rocks or unincorporated deposits and is transported by, suspended in, or deposited by water action.

Sedimentation

The depositing of sediment.

Sidewalk

A paved, typically Portland Cement concrete, pedestrian facility adjacent to, or in near proximity to, a public or private street.

Street

Except where applied to a specific route classification, "Road" and "Street" shall be considered interchangeable terms for the purposes of these Standards. When used with a route classification, connotes urban characteristics.

Technical Advisory Committee (TAC)

See Chapter 12.08.035, Whatcom County Code.

Transportation Concurrency Management

The requirement as defined under the Growth Management Act (RCW 36.70A) that adequate transportation facilities are available or provided concurrent with development. Concurrency Level of Service (LOS) is based on the volume to capacity ratio (v/c) for arterial or collector roadway segments. A segment is defined as a length of roadway located between major intersections, this can be also known as a link.

Traveled way

The portion of the roadway intended for movement of vehicles, exclusive of shoulders and lanes for parking, bicycles, turning and storage for turning.

Trip

A one-direction movement, which begins at an origin and ends at a destination.

Trip Generation

The number of trips created by a particular development, land use, or activity.

Truck Traffic

All buses, single-unit trucks and truck combinations, except light delivery trucks. A light delivery truck is a single-unit truck, such as a van or pickup, with size and operating characteristics similar to those of a passenger car and commonly used for short-haul, light delivery service. Vehicles in the commercial truck class are normally those having 26,001 lb or greater gross vehicle weight (GVW) rating of the manufacturer (RCW 46.25.010).

Urban

General land use classification which identifies those areas inside an Urban Growth Area as defined by the Whatcom County Comprehensive Plan.

Utilities

Any water, gas, sanitary sewer, stormwater conveyance system, electrical, telephone, wire or television communication service, and all persons, companies or governmental agencies furnishing the same.

Walkway

A pedestrian facility, typically in rural areas, which may or may not be adjacent to a road. Walkways differ from sidewalks in standards, alignment, shape, location, construction material, and overall installation. A walkway may also function as a bicycle path/facility in which case the bikeway standards will prevail.

Wetlands

Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.

B. Acronyms

AASHTO	American Association of State Highway and Transportation Officials
AC	Asphalt Concrete
ADA	Americans with Disability Act
ADT	Average Daily Traffic
APWA	American Public Works Association
ASTM	American Standard for Testing Materials
ATB	Asphalt Treated Base
AWDT	Average Weekday Traffic
BST	Bituminous Surface Treatment
DHV	Design Hourly Volume
DOT	Department of Transportation
HMA	Hot Mix Asphalt
ISD	Intersection Sight Distance
LOS	Level of Service

LVA	Low Volume Approach
MUTCD	Manual of Uniform Traffic Control Devices
NAD	North American Datum
NAVD	North American Vertical Datum
NOAA	National Oceanic and Aerospace Administration
PCC	Portland Cement Concrete
PUD	Planned Unit Development
RCW	Revised Code of Washington: Legislated requirements of the State
SCS	U.S. Soil Conservation Service
SSD	Stopping Sight Distance
TAC	Technical Advisory Committee
TIAR	Traffic Impact Analysis Report
UBC	Uniform Building Code (1979 or current)
USCS	Unified Soil Classification System
UGA	Urban Growth Area
WAC	Washington Administrative Code: Requirements developed by State of Washington agencies
WCDS	Whatcom County Development Standards
WB-40, 62, 67	Wheel Base-40ft., 62ft., 67ft. (AASHTO)
WCC	Whatcom County Code
WSDOT	Washington State Department of Transportation

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