

**OKANOGAN COUNTY  
DEPARTMENT OF PUBLIC WORKS**



**OKANOGAN COUNTY  
ROAD AND STREET  
STANDARDS AND GUIDELINES  
FOR DEVELOPMENTS**

**Adopted November 17, 1992**

**Revised March 30, 1993**

**Revised August 6, 1996**

**Revised April 10, 2007**

**Frank Sautell  
Director**

**Robert Breshears  
County Engineer**

**OKANOGAN COUNTY  
DEPARTMENT OF PUBLIC WORKS  
RESOLUTION NO. 39-92**

WHEREAS, the Okanogan County Subdivision Ordinance, No. 92-1 has been approved and adopted February 18, 1992; and,

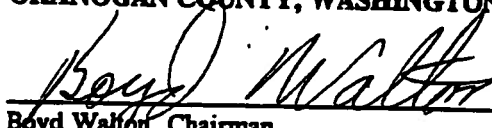
WHEREAS, said ordinance refers to said standards in Chapter 16.28 DESIGN STANDARDS, Section 16.28.010; and,

WHEREAS, further delineation, clarification and revision of said requirements are required, now,

THEREFORE BE IT RESOLVED that the OKANOGAN COUNTY ROAD AND STREET STANDARDS AND GUIDELINES FOR DEVELOPMENTS, NOVEMBER 1992 shall replace and nullify all other road standards previously set forth for road requirements for subdivision activity.

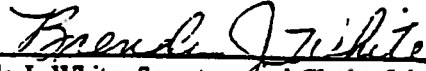
DATED at Okanogan, Washington, this 17 th day of November, 1992.

**BOARD OF COUNTY COMMISSIONERS  
OKANOGAN COUNTY, WASHINGTON**

  
Boyd Walton, Chairman

  
Ronald Weeks, Member

  
Arlie Clinkenbeard, Member

ATTEST:   
Brenda J. White, Secretary and Clerk of the Board

**OKANOGAN COUNTY  
DEPARTMENT OF PUBLIC WORKS  
RESOLUTION NO. 16-93**

WHEREAS, Okanogan County Department of Public Works has developed and adopted Standards for road design and construction, and said Standards were adopted by the Okanogan County board of Commissioners as Public Works Resolution 39-92 on November 19, 1992, and

WHEREAS, said standards are being amended by the Public Works Department, now

THEREFORE BE IT RESOLVED that the amended and highlighted sections of the attached 4 pages noted as revised. March 26, 1993 shall be adopted as part of the original November 19, 1993 standards.

DATED at Okanogan, Washington, this 6th day of April, 1993.

**BOARD OF COUNTY COMMISSIONERS  
OKANOGAN COUNTY, WASHINGTON**

  
Ronald V. Weeks, Chairman

  
Edwin E Thiele, Member

  
Dave Schultz, Member

ATTEST:

  
Brenda J. White, Secretary and Clerk of the Board

OKANOGAN COUNTY COMMISSIONERS'

RESOLUTION 78-96

WHEREAS, Construction standards and guidelines for roads and streets within a development were adopted by Public Works Resolution 39-92; and,

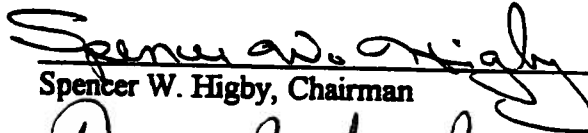
WHEREAS, said resolution was amended by Public Works Resolution 16-93, dated April 6, 1993; and,

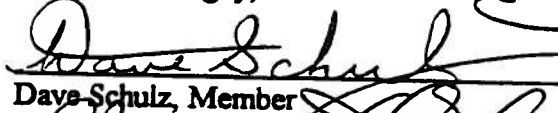
WHEREAS, it is now necessary to amend Resolution 16-93, Table 4.2, Standards for External Roads, and Table 4.1 Standards for Internal Roads;

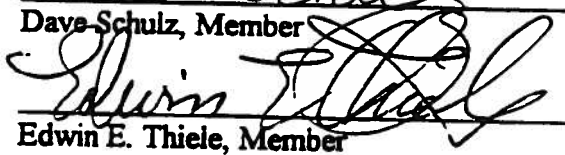
NOW THEREFORE, BE IT RESOLVED, that Table 4.2 and Table 4.1 as set forth in attachment A is hereby amended and incorporated herein.

DATED at Okanogan, Washington this 6th day of August 1996.

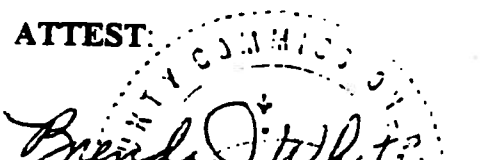
BOARD OF COUNTY COMMISSIONERS  
OKANOGAN, WASHINGTON

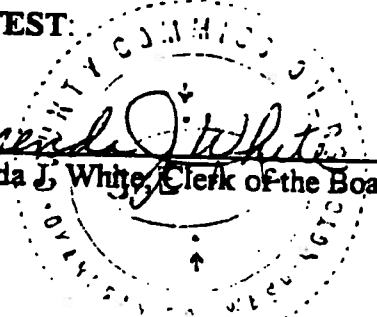
  
Spencer W. Higby, Chairman

  
Dave Schulz, Member

  
Edwin E. Thiele, Member

ATTEST:

  
Brenda J. White, Clerk of the Board



OKANOGAN COUNTY COMMISSIONERS'

RESOLUTION NO. 44-2007

WHEREAS, Okanogan County has developed and adopted Road and Street Standards and Guidelines for Developments, said standards and guidelines for roads and streets in the county and within developments were adopted by Public Works Resolution 39-92 on November 19, 1992; and,

WHEREAS, said standards were amended by Public Works Resolution 16-93, dated April 6, 1993; and,

WHEREAS, portions of the adopted standards were amended by Commissioners' Resolution 78-96, dated August 6, 1996; and,

WHEREAS, it has become necessary to further amend the adopted standards to address situations that have previously not been addressed as part of the standards and guidelines.

NOW THEREFORE, BE IT RESOLVED, that the attached OKANOGAN COUNTY ROAD AND STREET STANDARDS AND GUIDELINES FOR DEVELOPMENTS shall replace and nullify all other road standards previously set forth for road design and construction in Okanogan County.

DATED at Okanogan, Washington this 10<sup>th</sup> day of April, 2007.

BOARD OF COUNTY COMMISSIONERS  
OKANOGAN, WASHINGTON

**ABSENT**

\_\_\_\_\_  
Andrew Lampe, Chairman

Mary Lou Peterson  
Mary Lou Peterson, Member

Bud Hover  
Don (Bud) Hover, Member

ATTEST:

B. J. Crowell  
Brenda J. Crowell, Clerk of the Board

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# **Okanogan County Road and Street Standards and Guidelines for Developments**

## **1. PURPOSE**

The purpose of the *Okanogan County Road and Street Standards and Guidelines for Development* is to establish, in the interest of health, safety, livability, and sound project design, general minimum standards and recommended guidelines that shall be utilized for all public and private roads in residential, commercial, industrial, or institutional development projects with Okanogan County that are reviewed according to the land use regulations and building codes. Such development projects include but are not limited to subdivisions, short subdivisions, large lot segregations, planned developments, planned destination resorts, conditional use permits, and binding site plans.

A The decision to use a particular road design element at a particular location should be made on the basis of an engineering analysis of the location. Thus, while this document provides minimum requirements for design, it is not a substitute for professional engineering judgment. It is the intent that the provisions of these standards be international requirements for road and bridge design, but may not be appropriate for all locations and existing situations.

B. These standards cannot provide for all situations. It is intended to assist, but not substitute for, competent work by design professionals. It is expected that each professional bring to each project the best of their skills and abilities. These standards are also not intended to unreasonably limit any innovative or creative effort which could result in the more effective and appropriate combination of design, cost savings, or both. Any proposed departure from these standards will be judged on the likelihood that such a departure or variance will produce a compensating or comparable result, adequate in every way, for the road user and county resident.

## **2. SCOPE AND APPLICABILITY.**

A. Except as exempted in Section 4. Exemptions, all requirements contained in these standards, together with any and all appendices and amendments thereto, shall apply to all road, bridge, and other new construction and reconstruction of county and private roads in unincorporated Okanogan County or as may be required as a condition of development approval within Okanogan County, and as far as practicable and feasible to the reconstruction of existing county and private roads in unincorporated Okanogan County. These standards shall also apply to all public and private accesses and driveways connecting to public roads; usage of unopened county rights-of-way; location and installation of new utilities; and pedestrian, bicycle and equestrian facilities. In cases of any ambiguity or dispute over interpretation or application of the provisions of these standards, the decision of the county engineer shall be final, subject to administrative appeal

B. These standards apply to modifications of roadway features of existing facilities which are within the scope of reconstruction or capital improvement projects when so required by the county or to the extent they are expressly referred to in project plans and specifications.

C. These standards are applied as follows:

1. Mandatory standards are those considered most essential to the achievement of overall design objectives. Mandatory standards use the word "shall."

2. Advisory standards allow some flexibility in application to accommodate design constraints or to be compatible with local conditions. Advisory standards use the word “should.”
3. All standards other than the mandatory and advisory, indicated with the word “may,” are permissive with no requirement intended.

D. If these standards are silent regarding a specific issue regarding the planning, design or construction of a road or bridge, then the AASHTO Geometric Design of Highways and Streets, AASHTO “Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT≤ 400),” 2001, WSDOT Standard Plans and Specifications, WSDOT Construction Manual, and the WSDOT City and County Design Standards as contained within the WSDOT Local Agency Guidelines shall provide guidance as to the requirements subject to approval by the county engineer.

### **3. DEFINITIONS**

Unless otherwise defined or redefined within these standards, all definitions and terms used in these standards are contained in OCC Chapter 16.08.

#### **3.1 County Engineer**

A professional civil engineer licensed by the State of Washington, (or a designee), who has been appointed by the Board of Okanogan County Commissioners, to provide qualified engineering oversight in matters concerning construction, maintenance and operation of the County Road System and of other development projects.

#### **3.2 County Road**

Every public highway, roadway, or part thereof, outside the limits of incorporated cities or towns and which has not been designated as a state highway. (Note: Okanogan County is responsible for maintaining only those roadways designated by the Board of County Commissioners to be on the County Road System. Other public roads within the County not designated as part of the County Road System and are not state highways are off-system roads. The County does not have the responsibility to maintain other public roadways).

#### **3.3 County Road System**

The system of public roadways designated by the County Commissioners that are owned and maintained by Okanogan County.

#### **3.4 Dedication**

The granting of title by an owner of property to a public entity for general and public use including roads.

#### **3.5 Terrain Types**

##### **3.5.1 Flat Terrain**

Level to moderate rolling. This terrain offers few to no obstacles to the construction of a roadway having continuously unrestricted horizontal and vertical alignment.

##### **3.5.2 Rolling Terrain**

Terrain featuring hills and foothills. Slopes rise and fall gently but occasionally steep slopes may offer some restriction to horizontal and vertical alignment.

##### **3.5.3 Mountainous Terrain**



Terrain featuring rugged foothills, high steep drainage divides and mountain ranges restricts horizontal and vertical alignment.

### **3.6 Private Road**

Every roadway in private ownership and used for travel of vehicles by owners or those having expressed or implied permission from the owners, but not by the public.

### **3.7 Urban Transition Area (UTA)**

An area adjacent to a community, town, or city that has been specifically designated by that community, town, or city and Okanogan County, as a location for future development.

## **4. EXEMPTIONS.**

These standards shall not govern the following:

A. Road and associated work done on roads that are under the authority, ownership or responsibility of other governmental agencies. In such cases, the standards of the other governmental agency shall apply.

B. Road maintenance work within county road rights-of-way performed by county forces or by contract.

C. Road maintenance work on private roads that does not affect the prior approved geometrics or adversely affect the safe passage of vehicles on the private road.

D. Temporary road repairs made on an emergency basis.

E. Resurfacing and restoration ("2-R") projects.

F. New road construction or reconstruction within urban growth boundaries where the county and a city or town have entered into an interlocal agreement to use the city's or town's road standards.

## **5. PROJECT SUBMITTALS**

### **5.1 General**

The following information shall be furnished by the applicant for a proposed project in order to allow for review of the proposed project by the Okanogan County Department of Public Works.

#### **5.1.1 Project Description**

A narrative description of the proposed project that describes the location, size, intensity of development, characteristics of the planned use(s), phasing, etc; and, maps showing the general vicinity, the planned project layout, the location of existing roads serving the proposed project, and the location of proposed roadways and access points.

Consideration shall be given to the following criteria, in the design of roads and streets:

A. Where a short subdivision or subdivision abuts or contains an existing or proposed arterial road or street, the county may require frontage (with screen planting) and a non-access reservation along designated property lines, or such other treatment as may be necessary for adequate protection of residential properties and to afford separation of through and local traffic;

B. Where a short subdivision or subdivision borders on or contains a railroad right-of-way or limited access highway right-of-way, and there exists a reasonable possibility of a future overpass or intersection, the county may require a reservation for potential future right-of-way. Such reservations for potential future right-of-way shall be laid out with due regard for the requirements of approach grades and future grade separations;

C. Reserve strips controlling access to streets shall be prohibited except where their control is definitely placed with the county;

D. Road or street jogs with short centerline off-sets (generally those less than 125 feet) shall be avoided;

E. A tangent shall be introduced between reverse curves on major, secondary and collector roads of a length appropriate to the geometrics, design, speed and other engineering criteria meeting design standards and approved by the county engineer;

F. When the centerlines of connecting major, secondary, and collector roads are misaligned by more than one degree, they shall be connected with a degree of curvature determined by the county engineer;

G. Streets and/or road rights-of-way at intersections shall be laid out so as to intersect as nearly as possible at right angles;

H. The angle between property lines at intersecting roads or streets shall accommodate the radii of curvature of the roads or streets. Road radii shall be approved by the county engineer (generally a 20-foot minimum);

I. Road or street right-of-way widths free from any encumbrances shall be as shown in the comprehensive plan, and where not shown therein, shall be not less than 60 feet wide in subdivisions. In short subdivisions, *and with the approval of the County Engineer*, the right-of-way *may* be a minimum of 30 feet wide, where the right-of-way will only serve the number of lots created by the proposed development. When more than the proposed development will be served, the county engineer shall determine the minimum right-of-way width. A reduction of the right-of-way width may be considered where topographic restrictions exist, or when the proposed road or street connects to or is the extension of any existing platted street having a right-of-way width less than the required minimum, when approved in accordance with Chapter 16.34 OCC and the county engineer;

J. Half streets or roads shall be prohibited except where essential to the reasonable development of the short subdivision or subdivision in conformity with the other requirements of this document and where the county finds it will be practicable to require the dedication of the other half when the adjoining property is subdivided. Whenever a half street or road is adjacent to a tract being subdivided, the other half of the street shall be included as a part of the short subdivision or subdivision;

K. The length, turnaround, and design of dead-end streets or roads, and their associated parking areas, shall be determined by the county engineer (generally no longer than 600 feet);

L. No street or road names shall be used which will duplicate or be confused with the names of existing county roads. Street or road names shall be subject to the approval of the public works department in consultation with the county's addressing system;

M. Street or road grades shall not exceed maximum county road standards, without county engineer approval depending upon topographic conditions and whether the road is designated as a major collector, minor collector or local access.

#### 5.1.2 Drainage Plan

A drainage plan assessing and showing the runoff potential on and from the proposed project, include those amounts generated from impervious surfaces to be placed within the proposed project, shall be submitted together with a proposed drainage plan that describes methods and

improvements to be used to adequately and acceptably dispose of storm water runoff. The County Engineer may, at his discretion, waive the required drainage plan when, after review of site and climatic information, it is determined that potential runoff poses no significant impact.

#### **5.1.3 Traffic Impacts Assessment**

Applicants shall furnish an estimate of the average daily traffic (ADT) generated by the project. Such estimate may be made by utilizing the trip generation data contained in the Trip Generation Manual developed by the Institute of Transportation Engineers, or other methodology acceptable to the County Engineer.

Applicants having proposed projects with an estimated trip generation of greater than 1,000 ADT shall submit additional information describing the current existing traffic peak hour impact upon the public roadway(s) serving the proposed project.

In addition, applicants having proposed projects with an estimated trip generation of greater than 2,500 ADT shall conduct a complete traffic analysis describing directional distribution and trip assignment of traffic flow to and from the project and a capacity analysis that evaluates the proposed project's impact upon prevailing roadway and traffic conditions.

### **6. DETERMINATION OF APPLICABLE STANDARDS**

#### **6.1 General**

The County Engineer shall consider the following criteria when establishing the appropriate standard for private and public roadways serving a development project.

#### **6.2 Project Evaluation Criteria**

##### **6.2.1 Consistency With Comprehensive Plan**

The Director of Planning and Development and the County Engineer shall evaluate the proposed project's size, location, and character as it relates to the Okanogan County Comprehensive Plan, as amended, and assure roads and appurtenant improvements within the proposed project shall be, in so far as possible, consistent and in conformity with any location and classification specified by the circulation or transportation element thereof and shall recommend for approval only those projects consistent with the transportation and circulation elements of the comprehensive plan.

##### **6.2.2 Consistency With Federal and State Standards and Codes**

The County Engineer shall consider, as may be appropriate, the minimum standards of review and construction set out in federal and state codes, as they may exist or be amended, when reviewing proposed projects.

##### **6.2.3 Intensity and Characteristics of Project Traffic Impact**

The County Engineer shall evaluate, based upon review of required submittals described in Section 5.0, the character of the projected traffic impacts in terms of: trip generation, peak hour traffic, traffic flow, capacity and character of use of the existing roadways serving the proposed project, characteristics of proposed vehicular use, and other parameters as may be appropriate.

##### **6.2.4 Future Development Potential**

The County Engineer in conjunction with the Director of Planning and Development, shall evaluate the potential for additional development along the county road system serving the proposed project. The applicant may be required to provide a share of traffic analysis and / or improvements in conjunction with other proposals sharing and impacting the same county road system, as they may be identified at the time of analysis.

### 6.2.5 Other Considerations

The County Engineer may, in order to establish some flexibility in the standards required under this document, consider other factors when determining the appropriate road standard to be applied, including, but not limited to, topography, visual impacts, planned project phasing, etc.

### 6.2.6 Road Categories

The following categories of roadways are established for use pursuant to this Resolution. Each category is more fully defined in Section 5.2 of this Resolution.

	<u>FUNCTIONAL CLASSIFICATION</u>
Category I	Primitive
Category II	Minor Collector or Local Access
Category III	Major Collector or Minor Collector
Category IV	Major Collector or Minor Arterial
Category V	Minor Arterial
Category VI	Major Arterial

### 6.2.7 Determination of Appropriate Standard

Based upon evaluation conducted in accordance with the above, the County Engineer shall determine the appropriate standard design and construction to be required for the roadways within the proposed project and the external roadways serving the proposed project. Accordingly, the County Engineer shall impose the standards of design and construction of internal and external public and private roadways consistent with the following criteria.

#### 6.2.7.1 Internal Roads

Based upon information provided by the applicant, the County Engineer shall determine the potential traffic impact on each individual roadway, or portion thereof, within the project and shall establish the appropriate standard of construction for that section of roadway in accordance with the following table.

**Table 6.1**  
**Standards for Internal Roads**

Potential Traffic Impact On Roadway	Proposed Projects Not Within UTA's	Proposed Projects Within UTA's
<30 ADT	Category I Private / Public	Category II Private / Public
30 – 250 ADT	Category II Private / Public	Category III Private / Public
250 – 1000 ADT	Category III Private / Public	Category IV Private / Public
>1000 ADT	Category IV* Private / Public	Category IV* Private / Public

\* A higher standard may be required if, after review by the County Engineer, it is determined that a Category IV roadway is inadequate for projected traffic volumes and proposed roadway use.

#### 6.2.7.2 External Roads

The County Engineer shall determine the cumulative impact of the combined existing traffic volume and projected traffic volume resulting from proposed traffic impact on each roadway serving the proposed project together with traffic from other proposed projects as they may be known and shall establish the appropriate standard of construction for that roadway in accordance with the following table.

**Table 6.2  
Standards for External Roads**

Potential Traffic Impact On Roadway	Proposed Projects Not Within UTA's	Proposed Projects Within UTA's
<100 ADT	Category II* Private / Public	Category III* Private / Public***
100 – 250 ADT	Category III Private / Public	Category IV Public***
250 – 1000 ADT	Category IV Public***	Category IV Public***
>1000 ADT	Category IV** Public***	Category V** Public***

\* Exceptions to the right-of-way and recommended design speeds for this Category of roadway may be granted by the County Engineer, provided that in no case shall the required right-of-way be less than 30 feet and that the road does not or will not, in the foreseeable future, serve additional development.

\*\* A higher standard may be required if, after review by the County Engineer, it is determined that a Category IV roadway is inadequate for projected traffic volumes and proposed roadway use.

\*\*\* Public roadways on which routine maintenance is performed.

#### **6.2.7.3 Notice to Applicant**

Upon determination of the standards for internal and external roadways serving the proposed development project, the County Engineer shall provide written notice to the applicant and make known to him the necessary design and improvement(s) required.

### **6.3 Interpretation, enforcement and appeals.**

A. Interpretation and enforcement of these standards shall be the responsibility of the county engineer or designated representative.

B. Failure to comply with these standards will be cause for withholding or withdrawing acceptance of plans or drawings, withholding of bond, final inspection approval or occupancy certificates and/or other penalties.

C. All appeals of any decision by the county engineer in his/her administration, interpretation or enforcement of these standards shall be in writing and within fourteen days of the decision. The written appeal, including the recommendations and analyses of the county engineer, shall be made to the Okanogan County Board of County Commissioners.

### **6.4 Relationship to other county standards and requirements.**

Other Okanogan County plans, standards and requirements for which these standards are intended to be consistent with are:

- A. Okanogan County Code, as amended.
- B. Okanogan County Comprehensive Plan, current edition.
- C. Okanogan County Non-Motorized Transportation Plan, when adopted.

### **6.5 Project acceptance.**

A. The county engineer will rely upon the certification and approval of the road and drainage plans and calculations by the applicant's engineer for approval of the project. The county engineer's acceptance of the plans shall not relieve the applicant or the applicant's engineer from any liability related to portions of the design that are not in conformance with these standards nor follow good engineering practice.

B. Upon receipt of the project plans and calculations, the county engineer will review the work of the applicant's engineer for accuracy and completeness. The plans and calculations will either be accepted by the county or returned for revisions. Project acceptance occurs when the county engineer signs the plans.

C. The plans, reports, basin maps and calculations shall be signed, sealed and dated by the applicant's engineer. The cover sheet of the plan set and the cover sheet of all calculations shall bear the certification by the applicant's engineer that reads:

The design improvements shown in this set of plans and calculations conform to the current edition of the Okanogan County Road Standards. All design variances have been approved by the Okanogan County Engineer. I approve these plans for construction.

D. The acceptance of plans shall be valid for a period of three years from the date of approval by the county engineer. Construction in accordance with the approved plans must be completed within this period. If not completed within this period, the plans shall be resubmitted to the county engineer for review and any revisions or modifications necessary to meet the standards in effect at the time of resubmittal shall be made.

E. A Traffic Impact Assessment shall only be valid for a period of five years from the date of approval of the development. If the project is not completed within this time period, the Traffic Impact Assessment shall be updated and resubmitted to the county engineer for review and concurrence prior to project acceptance.

F. Requests for modifications made during the construction of a project that are not in conflict with the preliminary plat approval conditions shall be approved by the county engineer and county fire marshal, when applicable, prior to any changes being made in the field.

G. Depending upon the nature of the modifications and in all cases where there is a conflict with the preliminary plat approval conditions; approval of the Okanogan County Board of County Commissioners will also be required.

In the instance of standards set out in Chapter 16.28 of the *Okanogan County Subdivision Code* for proposed projects that are reviewed in accordance with said chapter, deviations shall be in accordance with the recommendation of the Okanogan County Planning Commission in accordance with the procedures set out in Chapter 16.34 and 16.45 of the Code.

## **7. MINIMUM DESIGN AND CONSTRUCTION STANDARDS**

### **7.1 General**

The standards described in the following table and text of this Section shall constitute the minimum standards for construction of roads associated with development of projects within Okanogan County.

### **7.2 Minimum Design Standards for Road Categories**

Table 7.1 describes the minimum dimensional standards for construction of various classifications of roads. Table 7.2 describes various minimum design standards for the layout and design of roadways serving proposed projects.

Table 7.1						
Design Standards by Category						
	CATEGORY					
STANDARD	I	II	III	IV	V	VI
<b>Min. Design Speed (mph)*</b>						
Flat	NA	30	40	50	50	50
Rolling	NA	25	30	40	40	50
Mountainous	NA	20	20	20	30	40
<b>Maximum Grade (%)</b>						
Flat	12	10	8	6	6	6
Rolling	12	12	12	8	8	7
Mountainous	12	12	12	12	10	10
Finished Roadway Width	16	20	24	28	34	40
<b>Travel Surface Width (ft)</b>						
2 Lanes	NA	16	20	24	24	24
4 Lanes	NA	NA	NA	NA	NA	44
Shoulder Width (ft)	NA	2****	2****	2	5	8
<b>Width Between Curbs (ft)</b>						
2 Lanes	NA	NA	24	24	28	28
4 Lanes	NA	NA	NA	NA	NA	44
Min. Curb Radius	NA	NA	35	55	75	75
Minimum ROW (ft)	60**	60**	60	60	60	60
<b>New Bridges:</b>						
Vertical Clearance (over bridge)	16.5 feet minimum					
Roadway Width	Width of traveled way (Surfaced width) Plus 2' each side under 400 ADT      3' each side over 400 ADT					
Design Loading	AASHTO HS 25 -44 minimum					
Bridge Length	Bottom of superstructure 3 ft above 100 year flood					
<b>Min. Surfacing (inches)</b>						
Ballast (natural pit run 2" minus)	3*****	3	6	0	0	0
Crushed Ballast (Appendix A)	0	0	0	9	9	9
Top Course – Type 0 (App. A)	NA	NA	NA	3	3	3
Top Course – Type 1 (App. A)	NA	NA	3	NA	NA	NA
<b>BST / ACP</b>	No	No	No	Yes	Yes	Yes
<b>Max. Super elevation (ft per ft)</b>	NA	.08***	.08***	.08***	.08***	.08***
<b>Clear Zone/Side Slopes</b>	AASHTO or TRB Special Report 214					
<b>Min. Cut – Fill Slopes Ratio</b>	NA	To be determined on a case by case basis				
<b>Minimum Ditch Depth (ft)</b>	NA	1	1	1	1	1
* Exception to the required design speed may be granted by the County Engineer on isolated portions of the roadway when topographical features prohibit strict adherence to the required design speed.						
** Exception to the right-of-way requirement may be granted by the County Engineer to no less than a 30-foot easement or right of way provided, that the right of way will serve now, or in the future, no more than the lots created by the proposed development. Exceptions will not be granted if the road can serve other properties.						
*** Where extreme snow conditions prevail, .06 foot per foot shall be the maximum allowable super-elevation.						
**** 2 – foot shy distance.						
***** May be waived if, in the opinion of the County Engineer, native materials are adequately drained						

**Table 7.2  
Required Improvements**

<u>Standard</u>	Proposed Projects Within UTA And Projects > 1000 ADT	Proposed Projects Not Within UTA and Projects < 1000 ADT
Access Points*	Minimum 2	Minimum 2
Dead End Roads		
Maximum Length (ft)**	600	600
Cul-de-sac Design	See Appendix A for Cul-de-sac Designs	
Sidewalks	May Be Required	Optional
Min. width residential (ft)	5	NA
Min. width comm. / industrial	10	NA
Alleys		
Min. width (ft)	20	20
Curbs	May Be Required	Optional

\* Each proposed project shall have a minimum of two points of access to the external roadway serving the proposed project. This shall not apply to Category I Roads. Exceptions to this requirement may be made by the County Engineer in the event that topographical, project configuration, or other circumstances make imposition of this requirement impractical or difficult. In no case shall this exception be made for proposed projects that have a projected ADT greater than 400.

\*\* Exception shall be Category I Internal Roads.

### **7.3 Minimum Angle of Intersection**

Intersection angles shall be as near 90 degrees as possible but in no case shall be less than 75 degrees. Minimum corner radii at road intersections shall not be less than 20 feet. Intersections of roadways will be reviewed on an individual basis dependent on the type of vehicle usage.

### **7.4 Geometric Design Requirements**

#### **7.4.1 Minimum Centerline Radius of Curves**

The minimum centerline radius of curves shall be determined based upon the table contained in Appendix D Maximum Degree of Curve and Minimum Radius.

#### **7.4.2 Minimum Tangent Between Curves**

A tangent of appropriate length as determined by the County Engineer shall be placed between reverse curves on roadways. Roadway geometrics, design speed, and other engineering criteria shall be evaluated in determining the tangent length.

#### **7.4.3 Site Distances**

The following table establishes the required stopping site distances for intersections including approaches to the County Road System.

Design Speed (mph)	Stopping Site Distance (feet)	
	Desired	Minimum
25	150	---
30	200	---
35	250	225
40	325	275
50	475	400
60	650	525



## **7.5 Guardrails**

Guardrails may be required when topography and road alignment combine to meet the warrants for guardrail. The county engineer shall determine when guardrails are required.

## **7.6 Culverts**

Culverts and culvert systems, where required, shall be designed to accommodate flows for at least the 25 year storm, 15 minute frequency based upon calculations using the Rational Method or other approved method. In no case shall the diameter of the culvert be less than 15 inches. Culverts shall be made of corrugated metal pipe or other material of equivalent strength and character determined to be acceptable by the County Engineer.

## **7.7 Signals and Signs**

Signs and signals, when required, shall be constructed in accordance with the guidelines set forth in the *Manual on Uniform Traffic Control Devices for Streets and Highways*, published by the U.S. Department of Transportation, Federal Highway Administration, as amended and adopted by the State of Washington.

## **7.8 Bridge Design**

All bridges serving a proposed development shall be designed by a licensed structural engineer. Plans for bridges shall be submitted for review and approval by the County Engineer.

## **7.9 Drainage / Erosion Control Devices**

Inlets and other drainage or erosion control structures or device may be required by the County Engineer.

## **7.10 Standards and Procedures Adopted by Reference**

### **7.10.1 General**

The following standards and procedures are adopted as supplemental to the extent that they may be appropriately applied to proposed projects.

- Okanogan County Subdivision Code – Title 16
- County Road Approaches – Chapter 12.22, Okanogan County Codes
- Utilities Permits – Chapter 20, Okanogan County Codes
- Road Additions and Vacations – Chapter 12.90, Okanogan County Codes, RCW 36.81, RCW 36.87.

### **7.10.2 Reference design specifications.**

Except where these standards provide otherwise, design detail, construction materials and workmanship shall be in accordance with the following publications:

A. WSDOT Standard Specifications for Road, Bridge and Municipal Construction, current edition, henceforth referenced as the “WSDOT Standard Specifications” along with the WSDOT Design Manual, current edition.

B. WSDOT Standard Plans for Road and Bridge Construction, current edition, henceforth referenced as the “WSDOT Standard Plans.”

C. WSDOT Local Agency Guidelines, current edition, including the City and County Design Standards for the Construction of Urban and Rural Arterials and Collectors.

D. AASHTO “A Policy on Geometric Design of Highways and Streets,” fourth edition (2001), also known as the “Green Book.”

E. AASHTO “Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT≤400),” 2001.

F. USDOT “Manual on Uniform Traffic Control Devices,” current edition as adopted, including amendments, by the Washington State Department of Transportation, henceforth referenced as the “MUTCD.”

G. ITE Trip Generation Manual, current edition.

H. ADA Guidelines for Public Right-of-Ways.

I. Washington State Department of Ecology, “Stormwater Management Manual for Eastern Washington” (when released and approved for use by DOE).

J. WSDOT Construction Manual, current edition.

K. WSDOT Bridge Design Manual, current edition.

L. WSDOT Hydraulics Manual, current edition.

M. WSDOT Materials Manual, current edition.

N. WSDOT Roadside Manual, current edition.

O. WSDOT Utilities Manual, current edition.

P. WSDOT Work Zone Traffic Control Manual, current edition.

Q. WSDOT Highway Runoff Manual, current edition.

R. WSDOT Pedestrian Facilities Guidebook, current edition.

## **7.11 Alternative Design.**

A. These standards represent reasonable approaches based on past experience in Okanogan County and other jurisdictions. These standards indicate the appropriate practice under most conditions.

B. Engineering design is an endeavor that examines alternative solutions to real world situations and accordingly, these standards are not provided to hamper the introduction of new ideas. It is fully expected that creative engineering will continue to take place. Situations will present themselves where alternatives may be preferred to allow conformance with existing conditions, to overcome adverse topography or to allow for more affordable solutions without adversely affecting safety, maintainability or aesthetics. These standards are intended to provide predictability yet still allow for the flexibility necessary for innovation.

C. Alternatives to these standards shall be proposed at the preapplication meeting and evaluated and accepted prior to the application submittal.

D. The alternative request shall be in writing, submitted to the county engineer, and address the following points:

1. Specifically outline the reason for the alternative request.
2. Specify the chapter and section for which the alternative is requested.
3. Provide supporting evidence demonstrating that an alternative from these standards is based on sound engineering judgment; that the requirements for safety, function, appearance, fire protection and maintainability are fully met; and that it complies with the Okanogan County Comprehensive Plan.
4. The above information shall be used by the county engineer in evaluating requests for the use of alternatives to these standards. Alternative requests that conflict with the International Fire Code as adopted by Okanogan County shall also require written concurrence from the county fire marshal.
5. Any alternative proposal which achieves the standard but at an equal or greater value.

### **7.12 Conflicting Standards**

In the event of conflicting standards between this document and any of the aforementioned documents listed in section 7.10, the County Engineer shall determine the applicable standard to be applied.

## **8. DESIGN REVIEW AND APPROVAL**

### **8.1 General**

Prior to any work undertaken to improve existing County roadways or to complete required Category III or higher roadway improvements serving a proposed project, the following design and construction review shall be completed. Similar review may be required for Category II roadways when determined to be appropriate by the County Engineer.

### **8.2 Plans & Profiles**

A plan, profile, and typical cross sections of the proposed road showing the roadway(s) and / or improvements to be build or reconstructed, shall be submitted to the County Engineer for approval prior to construction. Except, plans and profiles shall not be required for Class I Roads.

#### **8.2.1 Plans**

Plans shall include:

- a. Road alignment in stations of 100-foot intervals or less.
- b. Bearings on road centerlines.
- c. Curve data on all horizontal curves.
- d. Right-of-way lines and widths for proposed roadways.
- e. All land configuration and culture within the right-of-way limits.
- f. Location of all utilities.
- g. Existing and proposed drainage structures.
- h. Names of all roadways.
- i. A tie to a section corner or other appropriate monumentation.

Note: Plan size shall be 24" X 36" with a two inch margin on the left edge.

#### **8.2.2 Profiles**

Profiles shall include:

- a. Original ground profile.
- b. Stationing in intervals of 100-feet or less.
- c. Appropriate placement of control elevation.
- d. Centerline profiles showing percent of grade and vertical curves.

#### **8.2.3 Cross-Sections**

Cross sections shall include:

- a. Typical roadway sections including base and surfacing courses.
- b. Cross-sections showing location of utilities.

Additional cross-sections may be required by the County Engineer

### **8.3 Specifications**

Construction specifications, bid documents, and other construction documents shall be submitted to the County Engineer for review to assure workmanship and materials are in accordance with

the current *Washington State Department of Transportation Standard Specifications for Roads, Bridges, and Municipal Construction*.

## **9. INSPECTION**

All roadways constructed in accordance with these requirements will be inspected by the County Engineer or designee at appropriate intervals to be determined prior to construction.

## **10. PRIVATE OWNERSHIP OF ROADWAYS**

### **10.1 General**

In those instances where privately owned roadways are approved to serve a proposed development, the following provisions must be met.

#### **10.1.1 Maintenance**

Provisions assuring adequate means for maintenance of private roadways shall be incorporated into the proposed project's final approval documents and the face of the plat map or binding site plan.

#### **10.1.2 Right of Use**

If an existing private road is to be used to serve a proposed project, a permanent easement must be provided.

## **11. IMPROVEMENTS TO EXISTING COUNTY ROADS**

### **11.1 General**

Many existing roads on the County System currently may meet or exceed the required standard. Those, which do not, may be improved by the proponent of the proposed project in accordance with the requirements of this section or other requirements as may be determined appropriate by the County Engineer.

### **11.2 Transportation system and frontage improvements.**

Frontage improvements are required for all improvement and development projects that have frontage on a public road that does not meet current standards. The transportation system and frontage improvements shall be in place, paid or be secured by means of an approved deferred improvement agreement no later than the time of final plat approval or certificate of occupancy, whichever occurs first, for that development or phase.

**11.2.1. Transportation System Improvements—Off-Site.** Off-site transportation system improvements such as road widening, additional right-of-way, paving, geometric improvements, additional lanes, traffic control devices, bridge and drainage structure modifications, pedestrian facilities, bike paths and intersection improvements away from the development shall be required where identified by a Traffic Impact Assessment or otherwise be determined to be necessary as part of the development review process.

The Okanogan County Department of Public Works will also review the right-of-way status of abutting and adjoining county roads to determine if additional right-of-way is needed to meet the current road standards as set forth herein.

All such required off-site improvements must be completed or other financing arrangements made as approved by the county prior to final development approval.

11.2.2. Frontage Improvements—General Requirements.

A. Frontage improvements may be required for all improvement and development projects that have frontage on a public road. Frontage improvements shall consist of, but not be limited to, dedication of right-of-way, road widening, turn lanes, traffic signals, bus stop pads, bus shelter pads, passenger shelters, bus pullouts, pedestrian facilities, bike paths where designated in the current county comprehensive plan and safety and drainage improvements, including all tributary runoff.

B. Frontage improvements, including the dedication of right-of-way, shall be installed at the time of development unless otherwise approved by the county.

C. The developer shall coordinate the design and construction with the county and the local transit provider when frontage improvements include bus stop pads, shelter pads and bus shelters. Prescription of a passenger shelter shall also incorporate the condition that the shelter meets the local transit provider's standard passenger shelter specifications.

11.2.3. Exceptions. The county engineer may approve an alternative as set out in subsection 11.2.4 of this section to the installation of frontage improvements, not including dedication of right-of-way, if one or more of the following conditions apply:

A. The design grade and alignment of the abutting roads cannot be determined at the time of construction of the development.

B. The installation of frontage improvements required for the development would create or intensify a hazard to public safety.

C. The installation of frontage improvements required for the development could be more safely, efficiently, and effectively implemented if done concurrently with the installation of improvements required for other developments along the same road frontage.

11.2.4. Deferral of Improvements. Any deferred improvement shall be secured for installation at a later date by an agreement and covenant between the county and the property owner whereby the property owner agrees to three methods of installation of the deferred improvements. This agreement and covenant shall be executed before the issuance of any improvement and development permits. The county engineer shall select which method to enforce against the property owner at the time when the deferred improvements are required to be installed. Three methods the property owner shall agree to are:

A. Commitment to Participate in an Improvement District. The property owner shall execute and record an agreement with the county and covenant running with the land that ensures the participation of the subject property owner in any local improvement district (Chapter 35.43 RCW), road improvement district (Chapter 36.88 RCW), or transportation benefit district (Chapter 36.73 RCW) formed for the construction of such improvements. Said document shall be in a form acceptable to the county prosecuting attorney's office and shall be effective for a period not exceeding ten years from the date of recording. This document shall bind the owner and its designees, heirs, transferees, donees, and/or successors in interest.

B. Agreement to Participate in Improvement Project. The property owner shall execute and record an agreement with the county and covenant running with the land that ensures the participation of the subject property owner in an improvement project not supported by an

improvement district that encompasses the said deferred improvements by paying their share thereof. Such share shall be equal to the county's costs for installing the deferred improvements. The county shall provide a nonbinding total cost estimate to the property owner at the time the agreement is entered into including a disclaimer that the total cost of the project at the time of construction may vary due to inflation, changes in design standards or other governmental laws and regulations. A contract shall be developed at the time the improvement project is developed outlining the level of participation by the subject property owner in said project and the manner in which payment is to be made; provided, that the financial responsibility of the subject property owner shall not exceed the cost of said deferred improvements at the time of the improvement project. Such an agreement and covenant shall bind the owner and its assignees, heirs, transferees, donees, and/or successors in interest. The agreement and covenant document shall be effective for a period of ten years from the date of recording.

C. Voluntary Payments. See RCW 82.02.020.

#### **11.2.5 Design Standards to be Applied.**

The design standards for improvements shall be determined by evaluation by the county engineer of a Traffic Impact Assessment of the developments full build-out capacity.

## **12. DEDICATION AND CONVEYANCES**

### **12.1 Road Upgrades Responsibility of Property Owners**

In the event that roadways are constructed to a standard less than that of a Category IV, a statement shall be incorporated into the final approval documents, plat map, or site plan, advising that the responsibility for maintaining said roadways shall lie with the owner, developer, or their successors, to the appropriate standards as may be determined by the County Engineer in a manner consistent with this document.

### **12.2 Waiver of Claims**

Each proposed project shall contain a statement incorporated on the face of the final plan sheet or within the recorded approval documents waiving of damage against any governmental authority which may be occasion to the adjacent lands of the project by the established construction, drainage, and maintenance of roadways dedicated or conveyed by the applicant. Suggested wording is as follows:

“The undersigned do(es) hereby certify that the (type of project) as herein recorded has been made with the free consent and desire of the owners. Said owners do hereby dedicate to the public forever, all streets, roadways, and alleys or other public property shown hereon along with the right to make and maintain all necessary cut and fill slopes created in the original reasonable grading of said street, roadway, or alley. We furthermore grant a waiver of claim of damages against any governmental authority which may be occasioned to the adjacent lands of the (project) by the established construction, drainage, and maintenance of said roadways.”

## **13. FINANCIAL ASSURANCES**

### **13.1 General**

In the event that required road improvements are not completed at the time the proposed project received final approval from Okanogan County, the County Engineer may enter into contractual agreements with the project applicant(s). Said agreements shall contain the following features:

- a. A complete description of the required work to be performed.

- b. The estimated time frame describing the time needed to complete the key tasks necessary to construct the project.
- c. A line item estimation of project cost.
- d. A statement of surety.

### **13.2 Performance Assurances**

#### **13.2.1. Construction Performance.**

A. If actual construction of any required improvement is not completed prior to final approval of the proposed project or approved phase thereof, the Board of County Commissioners may accept a bond, in the amount and with surety and conditions satisfactory to the Board, or other secure method, providing for and securing to Okanogan County adequate funds for actual construction and installation of such improvements within a time period specified by the Board of County Commissioners, but not to exceed two years after final project approval or approved phase thereof. In addition, bonds or other security may be required by the Board of Commissioners securing to Okanogan County the successful operation of all improvements for one year after the acceptance by the County of the completed improvements.

### **14. APPEALS**

Final decisions of the County Engineer regarding standards set out herein may be appealed by filing with the Department of Public Works within thirty (30) days following the issuance of the decision. The appellant shall complete an appeal form provided by the Department of Public Works which states the specific reasons for the appeal, and shall pay an administrative decision appeal fee as established in the adopted fee schedule. The appeal will be heard by the Board of County Commissioners. The appeal will be limited to a review of the record by the County Commissioners and limited to the issues raised in the appeal.

### **15. AMENDMENTS.**

A. These standards may be amended from time to time.

B. All requests for amendments or revisions to these standards from other county departments, other agencies or other outside parties shall be provided to the county engineer for evaluation. Such requests shall be in writing and shall provide such supporting information as may be required by the county engineer.

### **16. SEVERABILITY.**

If any part of these standards or its application to any person is, for any reason, declared invalid, illegal, or unconstitutional, in whole or in part by any court or agency of competent jurisdiction, said decision shall not affect the validity of the remaining portions thereof.

**Appendices:**

**A Crushed Surfacing Specifications**

**B Cul-de-Sac Options**

**C Roadway Category Prisms**

**D Maximum Degree of Curve and Minimum Radius**



## Appendix A

### Crushed Surfacing Specifications

#### CRUSHED BALLAST SPECIFICATIONS – Type O:

The first sentence of Section 9-03, 9(1) Ballast is amended to read as follows:

Ballast shall consist of crushed or partially crushed material from approved sources manufactured in accordance with the provisions of Section 3-01.

The remainder of this section is as stated in the Standard Specifications. Some are repeated here for convenience.

The Material from which ballast is to be manufactured shall meet the following test requirements:

Los Angeles Wear, 500 Rev.....	40% maximum
Degradation Factor.....	15% minimum

Crushed Ballast shall meet the following requirements for grading:

% passing 2 ½ “ square sieve.....	100
% passing 2” square sieve.....	65 to 100
% passing 1” square sieve.....	50 to 85
% passing ¾ “ square sieve.....	30 to 50
% passing U.S. No. 40 sieve.....	16 maximum
% passing U.S. No. 200 sieve.....	9.0 maximum
Dust Ratio:	
% Passing U.S. No. 200/% Passing U.S. No. 40	23 maximum
Sand Equivalent.....	35 minimum
All percentages are by weight	

#### CRUSHED SURFACING TOP COURSE SPECIFICATION – Type 0:

Section 9-03.9(3) of the Standard Specifications shall apply, except the table of grading and quality shall be modified to read:

% passing 5/8” square sieve.....	100
% passing ¼ “ square sieve.....	50 to 65
% passing U.S. No. 40 sieve.....	8 to 24
% passing U.S. No. 200 sieve.....	10 maximum
% Fracture.....	75 maximum
Sand Equivalent.....	40 minimum
All percentages are by weight	

#### CRUSHED SURFACING TOP COURSE SPECIFICATIONS – Type 1:

% passing 5/8” square sieve.....	100
% passing ¼ “ square sieve.....	55 to 75
% passing U.S. No. 40 sieve.....	10 to 335
% passing U.S. No. 200 sieve.....	15.0 maximum
% Fracture.....	75 minimum
Sand Equivalent.....	30 minimum
All percentages are by weight	

CUL DE SAC GEOMETRY

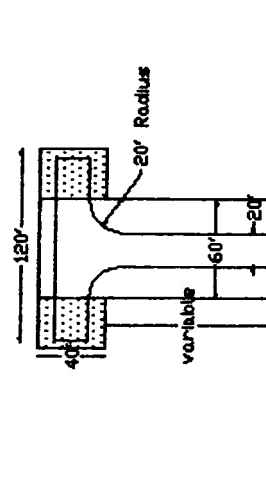
## Minimum Cul de Sac Design Standards

- Minimum Radius at Intersection = 20 feet
- Minimum Turning Radius on Surfaced Areas = 50 feet
- Minimum Width of Travel Surface = 20 feet

## TYPE 1

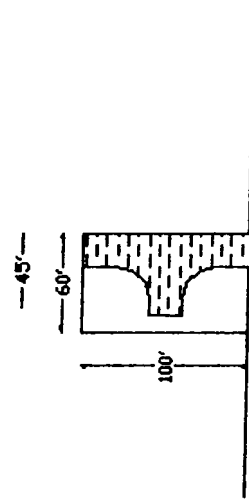
## RECOMMENDED HAMMER HEAD CUL DE SAC

This cul de sac design is required for all dead end county roads that serve development projects reviewed in accordance with these standards.



## TYPE 2

## MODIFIED HAMMER HEAD CUL DE SAC



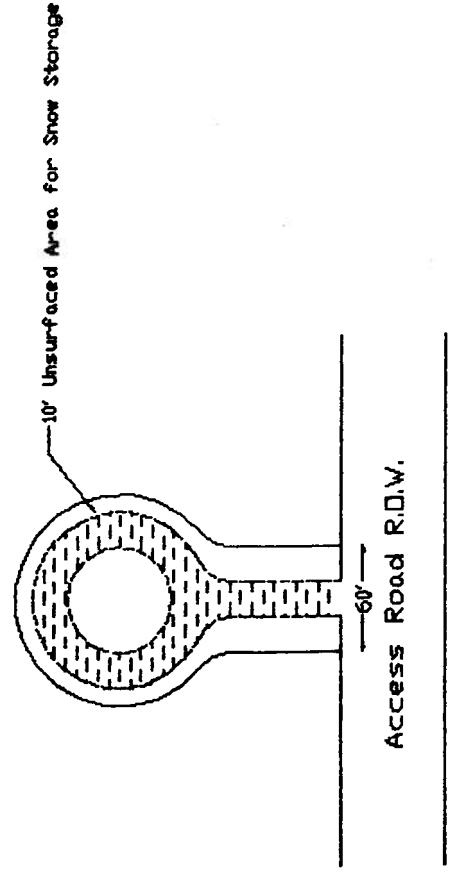
Note: Dotted area to be used for snow storage. Driveways may not be placed in this area.

# CUL DE SAC GEOMETRY

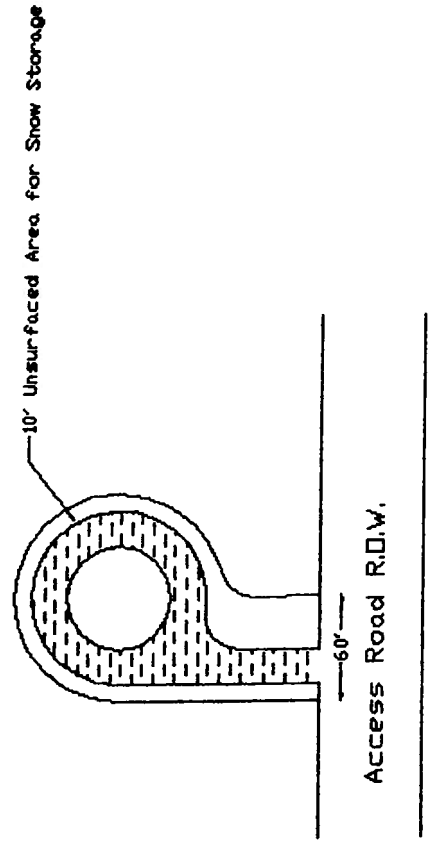
## Minimum Cul de Sac Design Standards

- Minimum Radius at Intersection = 20 feet
- Minimum Turning Radius on Surfaced Areas = 50 feet
- Minimum Width of Travel Surface = 20 feet

CIRCLE CUL DE SAC  
TYPE 3

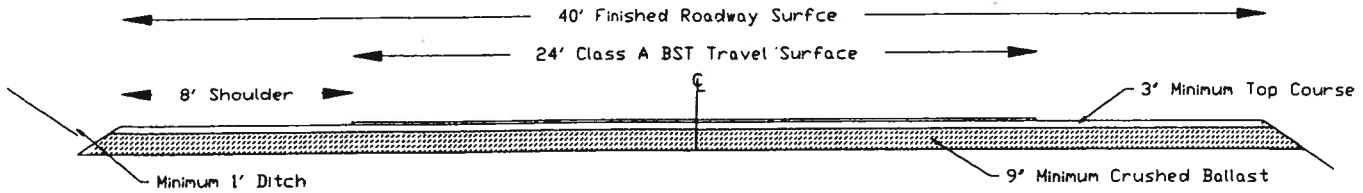


MODIFIED CIRCLE CUL DE SAC  
TYPE 4

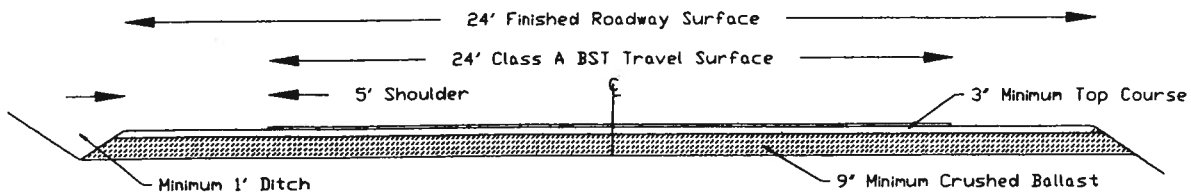


# ROADWAY PRISMS

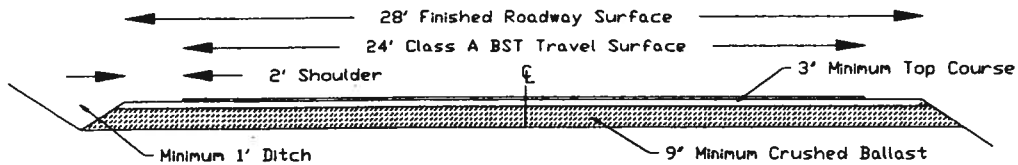
## CATEGORY VI ROADWAY



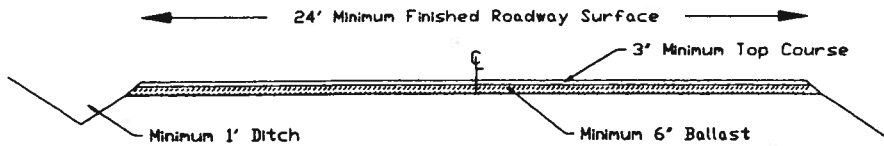
## CATEGORY V ROADWAY



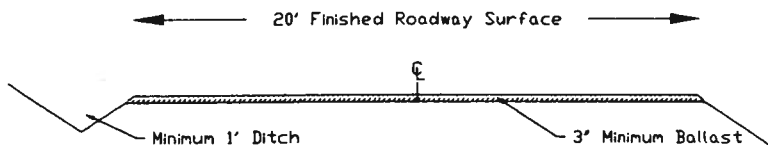
## CATEGORY IV ROADWAY



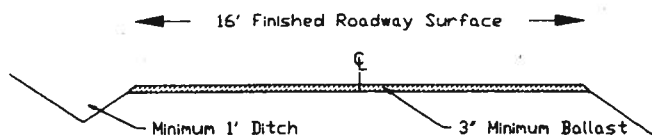
## CATEGORY III ROADWAY



## CATEGORY II ROADWAY



## CATEGORY I ROADWAY



## MAXIMUM DEGREE OF CURVE AND MINIMUM RADIUS

Design Speed (mph)	Maximum Superelevation Rate (ft/ft)	Maximum Degree of Curve	Rounded Maximum Degree of Curve	Minimum Radius (ft)
20	.04	44.97	45.00	127
30	.04	19.04	19.00	302
40	.04	10.17	10.00	573
50	.04	6.07	6.00	955
60	.04	3.81	3.75	1,528
	.06			
20	.06	49.25	49.25	116
30	.06	20.94	21.00	273
40	.06	11.24	11.25	509
50	.06	6.85	6.75	849
60	.06	4.28	4.25	1,348
65	.06	3.45	3.5	1,637
70	.06	2.80	2.75	2,083
	.08			
20	.08	53.54	53.50	107
30	.08	22.84	22.75	252
40	.08	12.31	12.25	468
50	.08	7.54	7.50	764
60	.08	4.75	4.75	1,206
65	.08	3.85	3.75	1,528
70	.08	3.15	3.00	1,910

Source: A Policy on Geometric Design of Highways and Streets, 1964  
American Association of Highway and Transportation Officials