

# THURSTON COUNTY

**WASHINGTON**

**SINCE 1852**



## ROAD STANDARDS

**JANUARY 2017**

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## **1.00 INTRODUCTION**

The Thurston County Road Standards shall hereinafter be referred to as the "Standards."

These Standards were developed to create a uniform construction process to ensure a quality end product that exemplifies safety, reliability, convenience and economical maintenance.

These Standards are not intended to provide for all situations but to be flexible in form and content. They are intended to assist but not substitute for competent work by design professionals. It is expected that land surveyors, engineers, architects, and Contractors will bring to each project the best of their skills.

These Standards are also not intended to unreasonably limit any innovative or creative effort. Through Section 2.08, a variance from these Standards may be requested; however, these requests are subject to the acceptance by the County Engineer based on satisfactory evidence that the proposed variance will produce an equivalent outcome.

### **1.01 Current Edition of the Standards**

The most current edition of these Standards will be available at the Permit Assistance Center. In order to remain current with technology and public needs, these Standards are subject to revisions. It is essential for the holder to keep the manual current with revisions as they occur.

The County Engineer is authorized to request information or to impose controls beyond those specified in these standards in order to protect the health, safety, and welfare of the public. In doing so, the County Engineer shall act reasonably, exercising best professional judgment based on available information.

### **1.02 Application of Standards**

- A. Mandatory Standards – Those considered most essential to the achievement of overall design objectives. Mandatory Standards use the word "shall".
- B. Advisory Standards – Standards that allow some flexibility in application to accommodate design constraints or to be compatible with local conditions. Advisory Standards use the word "should".
- C. Permissive Standards – All Standards other than the mandatory and advisory, indicated with the word "may", are permissive with no requirement intended.

## **CHAPTER 2 GENERAL CONSIDERATIONS**

### **2.00 GENERAL CONSIDERATIONS**

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## **2.00 GENERAL CONSIDERATIONS**

### **2.01 Applicability**

These Standards govern all construction within Thurston County as it relates to clearing, grading and work performed on existing or proposed Rights-of-Way. Projects within urban growth areas shall also be governed, in part, by that particular City's guidelines. Standards shall be considered reasonable minimum regulations, and shall not be relaxed except upon acceptance of a variance.

These Standards are pursuant to Thurston County Code Title 13 Roads and Bridges, Title 15 Public Works, Title 18 Platting and Subdivision and Title 20 Thurston County Zoning Ordinance and the International Building and Fire Codes. Where these Standards may be inconsistent with the provisions of Title 13, Title 15, Title 18 and Title 20, these Standards shall control.

### **2.02 Definitions**

Unless otherwise stated, capitalized words and phrases used in this document are defined in either Thurston County Code 13.56 or in the following list:

**AASHTO** - Current edition of the American Association of Highway and Transportation Officials manual.

**Accepted Plans** - Project plans that have been accepted for construction by the County Engineer or designee.

**Access** - A trail, Driveway or Private Road that connects to the general Public Road or Trail system.

**Average Daily Trips (ADT)** - The total two-directional volume of traffic passing through a given point during a given time period, divided by the number of days in that time period. When used as a threshold to determine classification (size) of the Access point or road, ADT shall be based on the ultimate build out of all land, considering current zoning, that will potentially be served by the Access point or road.

**Americans with Disabilities Act (ADA)** - A civil rights law that prohibits discrimination against individuals with disabilities in all areas of public life, including jobs, schools, transportation, and all public and private places that are open to the general public.

**Applicant** - Any person, firm, partnership, association, joint venture, corporation or any other entity responsible for a given project seeking approval from the County for any land use or other related Permit or approval referenced in Thurston County Code and which requires utilization of these Standards.

**Auxiliary Lane** - The portion of the roadway adjoining the Traveled Way for parking, speed change, turning, storage for turning, weaving, truck climbing, and other purposes supplementary to through-traffic movement.

**Breakaway** - A structure or installation that has been crash tested in accordance with National Cooperative Highway Research Program procedures.

**Capacity** - The maximum number of Vehicles that have a reasonable expectation of passing over a given roadway or section of roadway in one direction during a given time period under prevailing roadway and traffic conditions.

**Channelization** - The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised Islands or other suitable means to facilitate the safe and orderly movement of both Vehicles and pedestrians.

**Clear Zone** - The total roadside border area, starting at the Edge of Traveled Way, available for safe 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 desired width is dependent upon the traffic volumes, speeds, and the roadside geometry.

**Construction Plans** - The plans, profiles, cross sections, elevations, details, and supplementary specifications, signed by a licensed professional engineer and accepted by the County Engineer, which show the location, character, dimensions, and details of the work to be performed.

**County Road System** - Roads that are maintained by the County

**Cul-de-Sac** - Circular turnaround at the end of a road or Driveway that is temporarily or permanently closed to thru traffic.

**Deceleration Lane** - A lane, including tapered areas, for the purpose of enabling a Vehicle that is to make an exit turn from the roadway to slow to a safe turning speed after it has left the main stream of faster moving traffic.

**Design Speed** - A speed determined for design and correlation of the physical features of a highway that influence Vehicle operation: the maximum safe speed maintainable over a specified section of road when conditions permit design features to govern.

**Distribution** - See Trip Distribution.

**Driveway** - Access to individual lot. Access to 2 or more lots is defined as a Road.

**Edge of Traveled Way** - Designated by the face of curb, the fog line or the edge of the roadway when neither are present.

**Encroachment** - Occupancy of County right-of-way by privately owned Structures. This includes any Work within the County right-of-way.

**Engineer** - Shortened designation for County Engineer or authorized representative. This definition shall also be applied to the terms "Director" or "Engineer" as they may appear in the Standard Specifications or the Standard Plans.

**Grade** - Rate or percent of change in elevation, either ascending or descending, from one point to another.

**Half Road** - A 20' road constructed along the property line of development utilizing half the regular width of the right-of-way and Permitted as an interim facility pending construction of the other half of the road by the adjacent owner.

**Hazard** - Any object that when struck would apply unacceptable impact forces on the Vehicle occupants or place occupants in a hazardous position. It may be either natural or manmade.

**Intersection** - The general area where two or more Driveway/Roadways join or cross.

**Island** - A defined area between traffic lanes for control of Vehicle movements and/or for pedestrian refuge.

**Joint Access** - An Access onto County right of way which serves two or more Driveways.

**Median** - That portion of a divided roadway separating the Traveled Ways for traffic in opposite directions.

**PC** - Point of Curvature.

**PI** - Point of Intersection.

**Private Road or Private Roadway** - Privately owned and maintained vehicular Access serving two or more lots...

**Project Engineer** - A professional engineer currently licensed by the State of Washington, retained by the Applicant, and acting on the Applicant's behalf as a project designer.

**PT** - Point of Tangent.

**Public Road or Public Roadway**- Publicly owned and maintained Road.

**Recoverable Slope** - A slope on which a motorist may, to a greater or lesser extent, retain or regain control of a Vehicle by slowing or stopping.

**Rural Areas** - Areas so designated in Thurston County Comprehensive Plan which are characterized by long-term low density development.

**Shoulder** - That portion of the roadway contiguous with the Traveled Way providing lateral support of base and surface courses. The Shoulder also accommodates pedestrians, bicycles, stopped Vehicles and emergency use.

**Sight Distance** - The length of roadway ahead that is visible to the driver.

**Stopping Sight Distance** - The minimum distance a driver needs to perceive and comprehend the object, decide on an appropriate response, react and complete the braking maneuver without hitting the object in its path.

**Traffic Impact Analysis (TIA)** - A study which assesses the effects that a particular development's traffic will have on the overall transportation network. These studies vary in their range of detail and complexity depending on the type, size and location of the development.

**Traveled Way** - The part of the road made for Vehicle travel excluding Shoulders and Auxiliary Lanes.

**Trip** - A one-direction movement which begins at the origin and ends at the destination.

**Trip Distribution** - The process by which the movement of Trips between zones is estimated. The data for each Distribution may be measured or estimated by a growth factor process or by a synthetic model.

**Trip End** - A single or one-direction Vehicle movement with either the origin or the destination (exiting or entering) inside the study area. For Trip generation purposes, the total Trip ends for a land use over a given period of time are the total of all Trips entering plus all the Trips exiting a site during a designated time period.

An example of a Trip end would be: A site which has over some period of time, 2,000 Trips entering and 1,800 Trips leaving, has 3,800 Trip ends associated with it. The 3,800 total Trips to and from the site represent a total of 7,600 Trip ends.

Of these, 3,800 occur at locations other than the site in question.

**Trip Generation** - A general term describing the analysis and application of the relationships that exist between the Trip makers, the traffic study area, and the Trip making. It relates to the number of Trip Ends in any part of the traffic study area.



**Urban Areas** - Areas so designated in the Thurston County Comprehensive Plan, and as implemented through community plans and area zoning which are characterized by denser commercial/industrial and residential development.

## **2.03 Adopted Thurston County Specifications**

Except where these Standards provide otherwise, or by contract with the County, all design and construction, including materials, shall be in accordance with the relevant sections of the following publications:

- A. Washington State Department of Transportation "Standard Specifications for Road, Bridge, and Municipal Construction", current edition, hereinafter "Standard Specifications."
- B. Washington State Department of Transportation "Standard Plans for Road and Bridge Construction", current edition, hereinafter "Standard Plans."
- C. Washington State Department of Transportation "Hydraulics Manual", current edition.
- D. Washington State Department of Transportation "Construction Manual", current edition.
- E. U.S. Department of Transportation "Manual on Uniform Traffic Control Devices, as amended and approved by the Washington State Highway Commission", current edition, hereinafter "MUTCD."
- F. Drainage Design and Erosion Control Manual for Thurston County, Washington, current edition, hereinafter "Drainage Manual."
- G. G. Washington Chapter American Public Works Association "Standard Specifications for Municipal Public Works Construction", current edition, hereinafter "APWA Standard Specifications."
- H. "Standard Specifications for Highway Bridges," current edition, adopted by the American Association of State Highway and Transportation Officials, hereinafter "AASHTO Bridge Specifications."
- I. "Washington State Department of Transportation Design Manual", current edition, hereinafter "WSDOT Design Manual."
- J. Washington State Department of Transportation "Local Agencies Guidelines", current edition, hereinafter "LAG Manual."
- K. Washington State Department of Transportation "Traffic Manual", current edition.

- L. All AASHTO Design Guides and publications.
- M. "Trip Generation Manual," published by Institute of Transportation Engineers, current edition.
- N. "Proposed Rights-of-Way Guidelines," published by the United States Access Board, current edition.
- O. "International Fire Code", current edition, hereinafter "IFC."

## **2.04 Exemptions**

These Standards shall not govern the following:

- A. All work designed, administered and/or performed by Thurston County.
- B. Temporary repairs made on an Emergency basis. A Permit shall be applied for within 72 hours of starting the work.
- C. Routine maintenance of Driveways and Private Roads, including associated ditches and culverts, as long as said maintenance does not expanding the driveway surface or adversely impact adjacent critical areas. Routine maintenance includes, without limitation, grading out potholes, resurfacing, mowing, re-establishing original ditch line, etc.

This exemption does not include expanding or modifying the private driving surface (apron) and/or associated drainage system within the Rights-of-Way. If proposing to do so, please contact the Public Works Department to determine if the proposed Work requires a Permit.

## **2.05 Interpretation and Enforcement**

Interpretation and enforcement of these Standards shall be the responsibility of the Engineer.

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 as provided by code, ordinance or law.

## **2.06 Project Acceptance**

The Engineer shall rely upon the certification and approval of the road and drainage plans and calculations by the Applicant's Project Engineer for acceptance of the project. The Engineer's acceptance of the plans shall not relieve the Applicant or the Applicant's Project Engineer from any liability related to portions of the design which are not in conformance with these Standards or do not follow good engineering practices.

Upon receipt of the project plans, reports and calculations, the Engineer will review the work of the Applicant's Project Engineer for accuracy and completeness. The plans, reports and calculations will either be accepted by the Engineer or revision comments returned. All revisions are subject to hourly review fees as set forth in the current fee schedule. Project acceptance occurs when the Engineer signs the plans.

The plans, reports and calculations shall be signed, sealed and dated by the Applicant's Project Engineer. The cover sheet of the plans, reports and calculations shall bear the following certification:

"The design improvements shown in this set of plans and calculations conform to the current edition of the Thurston County Public Works Standards and the Drainage Design and Erosion Control Manual for Thurston County. All design variances have been accepted by the Thurston County Engineer. I approve these plans for construction."

Signed\_\_\_\_\_

Dated\_\_\_\_\_

## **2.07 Time Limitation of Acceptance**

### **Construction Plans**

The acceptance of plans shall be valid for a time period of 2 years from the date of acceptance by the Engineer. Construction in accordance with the Accepted Plans must be completed within this time period. If not completed within this time period, the plans shall be resubmitted to the County for review and any revisions or modifications necessary to meet the current Standards shall be made. Additional review/Permit fees shall be paid before the renewed plans are accepted by the County.

### **Traffic Impact Analysis**

A Traffic Impact Analysis shall only be valid for a time period of 2 years from the date of submittal. If the project does not receive the associated approval (preliminary, final, issued Permit, etc.) within 2 years from submittal date, the Traffic Impact Analysis shall be updated and resubmitted to the County for review.

## **2.08 Variance from the Standards**

These Standards are intended to provide predictability. However, the County recognizes that engineering design is an endeavor that examines alternative solutions in real world situations and accordingly, these Standards are not intended to hamper the introduction of new ideas. It is fully expected and anticipated 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 avoid significant impacts to critical areas without adversely affecting safety, maintainability or aesthetics.

In these situations a request can be submitted to vary from these standards. The request must follow the guidance provided below.

- A. A variance request shall not be evaluated until an application has been applied for and the associated fee has been paid.
- B. The variance request shall be in writing, submitted to the Development Review Division and address the following points:
  - 1. Specifically outline the reason for the variance request with alternatives if appropriate.
  - 2. Specify the chapter and section the variance request is for.
  - 3. Provide supporting evidence demonstrating that a variance from these Standards is in the public interest, based on sound engineering judgment and that the requirements for safety, function, appearance, fire protection and maintainability are fully met.
- C. The above information shall be used by the Engineer in evaluating requests for variances from these Standards. The Engineer will endeavor to evaluate and respond in writing to the variance request within 15 working days of receipt of the request. Variance requests that do not meet the International Fire Code also require review/acceptance from the County Fire Marshall.

Variance request approvals expire with the underlying permit or 1 year after variance approval date, whichever is later.

## **2.09 Environmental Considerations**

All work, including exempt work, shall adhere to applicable environmental requirements. If an environmental review is required, Permits shall not be issued until the environmental review has been completed.

## **2.10 Violations and Penalties**

Any Person, whether Permittee, owner, lessee, principal, agent, employee or otherwise, who violates any provision of these Standards, any Permit, Permit condition, or orders issued pursuant to these Standards, or Permits any such violation, or fails to comply with any of the requirements hereof, is subject to the enforcement provisions under Title 26 TCC.

## **2.11 Severability**

All sections, subsections, provisions, and portions of these Standards shall be severable, and if any section, subsection, sentence, clause, phrase, or other portion 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, such decision shall not affect the validity of the remaining portions hereof, and all other sections, subsections, provisions, and portions of these Standards shall remain in full force and effect.

## **2.12 Fees**

Fees shall be assessed in accordance with the current Development Review fee schedule as approved by the Thurston County Board of Commissioners.

## **2.13 Offsite Transportation Improvements**

Required frontage improvements, any offsite transportation improvements mitigating proposed traffic impacts or any fee-in-lieu of agreements shall either be constructed or paid prior to final approval/occupancy.

## **2.14 Grading**

A permit is required for all grading activities outlined in Chapter 14.37 Appendix J, Grading of the Thurston County Code.

## **2.15 Securities**

Under certain circumstances or as required by County code, securities may be required by the County to guarantee the performance of, or to correct Permitted work. The amount of security shall cover the County's cost to correct deficiencies. The type and amount of security shall be per ordinance or, if not specified, be at 150% of the Project Engineer's estimated cost of the work.

Types of securities include cash deposits, assignment of savings account, irrevocable standby letter of credit and bonds. Securities shall be released by the County upon satisfactory completion of the required work as specified in the accompanying agreement. The Applicant shall remain financially responsible for any and all costs exceeding the amount of the original financial guarantee.

## **2.16 Withdrawal of Approval/Acceptance**

At the discretion of the County, errors and omissions in the Accepted Plans or information used as a basis for such may constitute grounds for withdrawal of any acceptances and/or stoppage of any or all Permitted work. It shall be the responsibility of the Applicant to show cause why such work should continue, and make such changes in the plans that may be required by the County before the plans are re-accepted.

## **2.17 Site Maintenance**

- A. The Applicant shall schedule and control the work so as to comply with all applicable provisions of County land use codes and applicable state and federal laws and regulations to prevent any hazards to public safety, health and welfare.
- B. On existing roads, two way and all existing lanes of traffic shall be maintained at all times unless detour plans have been accepted in advance by the Engineer and the Board of County Commissioners where applicable.
- C. Roads shall be kept free of dirt and debris.
- D. Pedestrian and bicycle facilities shall be kept free of obstructions and be ADA compliant.
- E. Pedestrian and vehicular access to occupied buildings shall be maintained except where written approval from the building owner has been obtained.
- F. Drainage facilities shall be maintained and fully functional.

## **2.18 Correspondence**

All correspondence, including letters, reports, and plans, shall be clearly labeled with the County project number.

## **CHAPTER 3 PLAN FORMAT**

### **3.00 PLAN FORMAT**

- 3.01 Submittal Procedure
- 3.02 General Formatting
- 3.03 Plan Elements
- 3.04 Profile Elements
- 3.05 Typical Cross Section
- 3.06 Intersection Plan Details
- 3.07 Drainage and Erosion Control Plan
- 3.08 Record Drawings
- 3.09 Standard Notes
- 3.10 Construction Staking

### **3.00 PLAN FORMAT**

When construction is required by conditions of a plat, subdivision, Special Use Permit, commercial and other projects or by these Standards, plans for the proposed improvements shall be prepared, meeting all of the requirements in these Standards. Failure to provide the requirements set out in this chapter shall constitute an incomplete application and shall not be accepted for review. The plans shall be signed, sealed, and submitted by the Applicant's Project Engineer to the County for review. Final plans and profile drawings must be accepted by the Engineer prior to the start of construction and recording of the development. The Applicant's Project Engineer shall be a registered engineer, licensed in the State of Washington.

#### **3.01 Submittal Procedure**

Please note that all half size (11" x 17") sets of plans and project reports are required to be submitted digitally. Unless hand drawn/written, the digital copies shall be generated electronically from the software used to create the original drawings/reports.

- A. All plan submittals prior to final design acceptance shall include the following:
  - 1. Two (2) full size (22" x 34") sets and one (1) half size (11" x 17") set of plans, profiles, and details. (Refer to Sections 3.02 through 3.08 for plan content requirements)
  - 2. One (1) drainage report.
- B. Upon final design acceptance by the Engineer the following shall be submitted:
  - 1. One full size (22" x 34") set of plans, profiles, and details for the Engineer's signature.

Followed by:

- 2. Two (2) full size (22" x 34") copies and one (1) half size (11" x 17") copy of signed plans, profiles, and details.
- C. Changes to signed plans, profiles, and details shall be submitted for review and acceptance.
- D. Record drawings shall be submitted for review prior to final inspection of any road or drainage Facility. The submittal shall include two (2) full size (22" x 34") copies, one (1) half size (11" x 17") copy and a DWG copy of the record drawings. All changes to the original drawings shall be shown in a way to make them easily identifiable (i.e. clouded, bolded, etc.).



### 3.02 General Formatting

Proper use of line types and weights are required in order to ensure accuracy and readability of the project from design/ review through construction. Improper use of line types and weights will result in the project being placed on hold until the plans are revised to include the proper formatting.

Accurate Roadway plan alignments shall be stationed at 100' intervals with "tick marks" between stationing at a minimum of 50' intervals. Road widening projects shall be stationed at 25' intervals. Stationing shall be shown on all points of curvature, tangents and Intersections and shall be tied to existing road surveys, stationing, section corners, quarter corners and the horizontal control net established by the Engineer. Stations should increase from west to east and from south to north and be north arrow consistent, ie. north arrow pointing to the top of the drawing or to the right of the drawing.

### 3.03 Plan Elements

NOTE: ☐P - Minimum project requirements for preliminary approval prior to public hearing.

☐P Title Block to include:

- |                    |                 |
|--------------------|-----------------|
| 1. Project name    | 4. Road Name    |
| 2. County assigned | 5. Designed By: |
| project number     | 6. Drawn By:    |
| 3. Sheet number    | 7. Checked By:  |

☐P Legend (APWA Standard Symbols).

☐P Signature block for acceptance.

☐P Project Engineer's stamp (signed and dated).

☐P Section, township, range and vicinity map.

☐P Horizontal Scale Bar: 1" = 50' or less, However, 1" = 100' may be optional for larger developments. Details for clarification shall be shown on a convenient scale.

☐P North arrow.

☐P Section and lot lines.

☐P All topographic features within right-of-way limits or future right-of-way limits, and sufficient area beyond to resolve questions of setback, slope, drainage, access onto abutting property, and road continuations.

☐P Cross sections for all proposed new roads and widening of existing roads.

- ☐P Road alignments and centerline stationing.
- ☐P Curve data including radius, delta, arc length, and semi-tangent on all horizontal lines. Curve radius only for Preliminary.
- ☐P Project beginning and ending designation with stations.
- ☐P Indication of whether the roads are public or private.
- ☐P Identification of all roads and adjoining subdivisions.
- ☐P Edge of pavement and width.
- ☐P Sidewalks and width.
- ☐P Easement type, width and ownership.
- ☐P Right-of-way lines and width for proposed roads and intersecting roads, together with existing road improvements with dimensions.
- ☐P Grading quantities (cut & fill).
- ☐P Existing and proposed drainage features, indicating direction of flow, type of each drainage channel, Pipe, and structure.
- ☐P Identify roof run-off and storage.
- ☐P Soil test pit locations.
- ☐P All proposed utilities that will be designed and constructed.
- ☐P Existing and proposed transit stops and shelters, and bus pullouts.
- ☐P Environmentally sensitive and critical area.
- ☐P Existing and proposed wells within 200 feet of property lines.
- ☐P Existing drain fields.
- ☐ Bearings on road centerline, keyed to an associated plat map.
- ☐ Stationing of PC, PT, PI, Equations and Intersections.
- ☐ Datum - Bench mark elevation and location (on all sheets where elevations are referenced).
- ☐ Finished Grade elevations shall be shown on:
  1. All radius returns at beginning, quarter points and end.
  2. All Cul-de-Sacs at beginning, quarter points and end.
- ☐ Existing center line and gutter line Grades for all frontage improvements.

- ☐ All existing utilities.
- ☐ Proposed and existing street lighting.
- ☐ Traffic control signing and signal layout.
- ☐ Pavement marking details with station and offsets.
- ☐ Size, invert in, invert out, rim elevations, station of structures and offsets for all drainage facilities and other requirements as specified in the Drainage Manual.
- ☐ As a minimum, one new control monument shall be set at each end of a new road and intermediate monuments as required. Road monuments shall not be placed in landscape Medians. Witness monuments shall be offset in the roadway and so described.
- ☐ Beginning, quarter points, and ending elevations of curb returns.
- ☐ Temporary and permanent erosion control.
- ☐ Grading plans (see UBC for requirements).
- ☐ Proposed roadway names.
- ☐ Other data necessary for the specific project.

### **3.04 Profile Elements**

Profile elements shall include the following:

- ☐ Original ground line along center line, edge of pavement, ditch flow line or arrows, 25-foot stations through superelevation, and at significant ground breaks and topographic features with accuracy to within 0.1 feet on unpaved surfaces and 0.02 feet on paved surfaces. When a road extends to the perimeter of the project, ground lines shall be extended at least 300 feet to show any changes in contour which might affect the profile of the proposed road.
- ☐ Existing and proposed road, sewer, water and storm drainage profile with stationing to show stationing of points of curve, tangent, and inner section of vertical curves, with elevations to 0.01 feet.
- ☐ Values for Grade and length of vertical curve shall be shown with the profiles on a numbered grid.

- ☐ Superelevation data, if required, to include diagrams and calculations, shall be required and included for roadways of 30 miles per hour Design Speed or more.
- ☐ Vertical datum used on all benchmarks will refer to NGVD 1929 control i.e. mean sea level.
- ☐ Vertical scale of one inch equals two to five feet. Vertical scale shall be one inch equals ten feet if the optional one inch equals 100 foot horizontal scale is used.

### **3.05 Typical Cross Section**

- ☐P Widths of pavement, Shoulders, walks, ditch and right-of-way.
- ☐P Type of road.
- ☐P Depth of gravel base, crushed surfacing and hard surfacing.
- ☐P Type of sub-grade soil.
- ☐P Slope of crown, Shoulder and ditch design.
- ☐P Total width from centerline to back of ditch, including width of new pavement on widening of existing roads.
- ☐P A separate, full-width roadway typical section for each road or portion of road having a different section, labeled with appropriate stationing (i.e. Sta. 10+00 to Sta. 12+36).
- ☐ R-value table, if applicable, or other relevant information from Chapter 6.
- ☐ Location of existing and proposed utilities.
- ☐ All other data necessary for a specific project.

### **3.06 Intersection Plan Details**

- ☐ When either of the road centerline profile Grades within 35 feet of an Intersection have a gradient less than or equal to 1% or greater than or equal to 8%, an Intersection detail drawn to a scale of 1" = 20' must be included as a detail on the plans. The detail will show spot elevations every 25 feet on the road centerline, around the radius return and grate elevations for drainage structures in the Intersection. The Intersection plan must be clearly detailed to show flow line Grades and how surface drainage will be controlled at the Intersection. Radius return data for lesser gradients shall be shown on the road drawings.
- ☐ Details meeting the Americans with Disabilities Act (ADA) requirements.

- ❑ Profile Grades for all roads (public and private) intersecting onto a County road (existing or proposed) shall be designed and constructed so that intersection Sight Distance is available at the Intersection. Refer to Section 4.03.

### **3.07 Drainage and Erosion Control Plan**

Submittal shall be in accordance with the Drainage Design and Erosion Control Manual for Thurston County.

### **3.08 Record Drawings**

Engineering record drawings for roads and drainage facilities will be required prior to final inspection. In some cases, these drawings will be required during the inspection process to accept facilities before the next phase of construction can proceed.

### **3.09 Standard Notes**

All plans shall contain, as applicable, the Standard Construction Notes. Copies of the Standard Construction Notes are available on the Public Works Development Review webpage or upon request at the Permit Center. Other notes should be added as appropriate and necessary.

### **3.10 Construction Staking**

So as to ensure that design is carried through to the final product, construction staking of the Project Engineer's design by a registered surveyor or the design engineer, is required. Construction staking will consist of, but is not limited to, the following:

- A. Easement/Right-of-Way lines
- B. Slope Stake Sub-Grade
- C. Catch basins prior to Sub-Grade sign off
- D. Gutter line
- E. Top of Sub-Grade
- F. Top of Gravel Base
- G. Top of Crushed Surfacing, if required
- H. Drainage
- I. 50 foot center line stations minimum
- J. Quarter Points on Cul-de-Sacs.

## **CHAPTER 4**

### **ROAD TYPES AND GEOMETRICS**

#### **4.00 ROAD TYPES AND GEOMETRICS**

- 4.01 Development within Rural Areas
- 4.02 Development within Urban Areas
- 4.03 Sight Distances
- 4.04 Private Roads
- 4.05 Half Roads
- 4.06 New Driveways
- 4.07 Emergency Turnarounds
- 4.08 Intersections
- 4.09 Medians and Planters
- 4.10 One-way Roads
- 4.11 Dedications
- 4.12 Railroad Grade Crossings
- 4.13 Traffic Control
- 4.14 Slope, Wall, and Drainage Easements
- 4.15 Road Network Circulation
- 4.16 On-Site Principles
- 4.17 Developments with a Single Point of Entry
- 4.18 Roadside Obstacles
- 4.19 Roundabout Design Review

Appendix 4 - A      Vision Clearance Triangle

## **4.00 ROAD TYPES AND GEOMETRICS**

Each lot shall be served by a road built to applicable County Standards set forth herein, as now or hereafter amended, for public or Private Roads.

For the purpose of determining the applicable standard for development, the density and type of land use shall be that designated on the application by the Applicant or, if the Applicant fails to designate densities, they shall be deemed to be the maximum density allowed by the applicable zoning classification or the Comprehensive Plan. The applicable Standards shall be determined by the number of Vehicle Trips per day identified as being reasonably anticipated for the proposed use.

In the event an Applicant seeks a building permit after the final plat approval which results in a greater density or different use than the original approval, the Applicant shall not be granted the building permit until the road serving the lot is built to the higher standard or an agreement guaranteeing such construction is accepted by the County.

### **4.01 Development within Rural Areas**

All Roadway construction and improvements within the Rural Areas shall be constructed as set forth in these Standards. The minimum right-of-way width for Rural Areas is 60 feet.

### **4.02 Development within Urban Growth Areas**

#### **A. Cities**

All Roadway classification, construction and improvements within the Urban Areas shall be according to that city's development codes/standards; however, because the improvements will be within County jurisdiction, the Engineer reserves the right to enforce the County's development standards when there are conflicts between the codes.

#### **B. Grand Mound**

Roadway classification for the Grand Mound Urban Growth Area shall be according to the most current version of the Grand Mound Subarea Plan (or similarly named document). The development standards for Grand Mound are contained in Chapter 16 of these Standards.

### **4.03 Sight Distance**

#### **A. Stopping Sight Distance**

All Stopping Sight Distance calculations shall be based on AASHTO wet pavements criteria with adjustments for downgrades.

B. Intersection Sight Distance

Refer to AASHTO.

C. Preserving Sight Distance

Notes outlining the requirements shown in Appendix 4 - A may be required on final plat restricting the uses of the Sight Distance triangle with regards to structures, Landscaping, fencing, signs, and other visual obstructions.

#### **4.04 Private Roads**

A. Privately owned/maintained roads may be appropriate for some local access roads for both residential and commercial properties.

B. Proposed Private roads are accepted only when they are:

1. Permanently established by tract or easement providing legal access to each affected lot, dwelling unit, or business and sufficient to accommodate required improvements, to include provision for future use by adjacent property owners when applicable; and
2. Built to County Standards, as set forth herein; and
3. Accessible at all times for emergency and public service Vehicle use; and
4. Not obstructing, or part of, the present or future public neighborhood circulation plan developed in processes such as the Thurston County Comprehensive Plan, applicable community plan, or Capital Improvement Program; and
5. Not needed as Public Roads to meet the minimum road requirements of these Standards; and
6. Unless otherwise allowed by the Engineer designed to serve a maximum potential of 16 legal lots or 160 ADT, whichever is more restrictive, when the entire length of the Private Road system to the nearest Public Road is considered. The maximum potential is defined as being served by the road when physical barriers, zoning or other legal constraints are considered; and
7. Clearly described as a Private Road on the face of the plat; and
8. Clearly signed as a Private Road.



- C. The County shall not accept Private Roads into the County Road System until the Private Road meets all of the requirements of these Standards. This includes, without limitation, being constructed to a minimum Appendix 6-C standard, submittal of record drawings including plan and profile signed and sealed by a Washington State licensed engineer, installed survey monuments and the dedication of rights-of-way and drainage easements. For more specific information regarding the dedication process, contact the Public Works Department.

#### **4.05 Half Roads**

A Half Road may be permitted subject to approval by the Engineer when:

1. There is reasonable assurance of obtaining the prescribed additional right-of-way from the adjoining property suitable for completion of a full-roadway; and
2. Such alignment is consistent with or will establish a reasonable circulation pattern; and
3. The right-of-way width of the Half Road shall equal at least 30 feet, or 50 percent of the required right-of-way, whichever is greater; and
4. The Traveled Way shall be surfaced the same as the designated road classification to a width not less than 20 feet; and
5. The half road shall be graded consistent with the centerline of the ultimate roadway section.

#### **4.06 New Driveways**

- A. When required by the IFC, an emergency Vehicle access shall be provided to within 150 feet of the furthest point of the structure as measured by an accepted route around the exterior of the building. Emergency Vehicle access widths shall be as follows:
1. Residential use:
    - a. One (1) dwelling unit – 12' minimum.
    - b. Two (2) to six (6) dwelling units – 12' minimum w/pullouts.  
\*See Appendix 6-B & 6-F.
    - c. Six (6) or more dwelling units – 20' minimum.
  2. Commercial use: 20' minimum.

- B. Thurston County has no responsibility to control road runoff that flows down driveways that are constructed below road grade. Homeowners are responsible for grading their access point to manage any runoff from the roadway.
- C. An unobstructed vertical clearance of not less than 13 feet 6 inches in height shall be maintained for the required width of the emergency Vehicle access driveway.
- D. The emergency Vehicle access shall be constructed with an all-weather surface to adequately support the proposed loads of emergency Vehicles.
- E. Access locations to the Public Road shall be in accordance with Chapter 7 of these Standards.
- F. The maximum Grade for an emergency Vehicle access shall be:
  - 1. Residential use:
    - a. One (1) dwelling unit – 15% maximum.
    - b. Two (2) or more dwelling units – 12% maximum.
  - 2. Commercial use: 12% maximum.
- G. All turns shall have a minimum inside turning radius of 25 feet.
- H. A turnaround shall be required for any emergency Vehicle access driveway exceeding 300 feet in length. Turnarounds shall meet one of the following:
  - a. A looped turnaround providing the required width and turning radius, or
  - b. A Cul-de-Sac or hammerhead meeting the requirements of Appendix 6-G.
- I. Bridges shall follow the criteria in Chapter 10 with one exception: A bridge serving only one single-family dwelling may have a driving width of 8 feet 6 inches with hub rails or guard rails.
- J. The emergency Vehicle access driveway shall be shown on the site plan.
- K. The emergency Vehicle access driveway shall be maintained in accordance with these Standards by the property owner.

- L. Only when all other options have been exhausted, a property owner may elect to not comply with Section 4.07. In such cases, the property owner shall sign a statement acknowledging that lack of compliance may impede access of emergency services to the affected property. Said statement shall be recorded with the County Auditor against the parcel number. A copy of such recorded statement shall be mailed to the fire district in which the affected property is located.

#### **4.07 Emergency Turnarounds**

- A. An emergency turnaround shall be required on any Road over 150 feet in length serving two or more parcels. A hammerhead may be used on Roads up to 300 feet or temporarily on Roads greater than 300 feet. Roads greater than 300 feet require a Cul-de-Sac. Refer to Appendix 6 - G for specific details.
- B. The maximum Grade within the turnaround shall be 6% in any direction.
- C. Landscaped centers of Cul-de-Sacs are highly encouraged as a way to reduce impervious surface coverage; but because of emergency Vehicle access requirements, they will only be Permitted within Rural Areas.
- D. The Engineer may require off-road walkways to connect a road end at its terminus with other roads, parks, schools, bus stops, or other pedestrian traffic generators, if a demonstrated need exists. The Engineer may also require road ends be designed for increased circulation and future Vehicle access where connection to an existing road or future road is feasible. A public access easement or tract may be required to the property line.

#### **4.08 Intersections**

- |    |                                    |                             |
|----|------------------------------------|-----------------------------|
| A. | Angle of Intersection              | Minimum 75° to Maximum 105° |
| B. | Minimum Centerline Radius (2-Lane) | 55 Feet*                    |
| C. | Minimum Curb Radius                | 35 Feet*                    |
| D. | Minimum Property Line Radius       | 25 Feet*                    |

★Values shown are for local roads only. All others shall be designed for the specific roadway section.

- E. Minimum centerline offsets between adjacent Intersections shall be as follows:
  - 1. Principle Arterial 1,000 Feet
  - 2. Minor Arterial 500 Feet
  - 3. Collector 300 Feet
  - 4. Local Road 150 Feet

F. On sloping approaches at an Intersection, landings/apron lengths shall be provided with Grades as specified in Appendix 7-C.

G. Sight Distance – Refer to AASHTO Chapter IX, Intersection Control.

H. Intersections shall be designed to accommodate the continuation of the accessible walking route with maximum 2% cross slope. This will require benching of the Intersections on roads where proposed Grades are above 2%.

I. Installation of “dry” Conduit may be required at new Intersections to accommodate future utilities.

#### **4.09 Medians and Planters**

Median width shall be additional to, not part of, the specified width of Traveled Way. Edges shall be similar to outer road edges: either rolled edge or formed vertical curb; or Shoulder and ditch; except that Median Shoulders shall be minimum four feet in width. Medians shall be designed to accommodate pedestrian crossings at Intersections, at mid-block crosswalks and bus stops. Median and planters are encouraged to be grassed or landscaped and utilized as a drainage Facility. They shall be designed so as not to limit turning radii or Sight Distance at Intersections. Maintenance of the Medians, planters and planter strips within County right-of-way shall be the responsibility of the home owners unless otherwise agreed upon by the County.

On arterial roads with three (3) or more lanes, refuge Islands for pedestrians shall be incorporated as part of the road improvement as determined by the County.

#### **4.10 One-Way Roads**

Local roads, including loops, may be designated one-way upon a finding by the Engineer that topography or other site features make two-way traffic impractical. One-way roads shall meet the minimum fire access requirements.

#### **4.11 Dedications**

- A. Right-of-Way dedication at a minimum shall be in accordance with the applicable standard roadway section as set out in Appendices 6-C through 6-E and 6-G to accommodate motorized and non-motorized transportation, parking, utility and buffer requirements.
- B. Easements shall be provided for all public systems as required.
- C. The Engineer may require the dedication of additional right-of-way as a condition of project approval to provide the necessary right-of-way for the extension of existing and future roads for compatibility with the area's circulation system.

- D. Fees shall be assessed for roadway dedications based on the Public Works fee schedule.

#### **4.12 Railroad Grade Crossings**

All proposed railroad crossings shall be submitted and approved by the railroad and the Utilities and Transportation Commission prior to construction drawing approval.

#### **4.13 Traffic Control**

- A. Any construction proposed within the Traveled Way shall provide a traffic control plan. All traffic control and traffic control devices shall be as specified in the latest edition of the MUTCD. The Applicant shall implement the plan, when necessary, until the project is given final acceptance by the County. If conditions change, the traffic control plan shall also reflect the changes.
- B. During any construction, barriers and warning signs shall be erected, lighted and maintained as necessary or as directed by the County for the protection of the traveling public. The County may hire or use County forces to bring traffic control up to the safety standards set out in the MUTCD, WSDOT Design Manual and other applicable documents at the Applicant's expense when the safety of the traveling public is at risk.
- C. When road closures and detours cannot be avoided, the Applicant shall notify the Public Works Department. Road closures requiring action by the Board of County Commissioners shall require a minimum of 45 days advance notice. The County requires a detour plan to be prepared, submitted and accepted prior to closing any portion of a County roadway.

The road closure plan shall include a detour route with the location and type of signs to be used, as per the MUTCD. A written statement describing the detour route, length of detour and proposed dates and times of road closure shall also be submitted.

All road closures shall be consistent with Chapter 47.48 RCW. Special consideration needs to be given by the Applicant concerning the timing requirements of road closures as specified in the RCW and the timing requirements for the Board of County Commissioners to review and approve the closure.

#### **4.14 Slope, Wall, and Drainage Easements**

Either the functional classification or particular design features of a road may necessitate slope, wall, or drainage easements beyond the right-of-way line. Such easements may be required of the Developer by the Engineer in conjunction with dedication or acquisition of right-of-way.

#### **4.15 Road Network Circulation**

Poor circulation adds unnecessary miles to pedestrian and trail systems, school bus routes, mail delivery and other service deliveries, utility services and most importantly, emergency services. Because of this, the importance of good road network circulation for the health, welfare and safety of the public cannot be overemphasized. Each project will be reviewed against the following criteria.

- A. Plans will be reviewed for the provision of the best possible road network circulation. The road alignment may necessitate re-alignment in order to foster the long range transportation objectives of the County. This includes greater scrutiny to provide continuity of pedestrian and other trail systems related to the proposed road network.
- B. To facilitate the best possible road network circulation, if it is determined by the Engineer, after making an individualized determination, that the layout of roads are to provide for the continuation of existing roads in adjoining subdivisions, then the roads shall be constructed prior to final plat approval.
- C. When adjoining property is not subdivided, the Engineer shall determine whether stub roads shall be required to provide access to adjacent, unplatted property. The location for access to unplatted property shall be placed such that the objectives in these Standards can be achieved. All stub roads are required to be constructed as close to the property line as physically feasible.
- D. If the roads are to remain private, the above still applies except an easement will be shown on the final plat map and they will not be dedicated to the public. Specific information in the recorded covenants regarding the use of this easement will be required.

#### **4.16 On-Site Principles**

An integral part of an overall traffic study relates to basic site planning principles. An integrated on-site roadway system should deliver Vehicles from the external roadway system in a manner easily understood by typical drivers and that maximizes efficiency, accommodates anticipated traffic patterns and ensures public safety.

- A. Internal Vehicular Circulation
  - 1. Internal circulation is the means by which vehicular traffic is delivered between entry points and parking areas, pick-up/drop-off points, and service areas, and should be planned to accommodate appropriate future traffic volumes.

B. Access points

Refer to Appendix 7-A.

C. Parking

Parking shall be provided to meet site-generated demands and be consistent with Thurston County Code and other planning department policies.

D. Vehicular Queuing and Storage

1. Access drives should provide adequate vehicular exit queuing.
2. Parking areas and Access points of small developments should be designed so Vehicles waiting to exit are aligned perpendicular to the off-site roadway system.
3. Queuing areas of large developments should be sufficient so Vehicles queued at exits do not block internal circulation. Exits shall be signalized if warranted by the MUTCD at build out.
4. Documentation shall be provided to verify queue lengths for signalized Intersections, on-site queuing reservoirs, and off-site left and right-turn lanes.

E. Building Service Drives

Building service drives are roadways adjacent to a building and its entrances, and should be designed with sufficient width to serve as one or all of the following:

1. Fire and/or emergency Vehicle access
2. Pedestrian pick-up/drop-off points  

Pedestrian crossings and pick-up/drop-off points should be signed and striped to identify the vehicular/pedestrian conflict.
3. Internal circulation
4. Recirculation in parking areas  

Recirculation aisles shall have sufficient turning radii, clearances, Sight Distances and signing.
5. Bus passenger pick-up/drop off areas.

F. Pedestrian, Bus, Bicycle, and Disabled Access Facilities

The overall site plans must consider pedestrians, bus, bicyclists, and disabled access facilities.

1. Pedestrian Facilities

Pedestrian connections between public transportation facilities and site buildings should be integrated into the overall project design. Pedestrian facilities should be designed to reduce the motor Vehicle use for Trips within the development and between nearby developments.

2. Bus Facilities

Appropriate public transportation facilities, such as passenger shelters, ride sharing areas and bus staging areas shall be accommodated adjacent to service drive and entrance areas; at key locations along circulation drives; and at major pedestrian focal points along the external roadway system as determined the County and Intercity Transit.

3. Bicycle Facilities

Facilities for parking bicycles should be provided where bicycle use is expected.

4. Disabled Access Facilities

Disabled access shall be provided in accordance with federal, state and County requirements.

G. Service and Delivery Vehicles

Service and delivery Vehicles require separate criteria for movement to and from the site:

1. Vehicle turning paths shall be sufficient to accommodate the largest Vehicles anticipated, a minimum single unit truck (SU).
2. Service Vehicle Access points shall have turning paths sufficient to allow service Vehicles to enter and exit the site without encroaching upon opposing lanes or curbed areas.
3. External and internal roads shall have sufficient separation for large Vehicles to be queued on entry or exit without blocking access to parking spaces or internal roadways.



#### **4.17 Developments with a Single Point of Entry.**

The number of single family lots served with a single point of entry shall not exceed 30 or the ADT generated from the properties served by the road does not exceed 300.

#### **4.18 Roadside Obstacles**

- A. The WSDOT Design Guide and AASHTO's Roadside Design Guide shall be used for evaluation, placement and relocation of roadside features within the County right-of-way.
- B. Existing or new roadside features which could present a Hazard to the public shall be placed outside of Clear Zone areas unless justified to the Engineer's satisfaction by suitable engineering studies considering traffic safety, or where shielded by a barrier, placed in an area normally inaccessible to Vehicles or utilize a Breakaway design. If barriers are required, they shall be designed to AASHTO and WSDOT Standards.
- C. Locations of poles shall be compatible with Driveways, Intersections, and other roadside features (i.e., they shall not interfere with Sight Distance, roadway signing, traffic signals, culverts, etc.). Where possible, utility poles and other above ground appurtenances shall be located outside of the sidewalks or walkways.
- D. Costs of relocating poles or obstacles to achieve these Standards are the responsibility of the Applicant/Developer whose project necessitates compliance with these Standards. This is not intended to prevent the Applicant/Developer from making financial arrangements with an appropriate utility or other owner of the obstacle to accomplish removal of the pole or obstacle.

#### **4.19 Roundabout Design Review**

**At the discretion of the County Engineer, roundabout designs may require a third party review at the expense of the Permittee.**

LAST REVISED	7/2016



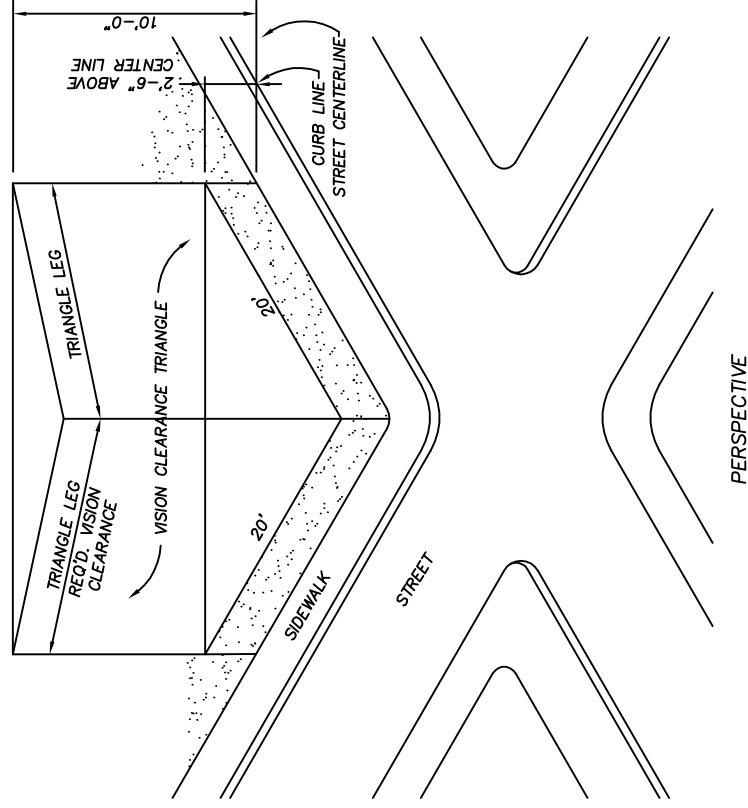
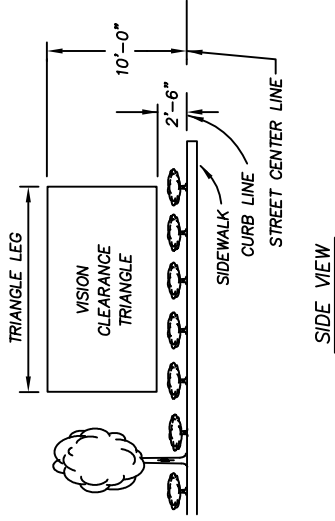
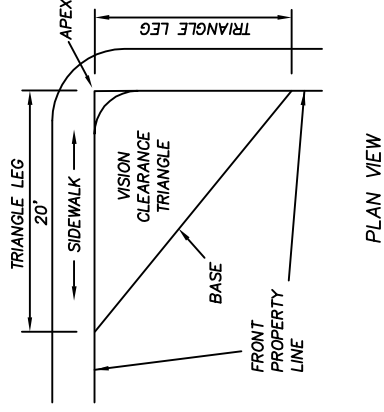
THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

VISION  
CLEARANCE  
TRIANGLE

APPENDIX 4 – A



## **CHAPTER 5 TRAFFIC ANALYSIS REQUIREMENTS**

### **5.00 TRAFFIC ANALYSIS GUIDELINES**

- 5.01 Purpose
- 5.02 County Engineer Authorization for Administrative Policies and Technical Procedures
- 5.03 Traffic Impact Analysis – When Required
- 5.04 Traffic Impact Analysis – Small Projects
- 5.05 Peak Traffic Hours
- 5.06 Level of Service
- 5.07 Concurrency
- 5.08 Report Certification
- 5.09 Traffic Impact Analysis - Scope

## **5.00 TRAFFIC ANALYSIS REQUIREMENTS**

A Traffic Impact Analysis (TIA) is a specialized study of the impacts that development will have on the transportation system. The Traffic Impact Analysis is an integral part of the environmental review process and specifically analyzes the generation, Distribution, assignment and impacts of traffic to and from the proposed development.

### **5.01 Purpose**

The purpose of a Traffic Impact Analysis (TIA) is to:

- A. To assess the impacts a particular development will have on the County and regional road network;
- B. To provide determine what provisions or mitigation is needed for safe and efficient site Access, mobility and traffic flows including on-site and off-site.
- C To document purpose, procedures, assumptions, findings, conclusions and recommendations of the study.
- D. To establish whether the development will meet the County's level of service Standards adopted within the County Comprehensive Plan; and
- E. To create, to the extent possible, uniform requirements for submittals by Applicants.

### **5.02 County Engineer Authorization for Administrative Policies and Technical Procedures**

The County Engineer is authorized to adopt administrative policies and technical procedures in order to administer this Section. The administrative policies and technical procedures may include, but are not limited to, such subjects as the contents and scope of the TIA, the methodologies to be used in preparing the TIA, and the nature and extent of the improvement(s) necessary to mitigate the traffic impacts caused by a proposed development. The administrative policies and technical procedures shall be available for inspection at the Office of County Engineer during normal business hours or may be purchased, for a reproduction fee, as specified in Thurston County Code.

### **5.03 Traffic Impact Analysis – When Required**

- A. Developments generating 100 or more PM peak hour Trips.
- B. Development is located within an existing or proposed transportation benefit areas. These may be defined at Road Improvement Districts, local/state areas programmed for Developer reimbursement

- C. A rezone of subject property
- D. Original traffic impact study is over 2 years old or when proposed development traffic volumes have changed from original study.
- E. The County Engineer or designee is unable to determine the Traffic Generation characteristics of the Development
- F. The Development Access to the Public Roadway system may create an impact as determined by the County Engineer or designee.
- G. Development that generates fewer than 100 PM peak-hour Trips to evaluate special or unique traffic concerns, such as, but not limited to, developments that generate a high proportion of heavy truck traffic, event based traffic, unique roadway alignments, safety concerns, etc. as determined by the County Engineer or designee.
- H. The County Engineer or designee may require a Traffic Impact Analysis for a less than 100 PM peak hour Trips if development is likely to impact transportation facilities at or near Breakaway or adopted levels of service.
- I. As required by any intergovernmental agreements.

#### **5.04 Traffic Impact Analysis - Small Developments**

- A. Trip Generation Worksheets may be required by the County Engineer or designee for any project.
- B. Developments between 50 and 100 PM peak hour Trips shall submit a Trip generation and Distribution study.

#### **5.05 Peak Traffic Hours**

For traffic analysis, the AM & PM peak hour conditions shall be used. In most cases peak hours are assumed to be similar to those on adjacent streets.

#### **5.06 Level of Service**

Transportation levels of service are defined in the Thurston County Comprehensive Plan.

#### **5.07 Concurrency**

Per the requirements of the State Growth Management Act and Chapter 17.10 of the Thurston County Code, a proposed development must undergo a concurrency review and determination.

Concurrency shall be based upon the PM peak hour.

## **5.08 Report Certification**

All traffic studies shall be prepared by or under the direct supervision of a Professional Civil Engineer currently licensed to practice within the State of Washington.

The project engineer shall certify the traffic study document by providing a signature and seal of approval.

## **5.09 Traffic Impact Analysis – Scope and Content**

The scope of the TIA shall be developed by the Applicant and accepted by the County Engineer prior to submittal of the TIA. At a minimum, the scope of the TIA shall include the following

- a. Prospectus
- b. Existing Conditions
- c. Study Area Identification
- d. Development Trip Generation
- e. Development Trip Distribution
- f. Future Traffic Conditions
- g. Traffic Operations & Concurrency
- h. Access Management
- i. Traffic Calming
- j. Mitigation

## **CHAPTER 6 ROADWAY BASES, SURFACING AND RESTORATION**

### **6.00 ROADWAY BASES, SURFACING AND RESTORATION**

- 6.01 Roadway Dimensions
- 6.02 Surfacing Requirements
- 6.03 Low Impact Development Considerations
- 6.04 Variance Requests for Widths/Grades
- 6.05 Right-of-Way Restoration

- Appendix 6 - A Private Roadway Section
- Appendix 6 - B Reduced Width Private Roadway Section
- Appendix 6 - C Local Roadway Section
- Appendix 6 - D Collector Roadway Section
- Appendix 6 - E Arterial Roadway Section
- Appendix 6 - F Pullout
- Appendix 6 - G Cul-de-Sac/Hammerhead Detail

## **6.00 ROADWAY BASES, SURFACING AND RESTORATION**

### **6.01 Roadway Dimensions**

All rural roads, either proposed or existing, that provide Access to a new development project (includes single family homes) shall be constructed or improved in accordance with Appendices 6A-6G and shall be determined using the Thurston County Road Master and/or Average Daily Trips (ADT).

Serving 10 ADT (1 single family home) – Driveway (see Chapter 4)  
Serving 11-60 ADT (2-6 single family homes) – Appendix 6B & 6F  
Serving 61-160 ADT (7-16 single family homes) – Appendix 6A  
Serving 161-400 ADT (17-40 single family homes) – Appendix 6C  
Serving 401-2,000 ADT (41-200 single family homes) – Appendix 6D  
Serving more than 2,000 ADT (200+ single family homes) – Appendix 6E

### **6.02 Surfacing Requirements**

- A. A pavement design may be required for County roads depending on the type of use being proposed.

If required, the design life shall be 20 years with a growth factor of 5%.  
The design procedure used shall be accepted by the Engineer and consider the following:

1. Traffic Loading - An estimate of the number and types of loadings the roadway will carry for the design life. This estimate of loading shall be established by a procedure accepted by the Engineer and be expressed in 18-Kip Equivalent Single Axle Loads (ESALs).
2. Subgrade Support - A representative value for the stiffness of the native material on which the road will be built. This value shall be established by a procedure accepted by the Engineer and be expressed as resilient modulus.
3. Analysis - a procedure for establishing the surfacing depth requirements for a given traffic loading and subgrade resilient modulus. This procedure shall be accepted by the Engineer. The following procedure is pre-approved:

Guide for the Design of Pavement Structures by the American Association of State Highway and Transportation Officials.



B. Minimum Thickness:

Regardless of the thickness computed by the design procedure above, the minimum thickness of the pavement section shall be as follows:

Local:

- 0.17' Asphalt Concrete Pavement
- 0.17' Crushed Surfacing Top Course
- 0.75' Crushed Surfacing Base Course

Collector & Arterial:

- 0.25' Asphalt Concrete Pavement
- 0.17' Crushed Surfacing Top Course
- 0.75' Crushed Surfacing Base Course

- C. All plan submittals shall be accompanied by the soils and traffic analysis on which the design was based. All minimum surfacing requirements assume an acceptable, well drained, stable, compacted subgrade. Additional measures may be required at the Engineer's discretion if evidence exists of unstable subgrade.
- D. Rural roads with a traffic volume less than 200 ADT may be paved by means of a light bituminous surface treatment (LBST); excluding Cul-de-Sacs. The LBST shall consist of no less than two applications of oil. The gravel thickness shall be designed according to good engineering practices considering the quality of the underlying soil. The design method shall be subject to acceptance by the Engineer. In no case shall the gravel thickness be less than eleven inches, two inches of crushed surfacing top course and nine inches of gravel base. The Developer shall provide funding for an additional application of oil to be placed as a seal coat approximately one year after initial construction.

### **6.03 Low Impact Development Considerations**

Low Impact Development (LID) is a strategy that protects and uses natural features and/or engineered, small-scale methods to manage stormwater and more closely mimic predevelopment functions. LID strategies focus on evaporating, transpiring, and infiltrating stormwater onsite through native or amended soils, vegetation, and bioengineering applications to reduce and treat runoff.

Roads generate a large amount of runoff that can benefit from the implementation of LID strategies. Developers and engineers are encouraged to explore LID options on their projects to reduce or eliminate central ponds, underground piping and even expensive filter systems. LID strategies are also helpful when setting up erosion and sediment control and construction sequencing which can save time and money.

More information on Low Impact Development Strategies such as bioretention, pervious pavements and native vegetation retention is available in the Thurston County Drainage Design and Erosion Control Manual.

Please note that pervious pavements, when feasible, will only be considered for the following:

- Private facilities (Driveways, roads, parking, etc.)
- Sidewalks (Public)\*
- Internal subdivision roads (Public)\*

\*Public facilities require County Engineer acceptance and will be considered on a “case-by-case” basis.

#### **6.04 Variance Request for Widths/Grades**

Variance requests regarding the road/Driveway widths and/or Grades shall also require review by the County Fire Marshal and the Fire Chief of the local district.

#### **6.05 Right-of-Way Restoration**

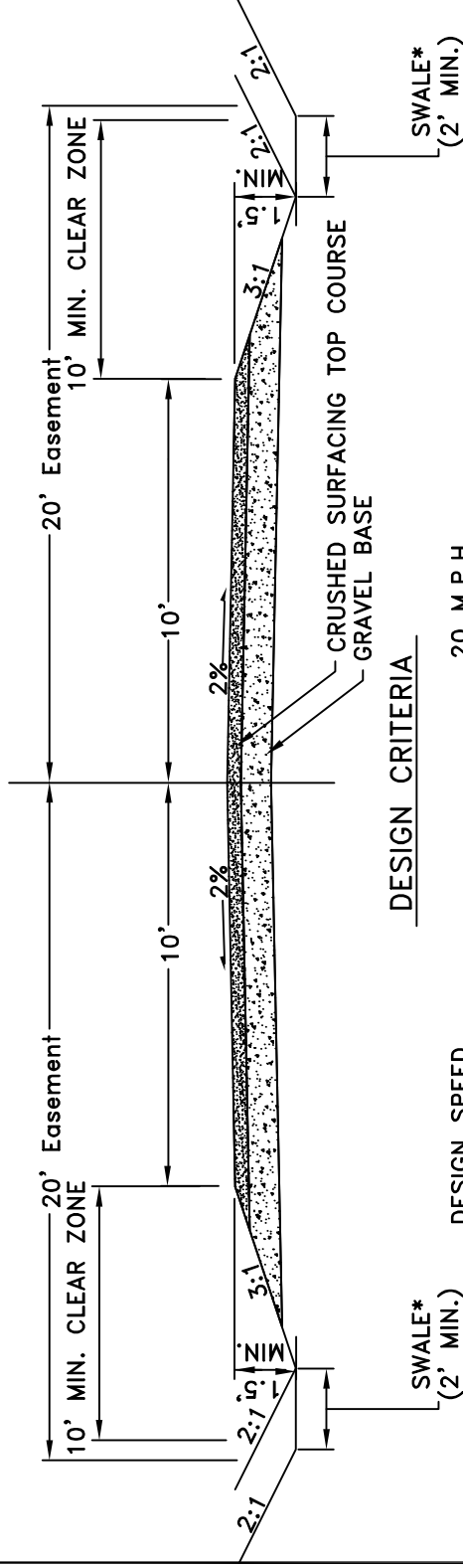
The intent of this section is to insure the life expectancy, structural integrity and overall safety of the public right-of-way as related to any Encroachment into the road right-of-way. This section pertains to existing Public Roads and those roads proposed to be dedicated to the County as Public Roads.

Upon completion of any Work, the Permittee shall promptly repair any and all public and private property, improvements, Landscaping, fixtures, Structures and Facilities which are damaged during the course of construction. Repair of the same shall be to as near the original condition before construction commenced. The repair shall take no longer than such time as may be established by the County during Permit review.

Any damage to an existing roadway during the course of construction shall be promptly repaired; which shall include a one lane (including Shoulder) 2” grind and overlay at a length determined by the County inspector to adequately repair the damage including Restoration of pavement markings.

# RURAL AREA ROADWAY DESIGN STANDARDS

ROADWAY CLASSIFICATION: PRIVATE ROAD  
20-YR. PROJECTED AVERAGE DAILY TRAFFIC (ADT): LESS THAN 160  
(16 DETACHED SINGLE FAMILY HOMES)



## DESIGN CRITERIA

DESIGN SPEED \_\_\_\_\_ 20 M.P.H.  
 MAXIMUM ROAD GRADE \_\_\_\_\_ 12%  
 MINIMUM ROAD GRADE \_\_\_\_\_ 0.5%  
 MINIMUM SURFACING WIDTH \_\_\_\_\_ 20'  
 MINIMUM ROADWAY WIDTH \_\_\_\_\_ 20'  
 EASEMENT WIDTH \_\_\_\_\_ 40' MIN.  
 ROADWAY GEOMETRICS \_\_\_\_\_ PER AASHTO AND WSDOT STD..  
 MINIMUM REQUIRED:  
 CRUSHED SURFACING TOP COURSE — 0.17' COMPACTED DEPTH  
 GRAVEL BASE — 0.75' COMPACTED DEPTH  
 VERTICAL CLEARANCE \_\_\_\_\_ 16.5'

## NOTES:

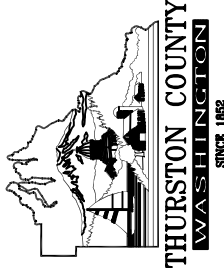
CLEAR ZONE DISTANCE SHOWN APPLIES TO ROADS WITH A POSTED SPEED OF 35 MPH OR LESS.  
 EASEMENT WIDTHS MAY BE REDUCED WHERE THE COUNTY ENGINEER HAS DETERMINED THAT ADEQUATE PROVISIONS HAVE BEEN MADE FOR THE PRIVATE MAINTENANCE OF WALKWAYS, TRAILS, BIKEWAYS AND DRAINAGE FACILITIES.

THE ROAD SECTION MAY BE CROSS-SLOPED ONE DIRECTION TO ACCOMMODATE EXISTING NARROWER EASEMENT WIDTHS, EXISTING TOPOGRAPHY OR THE DRAINAGE DESIGN.

IN FILL SECTIONS, THE COUNTY ENGINEER MAY REQUIRE A THICKENED EDGE TO CONTROL EROSION.

\* THE USE OF ROADSIDE AREAS FOR ALTERNATIVE DRAINAGE FACILITIES (BIORETENTION, BIOFILTRATION, DISPERSION, ETC.) IS ENCOURAGED BUT MAY REQUIRE ADDITIONAL EASEMENT WIDTH.

LAST REVISED 7/2016



THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

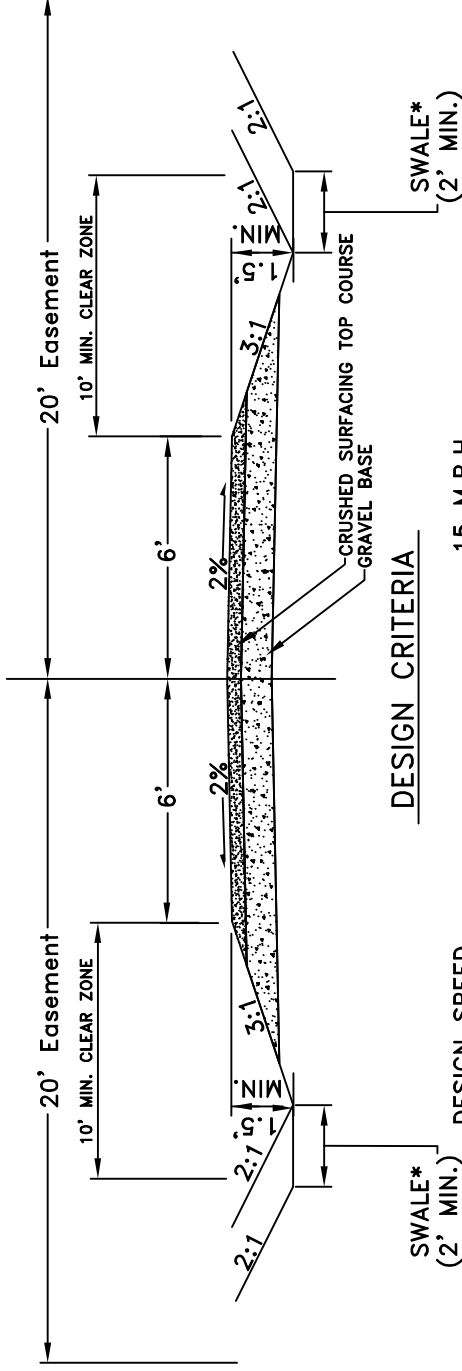
ROADWAY  
STANDARDS

PRIVATE  
ROADWAY  
SECTION

APPENDIX 6 — A

# RURAL AREA ROADWAY DESIGN STANDARDS

ROADWAY CLASSIFICATION: PRIVATE ROAD  
20-YR. PROJECTED AVERAGE DAILY TRAFFIC (ADT): UP TO 60  
(6 DETACHED SINGLE FAMILY HOMES)



## DESIGN CRITERIA

DESIGN SPEED	15 M.P.H.
MAXIMUM ROAD GRADE	12%
MINIMUM ROAD GRADE	0.5%
MINIMUM SURFACING WIDTH	12'
MINIMUM ROADWAY WIDTH	12'
PULLOUT REQUIRED	PER APPENDIX 6-F
EASEMENT WIDTH	40' MIN.
ROADWAY GEOMETRICS	PER AASHTO AND WSDOT STD..
MINIMUM REQUIRED:	
CRUSHED SURFACING TOP COURSE	0.17' COMPACTED DEPTH
GRAVEL BASE	0.75' COMPACTED DEPTH
VERTICAL CLEARANCE	16.5'

## NOTES:

CLEAR ZONE DISTANCE SHOWN APPLIES TO ROADS WITH A POSTED SPEED OF 35 MPH OR LESS.

EASEMENT WIDTHS MAY BE REDUCED WHERE THE COUNTY ENGINEER HAS DETERMINED THAT ADEQUATE PROVISIONS HAVE BEEN MADE FOR THE PRIVATE MAINTENANCE OF WALKWAYS, TRAILS, BIKEWAYS AND DRAINAGE FACILITIES.

THE ROAD SECTION MAY BE CROSS-SLOPED ONE DIRECTION TO ACCOMMODATE EXISTING NARROWER EASEMENT WIDTHS. EXISTING TOPOGRAPHY OR THE DRAINAGE DESIGN.

IN FILL SECTIONS, THE COUNTY ENGINEER MAY REQUIRE A THICKENED EDGE TO CONTROL EROSION.

PULLOUTS PER APPENDIX 6-F SHALL BE REQUIRED EVERY 300' AND WHERE SITE DISTANCE IS LIMITED (CURVES, HILLS, ETC.).

\* THE USE OF ROADSIDE AREAS FOR ALTERNATIVE DRAINAGE FACILITIES (BIORETENTION, BIOFILTRATION, DISPERSION, ETC.) IS ENCOURAGED BUT MAY REQUIRE ADDITIONAL EASEMENT WIDTH.

LAST REVISED

7/2016



THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

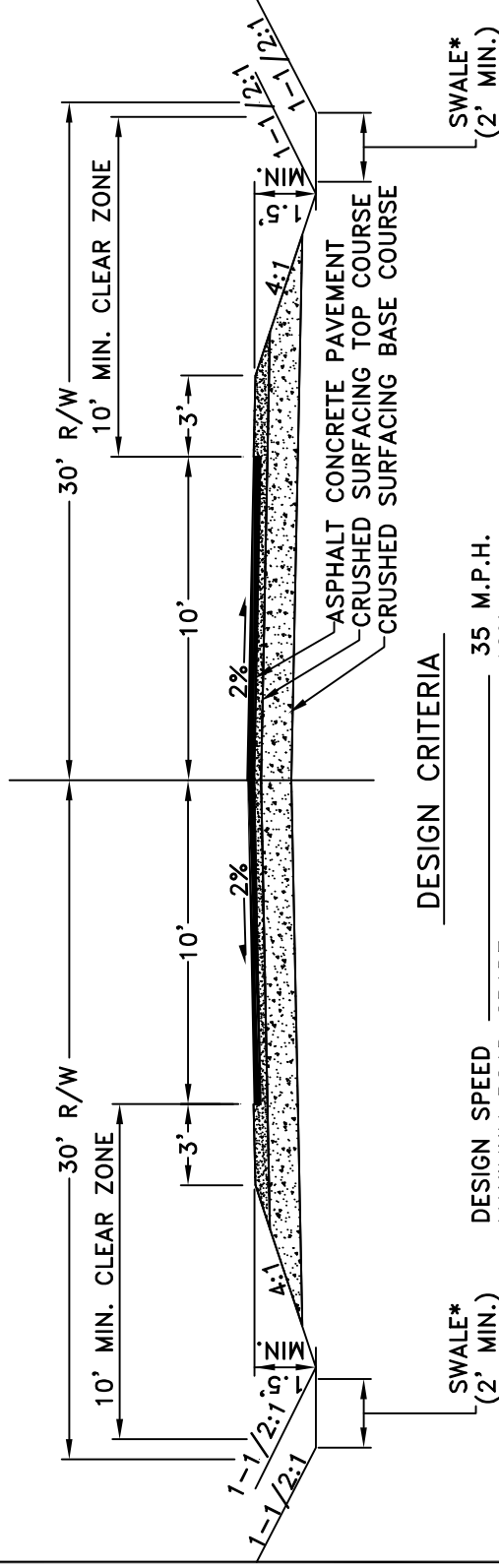
PRIVATE  
ROADWAY  
SECTION

REDUCED WIDTH

APPENDIX 6 - B

# RURAL AREA ROADWAY DESIGN STANDARDS

ROADWAY CLASSIFICATION: LOCAL ROAD  
20-YR. PROJECTED AVERAGE DAILY TRAFFIC (ADT): 161 - 400



## DESIGN CRITERIA

DESIGN SPEED	35 M.P.H.
MAXIMUM ROAD GRADE	10%
MINIMUM ROAD GRADE	0.5%
MINIMUM SURFACING WIDTH	20'
MINIMUM ROADWAY WIDTH	26'
MINIMUM DESIGN LOAD	HS 20-44
RIGHT-OF-WAY WIDTH	60' MIN.
ROADWAY GEOMETRICS	PER AASHTO AND WSDOT STDs.
MINIMUM REQUIRED:	
ASPHALT CONCRETE PAVEMENT	0.20' COMPACTED DEPTH
CRUSHED SURFACING TOP COURSE	0.17' COMPACTED DEPTH
CRUSHED SURFACING BASE COURSE	0.75' COMPACTED DEPTH
VERTICAL CLEARANCE	16.5'

## NOTES:

CLEAR ZONE DISTANCE SHOWN APPLIES TO ROADS WITH A POSTED SPEED OF 35 MPH OR LESS.

WHERE BICYCLE LANES ARE REQUIRED, PAVEMENT WIDTHS AND R/W WIDTHS SHALL BE INCREASED TO ACCOMMODATE THE BICYCLE LANE.

R/W WIDTHS MAY BE REDUCED WHERE THE COUNTY ENGINEER HAS DETERMINED THAT ADEQUATE PROVISIONS HAVE BEEN MADE FOR THE PRIVATE MAINTENANCE OF WALKWAYS, TRAILS, BIKEWAYS AND DRAINAGE FACILITIES.

FULL DEPTH PAVED SHOULDERS MAY BE REQUIRED ON CURVES AND WHERE ADDITIONAL LANES ARE, OR WILL BE, REQUIRED.

IN FILL SECTIONS, THE COUNTY ENGINEER MAY REQUIRE A THICKENED EDGE TO CONTROL EROSION.

STRUCTURAL ROADWAY SECTION TO BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN WASHINGTON.

\* THE USE OF ROADSIDE AREAS FOR ALTERNATIVE DRAINAGE FACILITIES (BIORETENTION, BIOFILTRATION, DISPERSION, ETC.) IS ENCOURAGED BUT MAY REQUIRE ADDITIONAL EASEMENT WIDTH.

LAST REVISED

7/2016



THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

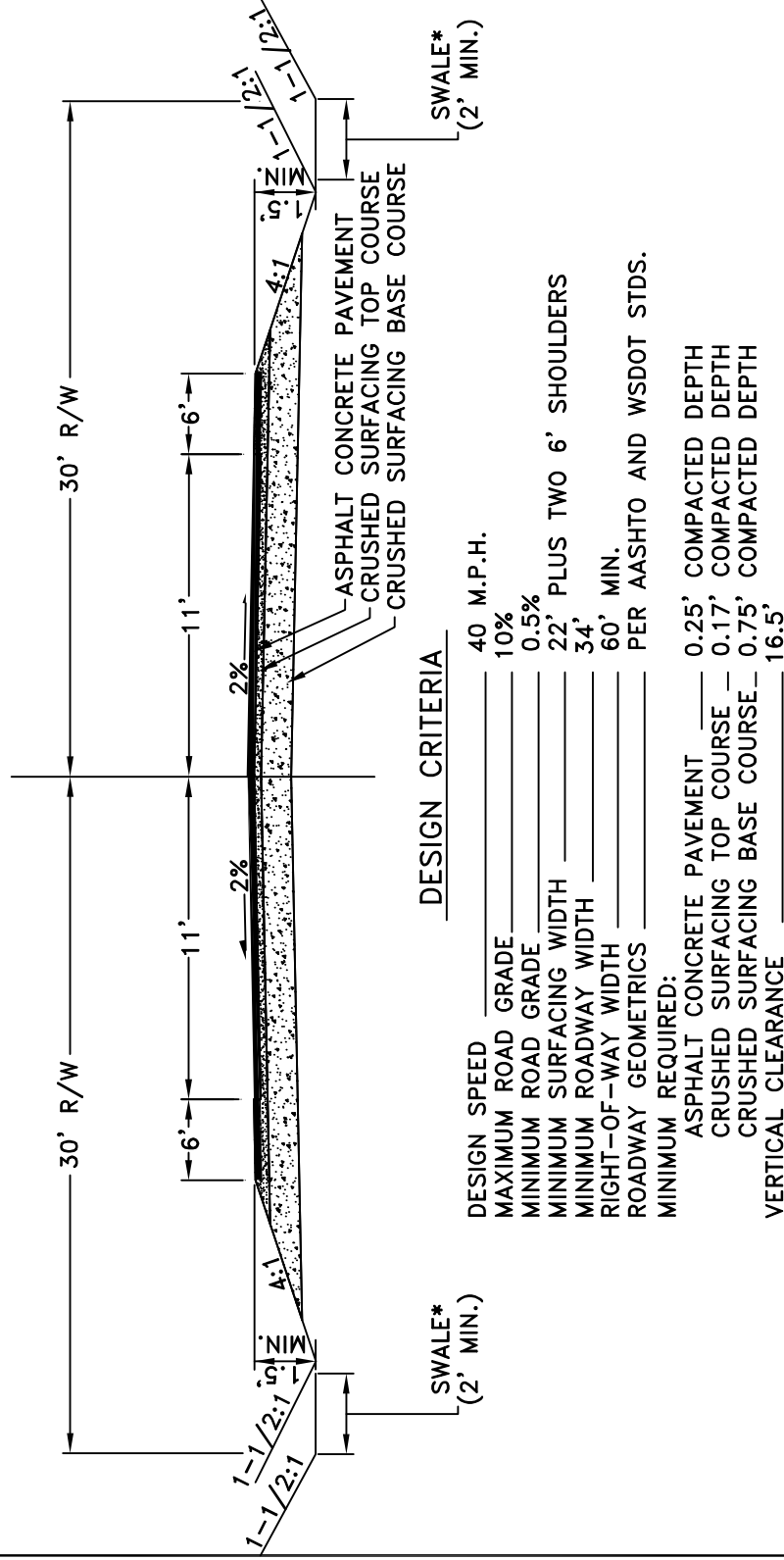
ROADWAY  
STANDARDS

LOCAL  
ROADWAY  
SECTION

APPENDIX 6 - C

# RURAL AREA ROADWAY DESIGN STANDARDS

ROADWAY CLASSIFICATION: COLLECTOR  
20-YR. PROJECTED AVERAGE DAILY TRAFFIC (ADT): 401 – 2000



## NOTES:

WHERE BICYCLE LANES ARE REQUIRED, PAVEMENT WIDTHS AND R/W WIDTHS SHALL BE INCREASED TO ACCOMMODATE THE BICYCLE LANE.

R/W WIDTHS MAY BE REDUCED WHERE THE COUNTY ENGINEER HAS DETERMINED THAT ADEQUATE PROVISIONS HAVE BEEN MADE FOR THE PRIVATE MAINTENANCE OF WALKWAYS, TRAILS, BIKEWAYS AND DRAINAGE FACILITIES.

IN FILL SECTIONS, THE COUNTY ENGINEER MAY REQUIRE A THICKENED EDGE TO CONTROL EROSION.

FULL DEPTH PAVED SHOULDERS MAY BE REQUIRED ON CURVES AND WHERE ADDITIONAL LANES ARE, OR WILL BE, REQUIRED.

CLEAR ZONE REQUIREMENTS OUTLINED IN SECTION 4.18 OF THESE STANDARDS SHALL BE COMPLIED WITH.

STRUCTURAL ROADWAY SECTION TO BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN WASHINGTON.

\* THE USE OF ROADSIDE AREAS FOR ALTERNATIVE DRAINAGE FACILITIES (BIORETENTION, BIOFILTRATION, DISPERSION, ETC.) IS ENCOURAGED BUT MAY REQUIRE ADDITIONAL EASEMENT WIDTH.

LAST REVISED

7/2016



THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

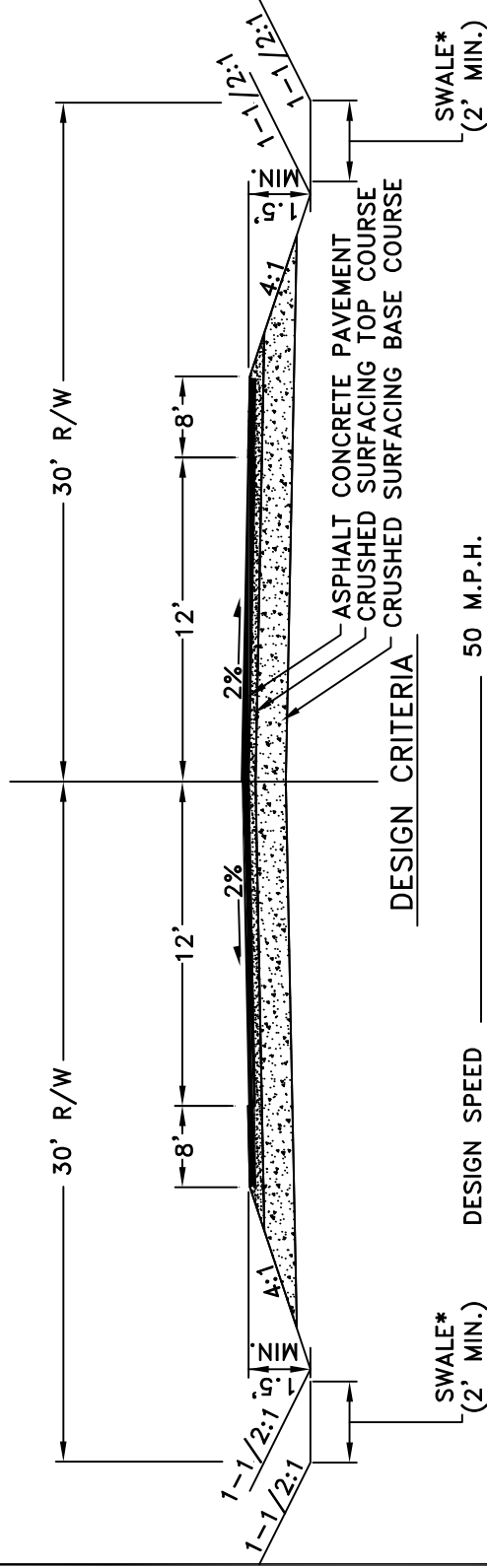
ROADWAY  
STANDARDS

COLLECTOR  
ROADWAY  
STANDARDS

APPENDIX 6 – D

# RURAL AREA ROADWAY DESIGN STANDARDS

ROADWAY CLASSIFICATION: ARTERIAL  
20-YR. PROJECTED AVERAGE DAILY TRAFFIC (ADT): ABOVE 2000



## DESIGN CRITERIA

DESIGN SPEED \_\_\_\_\_ 50 M.P.H.  
 MAXIMUM ROAD GRADE \_\_\_\_\_ 10%  
 MINIMUM ROAD GRADE \_\_\_\_\_ 0.5%  
 MINIMUM SURFACING WIDTH \_\_\_\_\_ 24' PLUS TWO 8' SHOULDERS  
 MINIMUM ROADWAY WIDTH \_\_\_\_\_ 40'  
 RIGHT-OF-WAY WIDTH \_\_\_\_\_ 60' MIN.  
 ROADWAY GEOMETRICS \_\_\_\_\_ PER AASHTO AND WSDOT STDS.  
 MINIMUM REQUIRED:

ASPHALT CONCRETE PAVEMENT \_\_\_\_\_ 0.33' COMPACTED DEPTH  
 CRUSHED SURFACING TOP COURSE \_\_\_\_\_ 0.17' COMPACTED DEPTH  
 CRUSHED SURFACING BASE COURSE \_\_\_\_\_ 0.75' COMPACTED DEPTH  
 VERTICAL CLEARANCE \_\_\_\_\_ 16.5'

## NOTES:

WHERE BICYCLE LANES ARE REQUIRED, PAVEMENT WIDTHS AND R/W WIDTHS SHALL BE INCREASED TO ACCOMMODATE THE BICYCLE LANE.

R/W WIDTHS MAY BE REDUCED WHERE THE COUNTY ENGINEER HAS DETERMINED THAT ADEQUATE PROVISIONS HAVE BEEN MADE FOR THE PRIVATE MAINTENANCE OF WALKWAYS, TRAILS, BIKEWAYS AND DRAINAGE FACILITIES.

IN FILL SECTIONS, THE COUNTY ENGINEER MAY REQUIRE A THICKENED EDGE TO CONTROL EROSION.

FULL DEPTH PAVED SHOULDERS MAY BE REQUIRED ON CURVES AND WHERE ADDITIONAL LANES ARE, OR WILL BE, REQUIRED.

CLEAR ZONE REQUIREMENTS OUTLINED IN SECTION 4.18 OF THESE STANDARDS SHALL BE COMPLIED WITH.

STRUCTURAL ROADWAY SECTION TO BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN WASHINGTON.

\* THE USE OF ROADSIDE AREAS FOR ALTERNATIVE DRAINAGE FACILITIES (BIORETENTION, BIOFILTRATION, DISPERSION, ETC.) IS ENCOURAGED BUT MAY REQUIRE ADDITIONAL EASEMENT WIDTH.

LAST REVISED

7/2016



THURSTON COUNTY  
WASHINGTON  
SINCE 1882

THURSTON COUNTY  
PUBLIC WORKS

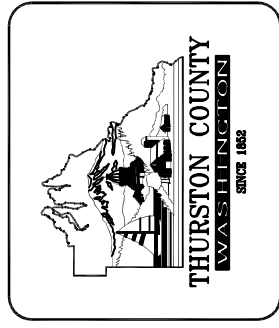
DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

ARTERIAL  
ROADWAY  
SECTION

APPENDIX 6 – E

LAST REVISED	7/2016



THURSTON COUNTY  
PUBLIC WORKS

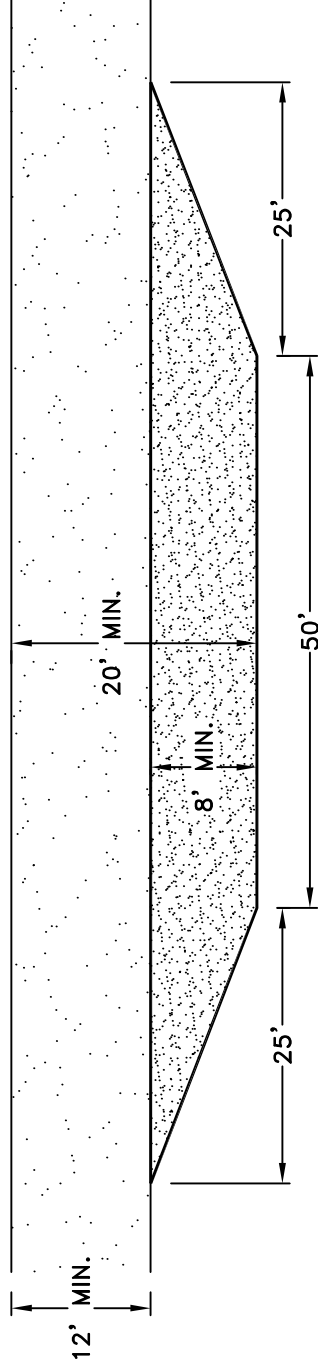
DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

PULLOUT

APPENDIX 6 – F

## PULLOUT FOR REDUCED WIDTH PRIVATE ROAD



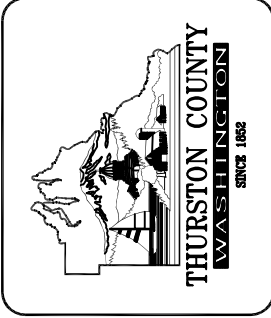
### NOTES:

PULLOUTS SHALL BE CONSTRUCTED USING THE PRIVATE ROAD STRUCTURAL SECTION – SEE APPENDIX 6–B.

PULLOUTS SHALL BE SIGNED FOR NO PARKING. SEE SIGNING/STRIPING STANDARDS FOR REQUIREMENTS.



LAST REVISED	7/2016



THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

CUL-DE-SAC/  
HAMMERHEAD  
DETAIL

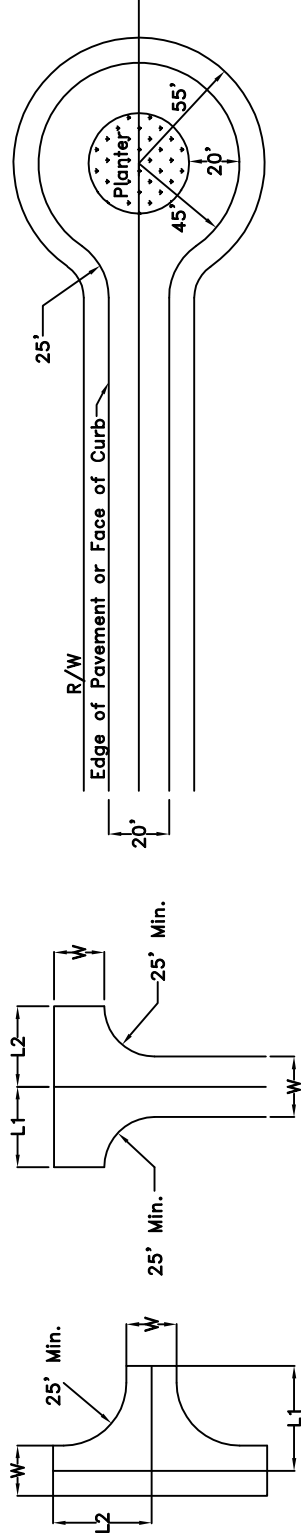
APPENDIX 6 – G

Type	Length ①	# Lots Served or Street ADT	Allowed Use
Hammerhead	< 150 Ft.	N.A.	None Required
	151 – 300 Ft.	②	Permanent
	301 – 600 Ft.	②	Temporary
Cul-de-Sac	< 150 Ft.	N.A.	None Required
	151 – 600 Ft.	②	Permanent

See Standard Drawings Appendix 6--A through Appendix 6-C for Road Section Requirements

NOTES:

1. LENGTHS ABOVE 600 FT. SHOULD BE AVOIDED. THEY WILL BE CONSIDERED FOR CASES WHERE LOTS ARE LARGE AND/OR DIFFICULT TERRAIN EXISTS, PROVIDED, THE LIMITS SPECIFIED IN 2 ARE MET.
2. 25 MAXIMUM SINGLE FAMILY LOTS OR A MAXIMUM OF 250 ADT.
3. SHOULDER WIDTHS SHALL BE CONSISTENT WITH THE ADJOINING ROADWAY SHOULDER WIDTH.
4. PLANTERS (RURAL ONLY) MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE HOME OWNER'S.



CUL-DE-SAC

W	L1	L2
12'-16'	38'	38'
16'-20'	34'	34'
20'+	30'	30'

HAMMERHEAD

## **CHAPTER 7 ACCESS**

### **7.00 ACCESS**

- 7.01 General
- 7.02 Sight Distance
- 7.03 Location of Access Points
- 7.04 Construction of Access Points
- 7.05 Horizontal Alignment of Access Points
- 7.06 Vertical Alignment of Access Points
- 7.07 Left Turn, Acceleration and Deceleration Lanes
- 7.08 Intersections

- Appendix 7 - A County Road Accesses
- Appendix 7 - B Culvert Detail
- Appendix 7 - C Access Point Grades

## **7.00 ACCESS**

### **7.01 General**

- A. Access to State Highways is regulated by the Washington State Department of Transportation. The property owner desiring Access to a State Highway is responsible to coordinate with WSDOT for satisfactory completion of any requirements prior to construction.
- B. An Encroachment Permit shall be required prior to accessing County roads. Construction of Access points or related improvements shall not be allowed without a valid Encroachment Permit. Application for Encroachment Permits shall be evaluated and Encroachment Permits issued based on the ability of the proposed Access or use to meet these Standards.

Access apron widths and locations for Driveways are determined at the time of acquisition of the Encroachment Permit. As a rule, Access widths are:

Residential Driveway – 12 feet min, 24 feet max  
Joint Driveway – 20 feet min, 24 feet max  
Residential Road – 20 feet min  
Commercial Driveway/Road – 24 feet min

- C. Access points for parking and loading areas shall be designed so that backing maneuvers from or onto a Public Road right-of-way will not occur. All Vehicles shall exit the property in a forward motion. This does not apply to single family or duplex residential uses accessing local roads.
- D. Where necessary for the safe and efficient movement of traffic, the Engineer may require an investigation by the Applicant to determine whether Access points should be designed to limit turning movements. The Engineer may also require Joint Access and circulation agreements between neighboring properties to further provide safe and efficient movement of traffic.
- E. Temporary Access may be granted to undeveloped property prior to completion of a final development plan if access is needed for construction of preliminary site access. Temporary Access points shall meet the requirements of these Standards. They are subject to removal, relocation, or redesign after development plan approval.

- F. Secondary Access for emergency Vehicles may be required for certain high volume or public safety sensitive developments. They shall be designed to the satisfaction of the Engineer based on review by the Thurston County Fire Marshal.
- G. No relocation, alteration or reconstruction of existing Access points shall be permitted without prior written approval from the Engineer.
- H. All abandoned Driveway areas shall be removed and the right-of-way (curbing, sidewalk, guardrails, Shoulders, ditch, etc.) shall be properly restored in accordance with these Standards.

## **7.02 Sight Distance**

All Access points shall conform to the minimum requirements in Section 4.03.

## **7.03 Location of Access Points**

- A. The spacing of Access points is critical to maintaining roadway traffic flow and can reduce vehicular and pedestrian conflicts while helping to avoid traffic accidents. As a general rule, Access points shall be a minimum of 130 feet from an Intersection, measured from the property corner nearest the Intersection.

The following guidelines shall be followed for accessing a County road:

### **1. Arterial Roads**

Internal collection of traffic shall be required. Access points shall be limited to one Access point per 500 feet of frontage, taking into account accesses on both sides of the road and adjoining property. Lots within a subdivision shall be designed so that lots adjacent to an arterial road are not allowed direct Access.

### **2. Collector Roads**

Internal collection of traffic shall be required. Access points shall be limited to one Access point per 300 feet of frontage, taking into account accesses on both sides of the road and adjoining property. Lots within a subdivision shall be designed so that lots adjacent to an arterial road are not allowed direct Access.

### **3. Local Roads**

Internal collection of traffic is desirable. Access points are not limited for local roadways; however, the spacing between Driveways and Intersection shall be maxed out as close to 130' as feasibly possible.

If required spacing cannot be achieved, the Access location shall be either located directly across from an existing Access point or a variance requested per Section 2.08.

- B. Where a property has frontage on more than one roadway, Access shall be limited to the lowest volume roadway where the impacts of the new Access are minimized. Access onto other higher volume roads shall be denied in the interest of traffic safety or in order to lessen congestion on the higher volume road.
- C. Access points for commercial or industrial property uses shall be placed directly opposite each other wherever possible. If this is not possible, a separation between the nearest edges of such opposite Access points shall be as close to the spacings as listed in Section 7.04 A. When such spacing cannot be attained, the Engineer may require investigation to substantiate whether or not left turns should be prohibited into or out of the Access points.
- D. Access to commercial or industrial use corner lots shall be located on the lower volume roadway and as close as practicable to the property line most distant from the Intersection. Right in and right out conditions may also be required by the County.
- E. No portion of an Access shall be Permitted within curb returns.
- F. The nearest edge of any Access point flare or radius shall be at least 3 feet from the nearest point of a fire hydrant, no parking zone, utility pole, traffic signal installation or light standard, mailbox cluster or other similar appurtenance.

#### **7.04 Construction of Access Points**

- A. All Driveways/roads accessing a paved County Road shall have a paved apron as shown in Appendix 7-A.
  - 1. Type A – Driveway Access to a Public Road.
  - 2. Type B – Roadway Access to a Public Road.
  - 3. Type C – Access to an Arterial/Collector for a roadway serving 3 or more lots or greater than 20 ADT.
- B. All Access points on arterial and collector roadways shall be installed prior to final project/plat approval.
- C. All Access points serving two or more parcels shall be installed prior to final project/plat approval.

- D. If a ditch or swale is present, a minimum 12" culvert shall be installed beneath the Driveway apron per Appendix 7-B.
- E. The construction of all Access points involving removal of existing vertical curb or vertical curb and gutter shall conform to this section and the following requirements:
  - 1. When cutting through or crossing vertical curbs, gutters and sidewalks, Access approaches shall extend from the curb to back of sidewalk and shall be portland cement concrete. The Driveway slopes through sidewalk shall meet ADA requirements.
  - 2. Any damage to the existing pavement shall be repaired with a full lane 2" grind and overlay extending a minimum 10 feet beyond each edge of the Driveway or as directed by the County Inspector.
- F. Existing trees, street lights, traffic signal facilities, utility poles, and fire hydrants shall be shown on any plan for Access point construction in an area of existing vertical curb.
- G. Prior to commencing any necessary removal or relocation of any public utilities, structures, trees, or plantings due to construction of an Access point, the Applicant/Developer shall secure approval from the Person or Persons having ownership or control of such facilities or features.
- H. All Access points to a County road shall be Permitted and inspected by the County. If said Access point, including culvert, was not Permitted or not installed in accordance with these Standards, it shall be Permitted, removed or reinstalled by the Applicant to the satisfaction of the County. A fee shall be charged for each additional inspection. If the Applicant does not obtain a Permit, remove or reinstall the Access and culvert within thirty days from the date of notice, the County has the right to remove said Access and culvert at the Applicant's expense. Upon removal by the County, all Permits shall be void and the Applicant shall resubmit an application for a new Access.

## **7.05 Horizontal Alignment of Access Points**

All Access points shall be angled a minimum of 75 degrees to the road, 90 degrees preferred, unless designated right turn only, in which case the angle shall be at least 45 degrees and then only with the Engineer's approval. Refer to Appendix 7-A, County Road Accesses.

EXCEPTION: Access points designed for large Vehicles, WB-40 and greater, shall be angled a minimum of 85 degrees to the road.

## **7.06 Vertical Alignment of Access Points**

- A. Approach Grades and configuration shall accommodate future road widening to prevent major Access point reconstruction.
- B. For maximum Access Grades, refer to Appendix 7-C, Access Point Grades.

## **7.07 Left Turn, Acceleration and Deceleration Lanes**

The need for left turn, acceleration and Deceleration Lanes in conjunction with development proposals shall be determined based on the criteria in AASHTO and the WSDOT Design Manual. Evaluation by the Engineer may require submittal of traffic data by the Applicant/Developer.

## **7.08 Intersections**

Refer to Section 4.08

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THURSTON COUNTY  
PUBLIC WORKS

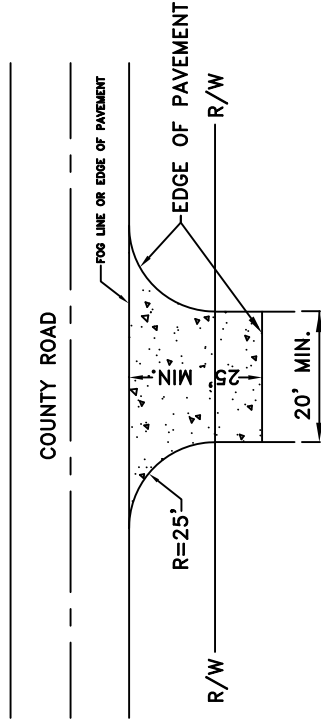
DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

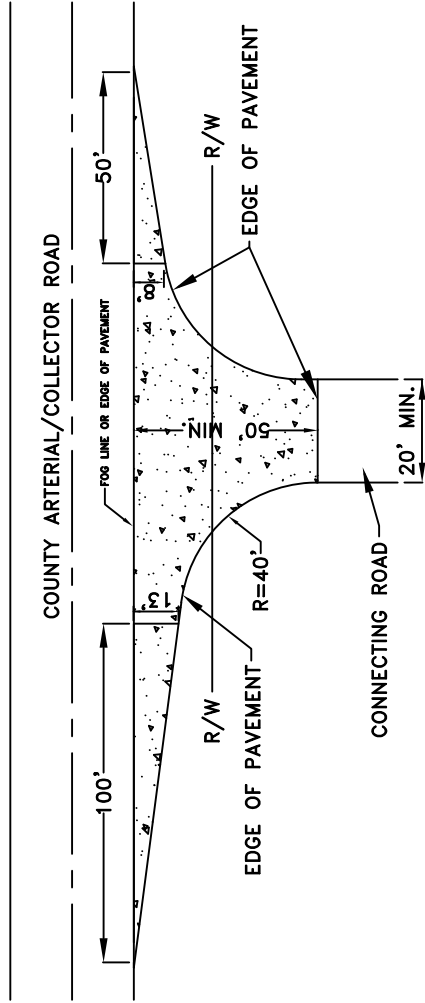
COUNTY  
ROAD  
ACCESSES

APPENDIX 7 – A

### TYPE B LOCAL ROAD ACCESS



### TYPE C ARTERIAL/COLLECTOR ROAD ACCESS (Access for 3 or more lots or greater than 20 ADT)



### GENERAL NOTES

1. ALL APPROACHES SHALL BE INSTALLED WITH A STRUCTURAL CROSS SECTION THAT MATCHES THE SECTION OF THE CONNECTING DRIVEWAY/ROAD. GRAVEL DRIVEWAY/ROAD APPROACHES SHALL BE PAVED (2" MIN. ASPHALT, 6" MIN. CONCRETE).
2. ALL APPROACHES ARE SYMMETRIC ABOUT CENTERLINE UNLESS OTHERWISE NOTED.
3. WHERE LARGER TRUCK TURNING MOVEMENTS ARE ENCOUNTERED, LARGER RETURN RADII AND RIGHT TURN TAPERS MAY BE REQUIRED. RADIUS AND TAPERS SHALL BE DETERMINED BY THE COUNTY ENGINEER.
4. WHERE REQUIRED, CULVERTS SHALL BE IN ACCORDANCE WITH APPENDIX 7-B.



LAST REVISED	12/2018



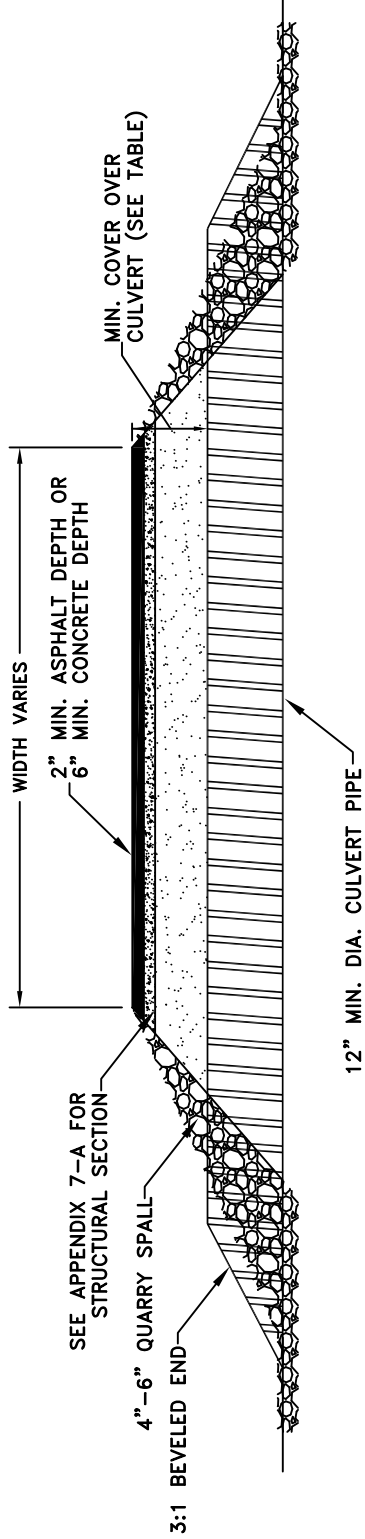
THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

CULVERTS

APPENDIX 7 – B



	DRIVEWAY MINIMUM COVER	ROADWAY MINIMUM COVER
PVC (PLASTIC)	6"	12"
CONCRETE	6"	12"
CORRUGATED METAL, ALUMINIZED	6"	12"
DUCTILE IRON (STEEL)	2"	10"

#### GENERAL NOTES

1. CULVERT BOTTOM SHALL MATCH EXISTING DITCH/SWALE FLOWLINE. THIS MAY REQUIRE RE-GRADING OF THE DITCH/SWALE.
2. CULVERT SIZE SHALL MATCH THE DIAMETER OF THE CULVERT IMMEDIATELY UPSTREAM OR DOWNSTREAM, WHICHEVER IS LARGER.
3. CULVERT ENDS SHALL BE ARMORED WITH 1' MIN. DEPTH OF 4"-6" QUARRY SPALLS AND EXTEND 6' BEYOND CULVERT ENDS.
4. PREFERRED CULVERT MATERIAL IS PLASTIC, BUT ALTERNATIVE MATERIAL WILL BE CONSIDERED ON A CASE BY CASE BASIS.
5. ZINC COATED METAL PIPE IS NOT AN ALLOWED ALTERNATIVE CULVERT MATERIAL.
6. BEVELED CULVERT ENDS SHALL BE PLASTIC.

LAST REVISED	7/2016



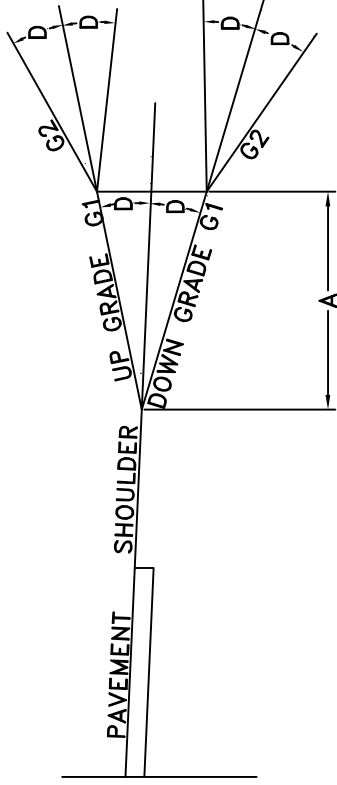
THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

ACCESS  
POINT  
GRADES

APPENDIX 7 – C



DESIGN VALUES			
ROADWAY CLASSIFICATION	APRON LENGTH (A)	GRADE CHANGE (D)	
		DESIRABLE	MAXIMUM
ARTERIAL COLLECTOR LOCAL	≥20 FEET	≤4%	5%
	≥15 FEET	≤5%	6%
	≥10 FEET	≤6%	7%

## ACCESS POINT GRADES AND APRON LENGTHS FOR ROADWAYS AND DRIVEWAYS

### NOTES:

1. PIVOT POINT SHALL BE AT THE EDGE OF THE SHOULDER
2. DESIRABLE WIDTHS SHOWN WILL BE THE REQUIREMENT, UNLESS THE APPLICANT DEMONSTRATES TO THE COUNTY ENGINEER'S SATISFACTION THAT THEY CANNOT BE OBTAINED.
3. VERTICAL CURVES ARE NOT TO EXCEED A 3-1/4 INCH HUMP OR A 2 INCH DEPRESSION IN A 10 FOOT CORD.
4. IN CASES OF FUTURE LANE WIDENING AND ADDITIONAL LANES, THE APRON LENGTH SHALL BE INCREASED TO ACCOMMODATE FUTURE WIDENING.

## **CHAPTER 8 ROADSIDE FEATURES**

### **8.00 ROADWAY FEATURES**

- 8.01 Side Slopes
- 8.02 Survey Monuments
- 8.03 Mailboxes
- 8.04 Landscaping
- 8.05 Road Illumination
- 8.06 Roadway Barricades
- 8.07 Bollards
- 8.08 Guardrail
- 8.09 Parking within the Right-of-Way
- 8.10 Signs
- 8.11 Roadway Striping, Buttoning, and Delineation
- 8.12 Clear Zone

Appendix 8 - A      Survey Monument Standard  
Appendix 8 - B      Community Mail Box

## **8.00 ROADWAY FEATURES**

### **8.01 Side Slopes**

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

### **8.02 Survey Monuments**

Refer to Appendix 8-A for Survey Monument Standard

#### **A. Reference**

All surveyed monuments horizontal or vertical tied, placed, replaced or calculated shall be coordinated (X,Y,Z) to the Thurston County High Precision Network (TCHPN).

#### **B. Placement**

Survey control monuments, including existing monuments disturbed, destroyed or removed during construction, shall be placed or replaced by a registered surveyor at the expense of the Applicant in accordance with recognized good practice of land surveying, and in conformance with all applicable state law, rules and local regulations.

#### **C. Records**

A legal survey conforming to Chapter 58.09 RCW shall be filed with the County Auditor and the Engineer showing methods used to establish the monument's position with references tying the monument's location. Formal recorded documents, containing the registered surveyor's certification, monumentation, and staking, shall be placed by the registered surveyor in accordance with Chapter 58.09 RCW.

#### **D. Plat Surveys**

Survey monuments shall be placed at all exterior boundary corners of plats. A signed and sealed statement from a registered surveyor that all monuments and corners indicated on the subdivision plat have been set and are in good condition shall be required prior to final plat approval.

## E. Road Surveys

Survey monuments, Appendix 8-A, shall be placed in County roads at:

1. Points of curvature
2. Points of tangent
3. Intersections
4. Centers of Cul-de-Sacs
5. As needed for intervisibility
6. As required by the County

If a PI falls within the paved roadway surface, a PI monument may replace the corresponding PC and PT monuments. Monuments shall not be placed in landscape Medians. Witness monuments shall be offset in the roadway and so described.

### 8.03 Mailboxes

Mailboxes shall be set in accordance with the LAG manual, and as follows:

- A. U.S. Postal Service approval shall be required.
- B. Mailbox supports shall be of Breakaway design.
- C. Mailbox clusters shall conform to WSDOT Standard Plans.
- D. Community mailboxes shall only be allowed in the right-of-way within Urban Areas and shall be constructed according to that particular urban growth area standard. Within the Grand Mound urban growth area, community mailboxes shall be constructed as shown in Appendix 8-B.

### 8.04 Landscaping

- A. All Landscaping within County right-of-way shall require approval of the Engineer.
- B. Landscaping shall be of the type and placement to achieve and maintain the Sight Distance requirements in Section 4.03.
- C. No Landscaping shall be allowed within a drainage ditch or drainage swales; exceptions would be grass or other Landscaping that has been specifically designed for the ditch/swale and has been accepted by the Engineer.
- D. Installation and maintenance of all Landscaping shall be the responsibility of the Applicant or the homeowner's association.
- E. All conditions of the Landscaping section of Thurston County Code 13.56 shall also apply.

## **8.05 Road Illumination**

- A. Road illumination may be required at school bus stops as identified by the local school district.
- B. Road illumination shall be installed at critical Intersections as required by the County.
- C. Roadway Illumination shall be installed at all new or upgraded Intersections that serve over 25 lots or 250 ADT.
- D. Roadway Illumination shall be installed at all new or upgraded Intersections with Channelization.
- E. Illumination systems shall be in accordance with the WSDOT Design Manual.
- F. Installation, ownership, maintenance, and operation billing shall be the responsibility of the Applicant or the homeowner's association.

## **8.06 Roadway Barricades**

Refer to WSDOT Standard Plans.

## **8.07 Bollards**

### **A. Acceptable Uses**

When necessary to deny motor Vehicle Access to an easement, tract, or trail, except for maintenance or emergency Vehicles, the point of access shall be closed by a line of bollards.

### **B. Placement**

One or more fixed bollards shall be placed on each side of the Traveled Way and removable, locking bollards shall be placed across the Traveled Way and outside of the roadway Clear Zone. Spacing shall provide one bollard on centerline of trail and other bollards spaced at intervals not exceed 50 inches on centers.

### **C. Fire Access**

No fire apparatus access roads shall be blocked in this manner without the approval of the County Fire Marshal and local Fire District Chief.

## **8.08 Guardrail**

All roads that do not meet the minimum roadway Clear Zone and recovery area criteria, to include slopes, shall be required to install guardrail. An exception to this is when the installation of guardrail creates a greater Hazard with the potential of redirecting errant Vehicles into oncoming traffic.

Guardrail installations shall conform to WSDOT Standard Plans, WSDOT Design Manual and LAG Manual.

## **8.09 Parking within the Right-of-Way**

Parking shall not be allowed in County right-of-way unless accepted by the Engineer.

## **8.10 Signs**

- A. Road name signs are required for:
  - 1. All Public Roads.
  - 2. Private Roads providing Access to 5 or more legal lots.
- B. Road name signs shall be installed in accordance with the MUTCD and current edition of the Sign and Pavement Marking Requirements and Guidelines for Thurston County.
- C. Placement of Private Road name signs in County right-of-way shall require an encroachment permit and be installed by the Applicant at Applicant's expense.
- D. Road naming shall comply with applicable Thurston County Code.
- E. Stop signs shall be installed in accordance with the MUTCD.
- F. Any sign placed in the County right-of-way not conforming to these Standards may be removed by County forces.

## **8.11 Roadway Striping, Buttoning, and Delineation**

- A. When required by the County, roadway striping, buttoning or other traffic delineators shall be installed in accordance with the Accepted Plans, the MUTCD and the County traffic division.
- B. Before any pavement marking work takes place, the Applicant shall contact the County traffic division. An on-site meeting may be required to review the work and method of construction.

## **8.12 Clear Zone**

All roadway features shall meet Clear Zone requirements according to section 4.18-A.



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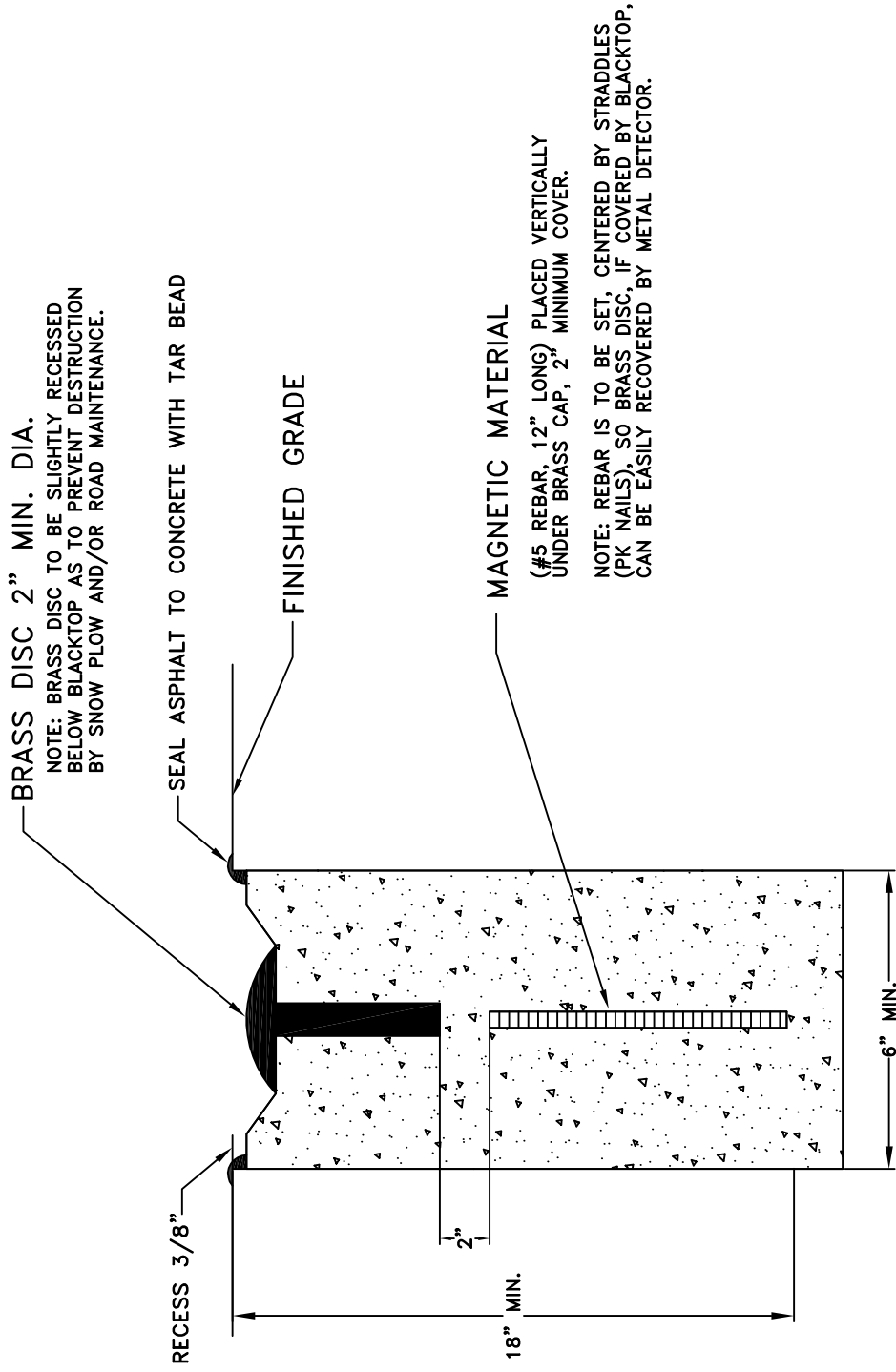
THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

SURVEY  
MONUMENT

APPENDIX 8 – A



CONCRETE SHALL BE CLASS 4000 MIX. THE HOLE SHALL BE CORED TO AN 18" MIN. DEPTH. ALL LOOSE MATERIAL SHALL BE REMOVED FROM THE BOTTOM OF THE HOLE. THE CONCRETE SHALL BE PLACED ON FIRM UNDISTURBED EARTH. THE TOP OF THE CONCRETE SHALL BE TROWELED SMOOTH AND THE BRASS DISC SHALL BE CENTERED WITH THE TOP SLIGHTLY RECESSED AS NOTED ABOVE. REBAR SHALL BE CENTERED BENEATH THE BRASS DISC USING STRADDLES.

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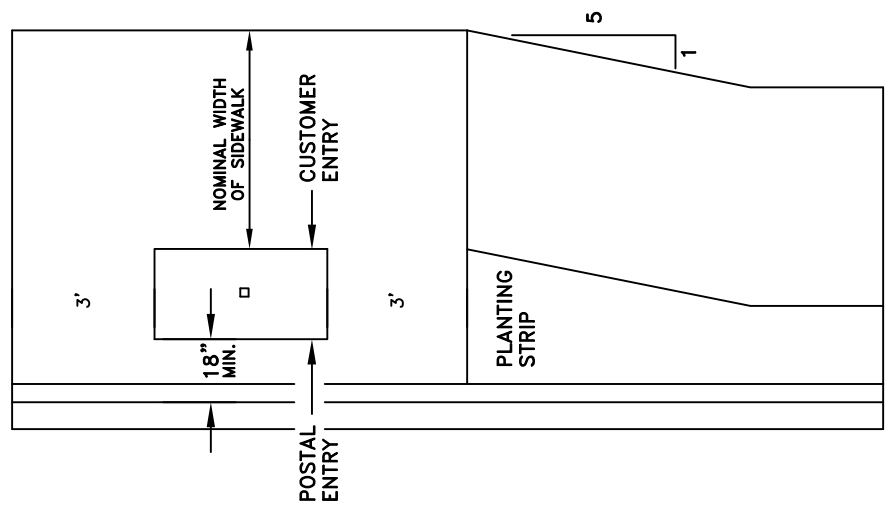
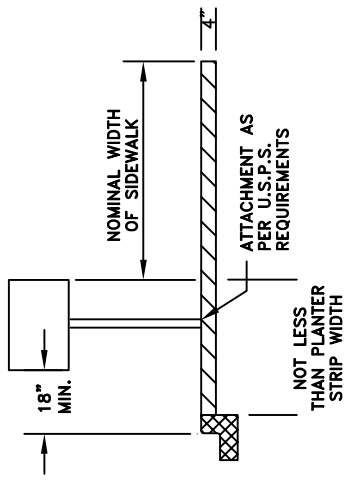
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DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

COMMUNITY  
MAIL BOX

APPENDIX 8 – B



- GENERAL NOTES:
1. SEE SECTION 8.03 FOR ADDITIONAL REQUIREMENTS.
  2. LOCATE OUTSIDE INTERSECTION SIGHT-DISTANCE OBSTRUCTION AREAS.

## **CHAPTER 9 RETAINING WALLS**

### **9.00 RETAINING WALLS**

9.01 Design Criteria

9.02 Rock Retaining Walls

Appendix 9 - A      Rock Retaining Wall

## **9.00 RETAINING WALLS**

### **9.01 Design Criteria**

- A. Retaining walls on public or Private Roads shall be designed and constructed to meet the minimum requirements of the AASHTO Bridge Specifications.
- B. Retaining walls with a height of four feet or greater shall be designed, signed, and stamped by a Washington licensed engineer, and shall be submitted by the Applicant for approval by the Engineer.
- C. Refer to Appendix 9-A.

### **9.02 Rock Retaining Walls**

- A. Rock retaining walls, not exceeding the maximum height specified in Appendix 9-A, may be used for the containment of cut slopes or fill embankments in stable soil conditions which will result in no significant foundation settlement or outward thrust upon the walls.

For heights over 4 feet or when soil is unstable, a structural wall of acceptable design shall be used and calculations shall be submitted to the County for approval. A soils investigation and report prepared by a Washington licensed geotechnical engineer may be required by the County if soil conditions are questionable.

- B. Materials:
  - 1. Rock sizes shall be as shown in Appendix 9-A.
  - 2. The rock material shall be as nearly rectangular as possible. No stone shall be used which does not extend through the wall. The rock material shall be hard, sound, durable and free from weathered portions, seams, cracks and other defects. The rock density shall be a minimum of 160 pounds per cubic foot.
- C. The retaining wall shall be started by Excavating a trench, not less than 12 inches in depth below subgrade in Excavation sections or below the existing ground level in embankment sections.

- D. Rock selection and placement shall be such that there will be minimum voids and, in the exposed face of the wall, no open voids over 6 inches across in any direction. The final course shall have a continuous appearance and be placed to minimize erosion of the Backfill material. The larger rocks shall be placed at the base of the rockery so that the wall will be stable and have a stable appearance. The rocks shall be placed in a manner such that the longitudinal axis of the rock shall be at right angles or perpendicular to the rockery face. The rocks shall have all inclining faces sloping to the back of the rockery. Each course of rocks shall be seated as tightly and evenly as possible on the course beneath.
- E. The wall Backfill shall consist of gravel Backfill for walls as per the Standard Specifications. This material shall be placed to a 12-inch minimum thickness between the entire wall and the cut or fill material. The Backfill material shall be placed in lifts to an elevation approximately 6 inches below the top of each course of rocks as they are placed, until the uppermost course is placed. Any Backfill material on the bearing surface of a rock course shall be removed before setting the next course.
- F. A 6-inch, minimum inside diameter, perforated drain Pipe shall be installed behind the first course of rock and laid on original ground. The perforated drain Pipe shall be surrounded by gravel Backfill for drains as shown in Appendix 9-A. Positive drainage for the perforated drain Pipe shall be provided and shown on the construction plan.
- G. The face of the rockery shall be sloped at 1/4 to 1 or flatter.
- H. For rock walls in fill sections all fill material placed beyond the Backfill shall be placed and compacted in a maximum of 6-inch compacted lifts.

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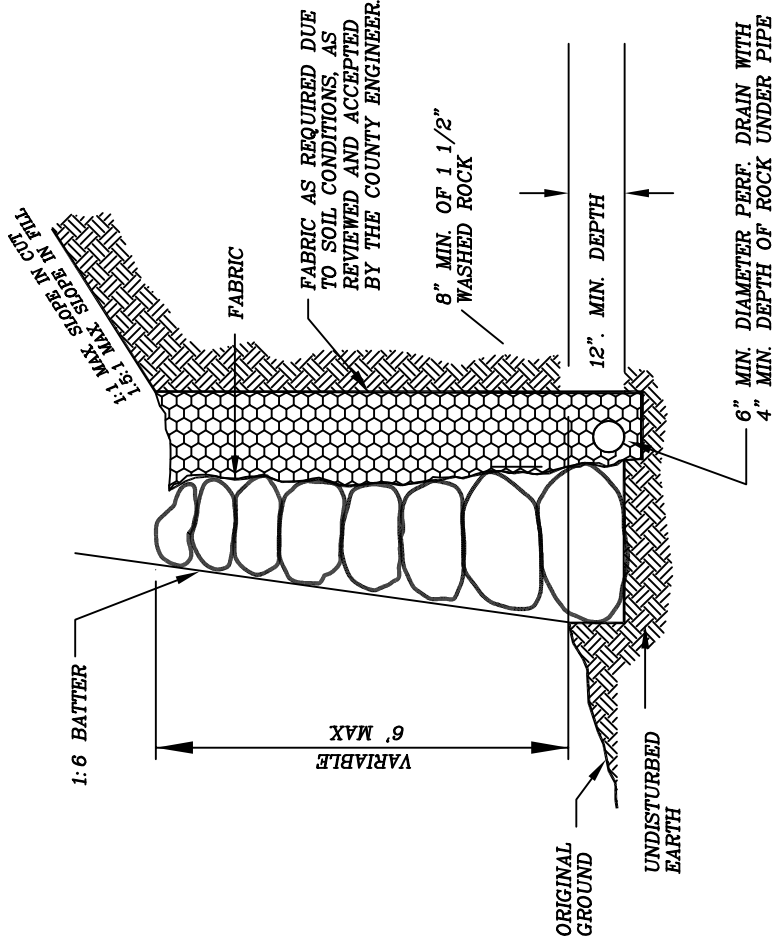
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REVIEW

ROADWAY  
STANDARDS

ROCK  
RETAINING  
WALL

APPENDIX 9 – A



#### GENERAL NOTES:

1. Rockeries higher than 5' shall be constructed of rocks of graduated sizes from 5-man to 2-man from bottom to top. Rockeries of 5' or lower shall be constructed of 3-man to 2-man from bottom to top. Rock size categories shall include:
  - Two-man rocks (300 to 600 pounds), 13 inches in least dimension;
  - Three-man rocks (800 to 1200 pounds), 16 inches in least dimension;
  - Four-man rocks (1500 to 2200 pounds), 18 inches in least dimension;
  - Five-man rocks (2400 to 3400 pounds), 24 inches in least dimension.
2. The rockery shall be installed with a smooth face.
3. The long dimension of the rocks shall be oriented towards the bank to provide maximum stability.
4. The rock shall be placed so as to lock into two rocks in the lower tier.
5. Call for inspection prior to base course being placed (for verification of rockery height, foundation material and rock size).
6. Design varying from those indicated shall carry the seal of a civil engineer experienced in soil mechanics.

## **CHAPTER 10 BRIDGES**

### **10.00 BRIDGES**

- 10.01 Principle References
- 10.02 Bridge Geometrics
- 10.03 Bridge Design Criteria
- 10.04 Special Permits
- 10.05 Existing Bridges

## **10.00 BRIDGES**

### **10.01 Principal References**

All proposed bridges shall be designed and constructed to meet the minimum requirements set forth in the latest edition, including all interim addenda, of the AASHTO Bridge Specifications and shall meet or exceed the HL-93live load.

All submittals, including drawings, calculations and reports, shall be stamped and signed by a professional engineer licensed in the State of Washington.

### **10.02 Bridge Geometrics**

- A. The bridge roadway shall comprise the full width and configuration of the road including curbs, sidewalks, bike lanes and/or
- B. The minimum width for a bridge shall be measured between curbs or between faces of rails, whichever is less. The minimum width shall be no less than 20 feet for Private Roads and 30 feet for Public Roads.
- C. The bridge shall be designed to accommodate a 100-year storm event with a 2 foot debris clearance. A hydraulic report demonstrating this shall be submitted to the County for review and acceptance.
- D. Accommodations shall be made for utilities, including likely future improvements.
- E. All bridges proposed to be dedicated to the County shall be constructed of pre-stressed or post-tensioned concrete unless otherwise accepted by the Engineer.
- F. Where typical speed is 35 MPH or higher and significant pedestrian, bike and/or horseback traffic can be expected, the Engineer may require that the lanes for these other modes of traffic be separated from motor Vehicle traffic by a physical barrier.
- G. Approach railings shall be made structurally contiguous with bridge railings.
- H. Overhead vertical clearances shall be: 16.5 feet minimum over the roadway 8 feet minimum over the walkway or sidewalk.



### **10.03 Bridge Design Criteria**

- A. Bridges that will carry pedestrian and bicycle traffic shall be designed in accordance with AASHTO's LRFD Guide Specifications for the Design of Pedestrian Bridges.
- B. Approach slabs shall be required for all bridges. New bridge plans shall provide pavement seats for approach slabs unless otherwise accepted by the Engineer. Waiver of the requirement for approach slabs may be considered only on the basis of adequate geotechnical analysis.
- C. New bridge decks and approach slabs shall be designed using epoxy coated rebar other.
- D. Criteria under other recognized road bridge project classifications, such as those of 3-R projects, set forth in the LAG Manual, may be applied under conditions deemed appropriate by the Engineer.
- E. Requirements for future resurfacing shall be considered.

### **10.04 Special Permits**

Permit requirements for construction or reconstruction of bridges include but are not limited to the following:

- A. Bridges over navigable waters require U.S. Coast Guard permits.
- B. Bridges involving deposition of material in waters of the United States or their adjacent wetlands require a U.S. Army Corps of Engineers Permit.
- C. Any work involving alteration of flow or bed materials below the ordinary high water line of any water body or water course requires a Hydraulic Project approval from the State Department of Fish and Wildlife.
- D. Any project requiring a U.S. Army Corps of Engineers Permit also requires a Water Quality Certification from the State Department of Ecology.
- E. Bridges across streams in State Flood Control Zones require a permit from the State Department of Ecology.
- F. Where Bridge structures lie on or over submerged lands, a lease from the Washington State Department of Natural Resources may be necessary.
- G. Structures located on shoreline zones as defined in the Thurston County Shoreline Master Program require a substantial development permit from the Thurston County Development Services Department, subject to concurrence of the State Department of Ecology.

## **10.05 Existing Bridges**

Existing bridges shall be evaluated against these Standards. A report shall be prepared by a professional engineer licensed in the State of Washington specifically outlining how the existing bridge compares to the current Standards. The report shall also contain calculations for the structural loads of the bridge and the engineer's certification that the bridge meets minimum loading requirements for emergency Vehicles.

## **CHAPTER 11 DRAINAGE**

### **11.00 DRAINAGE**

11.01 General Requirements

11.02 Catch Basins, Manholes, Inlets and Culverts

11.03 Minimum Grades

## 11.00 DRAINAGE

All project submittals shall be in compliance with the most current version of the Thurston County Drainage Design and Erosion Control Manual.

The Drainage Manual establishes requirements and provides guidance for managing the quantity and quality of stormwater runoff produced by development and redevelopment in Thurston County. The Drainage Manual establishes minimum requirements for projects of all sizes and types and the required submittals to demonstrate compliance with the minimum requirements. The Drainage Manual is also intended to comply with the National Pollutant Discharge Elimination System (NPDES) Phase II permit issued to Thurston County by the Department of Ecology.

The use of “onsite measures” (Low Impact Development) will be an integral part of the planning and design of all development in Thurston County. The ultimate goal of stormwater management for new development and redevelopment will be to mimic the natural pre-development hydrologic conditions of the site as closely as possible with respect to infiltration, evapotranspiration, water quality, and quantity of surface water release from the site. To this end, the design sequence for stormwater management systems shall be as follows:

- A. Minimize disturbed areas and maximize open space and native vegetation retention.
- B. Limit impervious surface to the minimum necessary and implement source control measures to prevent contact of stormwater with pollutant generating sources.
- C. Use “onsite” measures such as dispersion, bio-retention (rain gardens), and small scale infiltration to the maximum extent practicable to reduce concentrated flows of stormwater.
- D. Disconnect impervious surfaces to the maximum extent practicable to slow the runoff of stormwater from a site and increase the time of concentration. Examples include filter strips, porous paving, sheet flow of runoff to native vegetation, and bio-retention.
- E. For any remaining concentrated stormwater flows that exceed specific thresholds, provide treatment and infiltrate to the maximum extent practicable and at least to the level of infiltration provided by the site in pre-development conditions.
- F. Minimize release of surface water to protect stream channels and downstream properties by meeting design criteria established for peak flow rate and volume per drainage manual requirements.

- G. Implement controls to manage stormwater runoff during construction to eliminate discharge of sediment-laden water offsite and maintain these controls until the site is stabilized.
- H. Establish and implement a plan for the operation and maintenance of the stormwater facilities and provide ongoing maintenance, repair, and operations for those facilities to ensure continued protection of water quality and flow control.

### **11.01 General Requirements**

Drainage facilities within current or future County Right-of-Way must be of the type and nature that can be easily maintained by County forces. This includes, without limitation:

- Minimum 12 inch diameter storm sewer/culvert Pipe
- Utilize WSDOT standard plans for typical catch basins, Manholes, vaults, etc.
- Minimum 18 inch depth for roadside ditches and swales
- Except for Bio-Retention Swales, all other facilities, such as french drains, curtain drains, infiltration trenches, drywells, and stormwater ponds shall be installed outside of County Right-of-Way.

Stormwater facilities shall be designed to accommodate, not only onsite stormwater runoff from the project, but also the stormwater from the addition of frontage improvements, including tributary area.

### **11.02 Catch Basins, Manholes, Inlets and Culverts**

- A. Maximum spacing on surface drainage courses between inlets or catch basins shall be:

- 150 feet on road Grades less than 1.0%
- 200 feet on Grades from 1.0% to 3.0%
- 300 feet on Grades greater than 3.0%

Additional catch basins shall be installed as needed to confine drainage to the gutter and prevent road drainage from sheet flowing across roadways or Intersections.

- B. Maximum spacing between access structures on storm sewers shall be 300 feet.
- C. On storm sewers with depths greater than five feet from the lid/grate to invert of lowest Pipe, a Type 2 catch basin shall be used.

- D. Location of drainage structures shall not conflict with ADA ramps or accessible pathways; nor shall ponding occur where ADA ramps meet the roadway.
- E. Culverts and Pipe outlets/inlets 24 inches or greater with a invert depth of 4' or greater (measured from edge of road) located within County Right-of-Way shall incorporate a headwall constructed of either concrete or  $\geq 2$  man rock. Headwalls shall be design in accordance with Chapter 9 of these Standards.

See Chapter 7 and Appendix 7-B of these Standards for additional culvert requirements.

### **11.03 Minimum Grades**

Gutter, ditch and swale flow line Grades shall not be less than 0.5% when designed to convey water.

## **CHAPTER 12 UTILITIES**

### **12.00 UTILITIES**

- 12.01 Underground Facilities
- 12.02 Overhead Facilities
- 12.03 Fiber Optic Facilities
- 12.04 Vegetation and Landscaping Management
- 12.05 Installation on Rights-of-Way and Trail Structures
- 12.06 Restoration of Rights-of-Way

Appendix 12 - A      Utility Trench Detail

## **12.00 UTILITIES**

In addition to these standards, Thurston County Code Title 13 shall also govern utility installations within the Rights-of-Way. For installation of utilities owned/maintained by Thurston County, the Development Standards for Water and Sewer Systems shall also be consulted.

### **12.01 Underground Facilities.**

- A. Whenever all existing Facilities are located underground within Rights-of-Way, a Permittee or Owner must also locate its Facilities underground.
- B. Whenever all new or existing Facilities are located or relocated underground within Rights-of-Way, a Permittee or Owner that currently occupies the same Rights-of-Way shall concurrently relocate its Facilities underground at its expense.
- C. All Roadway and Trail crossings shall be done by means of Boring or pushing (Trenchless installation). The County will only allow an open trench installation after three bore/push attempts; or if the County knows that a bore/push is not feasible in a particular location.
- D. Location and Alignment.
  - 1. All crossings shall be perpendicular to the centerline of the Road or Trail.
  - 2. Where practicable, crossings should avoid deep cuts, footings of bridges and retaining walls, or locations where Roadway or Trail drainage would be affected. The Permittee shall be responsible for protecting these, or restore to the County's satisfaction.
  - 3. Longitudinal installations should run parallel to the Roadway and lie as near as practicable to the Rights-of-Way line. Installations which cannot be so installed will be allowed within the Rights-of-Way, provided that the installation will not adversely affect the design, construction, stability, structural integrity, traffic safety or operation of the Roadway. Longitudinal Installations are typically not Permitted on Trail Rights-of-Ways.
  - 4. Where irregularly shaped portions of the Rights-of-Way extend beyond the normal Rights-of-Way limits, a uniform alignment of Facilities shall be allowed.
  - 5. Where existing Facilities are in place, new Facilities shall be compatible with the existing installations and conform to this Chapter.



6. Any water or sewer line other than a main line shall not be placed parallel to a County Road or Trail within the County Rights-of-Way.
- E. Cover. The Grade of and resulting Cover for a new or relocated underground Facility shall be a minimum of thirty vertical inches below finished Grade for all installations within County Rights-of-Way, or in compliance with applicable federal, state and industry requirements if greater; provided, however, where less than the minimum Cover is made necessary to avoid obstacles, the Facilities shall either be rerouted or protected with a Casing, concrete slab or other method acceptable to the County.
- F. Casing.
1. Casings shall be installed for Roadway and Trail crossings where required by appropriate industry code.
  2. Casings may be required for the following conditions:
    - a. As an expediency in the insertion, removal, replacement or maintenance of a carrier line crossing or other locations where it is necessary in order to avoid open trench construction;
    - b. As protection for carrier lines from external loads or shock either during or after construction of a road;
    - c. For jacked or bored installations of coated carrier lines unless assurance is provided to the County that there will be no damage to the protective coating.
  3. Within the Rights-of-Way, Casing Pipes shall extend beyond the toe of fill slopes, back of roadway ditches, or outside of curbs.
  4. Other than for necessary carriers, vents and/or drains, Casing Pipes shall be sealed at both ends.
  5. Casing Pipes shall be designed to support the load of the road and superimposed loads thereon and, as a minimum, shall equal the structural requirements for road drainage facilities.
  6. Casing Pipes shall be composed of materials of sufficient durability to withstand conditions to which they may normally be exposed.

G. Uncased Carriers.

1. The carrier Pipe shall conform to the material and design requirements of the appropriate utility industry and governmental codes and specifications.
2. The carrier Pipe shall be designed to support the load of the road, plus superimposed loads thereon, when the Pipe is operated under all ranges of pressure from maximum internal to zero pressure.

H. Appurtenances.

1. Vents shall be required for Casings, tunnels and galleries enclosing carriers of fuel where required by federal safety standards. Vent standpipes shall be located and constructed so as neither to interfere with maintenance of the Road or Trail nor to be concealed by vegetation. Preferably standpipes should stand by a fence or on the Rights-of-Way line. It is the responsibility of the owner to keep these vents free of vegetation in accordance with Section 12.04, Vegetation and Landscaping Management.
2. Drains shall be required for Casings, tunnels or galleries enclosing carriers of liquid, liquefied gas or heavy gas. Drains for carriers of hazardous materials shall be directed to holding areas to prevent the potential for surface or groundwater contamination. Drains for which only water or other nonhazardous liquids may discharge may be directed into the roadway ditch or natural water course at locations accepted by the County. The drain outfall shall not be used as a wasteway for routine purging of the carrier unless specifically authorized by the County.
3. Location markers and emergency information should be used when required by applicable state and federal standards.
4. Manholes shall be designed and located in a manner that will not interfere with the wheel paths of the existing Roadway or any future build-out of the Roadway. Where practicable, installations in the Pavement Structural Section or Shoulders should be avoided.

I. Installation.

Installations shall ensure safety of traffic and preservation of the Roadway and Trail structures, and required construction shall, unless otherwise provided in the approved Permit, be in accordance with the following controls:

1. Trenchless construction shall be required for underground Facilities crossing Roads and Trails paved with asphalt concrete or cement concrete and for roads paved with bituminous surface treatment unless otherwise directed by the County.
  - a. If sufficient Rights-of-Way exists, the length of Trenchless construction shall extend a minimum of four feet from edge of Pavement Structural Section, except that a lesser standard may be Permitted by the Engineer when conditions warrant.
  - b. Over breaks, unused holes, deactivated or abandoned Casings shall be Backfilled as directed by the County.
  - c. Water Boring under Roadways and Trails shall not be Permitted.
  - d. Existing carriers and Conduit installed under a Roadway or Trail shall be physically located prior to Facility installation.
2. Trenched Construction and Backfill.
  - a. Where the pavement must be removed, it shall first be cut in vertical (or undercut), continuous straight lines.
  - b. Trenches shall be cut to have vertical faces, where soil and depth conditions permit, with a maximum width of outside diameter of Pipe plus two feet. Shoring shall comply with the Washington State Department of Labor and Industries Safety Code.
  - c. The Pipe or carrier shall be installed and the trench Backfilled in a manner assuring no deformation of the Pipe likely to cause leakage and deterioration of the structural integrity of the Roadway or Trail structure.
  - d. All trenching shall be performed and restored according to Appendix 12-A.
3. Plowing of communication and electrical lines on or adjacent to existing roads by means of a vibratory plow may be allowed by the County; provided, that the structural integrity of the Roadway is not impaired.

J. One Number Locator Service.

Utility installations shall be located and identified in accordance with Chapter 19.122 RCW (Washington State One Call System), as enacted or subsequently amended.

## **12.02 Overhead Facilities.**

- A. Single-pole construction and joint use of the pole is desirable and shall be used whenever feasible. Telecommunication Facilities and Cable Facilities shall be installed on pole attachments to existing utility poles only, provided, however, surplus space is available.
- B. The minimum vertical clearance for overhead power and communication lines above the ground and the minimum lateral and vertical clearance from bridges shall be in compliance with the National Electrical Code and Chapter 296-46B WAC.
- C. Where irregularly shaped portions of the Rights-of-Way extend beyond the normal Rights-of-Way limits, a uniform alignment of Facilities may be allowed.
- D. Overhead lines shall not be strung in a way that they impede the line of sight to a traffic signal.
- E. Poles shall be located so as not to obscure traffic signs and line of sight at Intersections and Driveways.

## **12.03 Fiber Optic Facilities.**

- A. Depth. All fiber optic systems shall be installed at a depth of not less than thirty-six inches below the final Grade.
- B. Location Marking. All fiber optic cable installers shall mark the installation of the system with marking tape or locating wire. When marking tape is placed, it shall be used at twelve- to eighteen-inch depth. Where nonmetallic fiber cable is used, a locator wire shall be used and must be at same depth as fiber optic cable.
- C. Fiber optic systems shall also comply with Section 12.01 Underground Facilities and Section 12.02 Overhead Facilities.

## **12.04 Vegetation and Landscaping Management.**

Refer to Thurston County Code 13.56.

## **12.05 Installations on Roadway and Trail Structures.**

Attachment of Facilities to a Roadway or Trail Structure may be allowed by the Engineer where such attachment conforms to sound engineering considerations for preserving the Roadway or Trail Structure and its safe operation, maintenance and appearance; provided that any damage to such Facility attached to a Roadway and or Trail Structure shall be the responsibility of the Owner. The attachment shall be in accordance with the following:

- A. Attachment of a Facility shall not be considered unless the Structure in question is of a design and in a condition that is adequate to support the additional load and can accommodate the Facility without compromise of Roadway or Trail features, including reasonable ease of maintenance.
- B. Manholes and other access points shall not be placed within the wheel paths of the existing Roadway or any future build-out of the Roadway.
- C. Pipelines carrying a hazardous transmittant, not including natural gas, shall not be attached to Roadway or Trail Structures.
- D. The Facility attachment shall not reduce the clearance of a Structure where such clearance is critical. Attachment to the outside of a Structure shall be avoided where there are reasonable alternatives.
- E. Facility mountings shall be of a type which shall not create noise resulting from vibration.
- F. The hole created in a Structure abutment shall be sleeved, shall be of the minimum size necessary to accommodate the Facility, and shall be sealed to prevent any leakage of water or Backfill material.
- G. After the Facility passes through the abutment, the Facility may be required to curve or angle out to align outside the Road/Trail bed area in as short a distance as is operationally practicable.
- H. Facilities shall be suitably insulated, grounded and carried in protective Conduit or Pipe from point of exit from the ground to reentry.

## **12.06 Restoration of Rights-of-Way.**

Refer to Thurston County Code 13.56.



## **CHAPTER 13**

### **CONSTRUCTION CONTROL AND INSPECTION**

#### **13.00 CONSTRUCTION CONTROL AND INSPECTION**

- 13.01 Basis for Control of Work
- 13.02 Engineer Certification
- 13.03 Inspection Criteria
- 13.04 Notification Requirements
- 13.05 Revisions to Inspection Sequence
- 13.06 Required Inspections to be Performed by the Applicant
- 13.07 Materials Sampling and Testing

## **13.00 CONSTRUCTION CONTROL AND INSPECTION**

### **13.01 Basis For Control of Work**

- A. Work performed within the County rights-of-way, or as described in these Standards, whether by or for a private Applicant, or by a County Contractor, shall be done to the satisfaction of the County and in accordance with the Accepted Plans and specifications and these Standards. Any revisions shall be accepted by the County before being implemented.
- B. The County shall have the authority to enforce these Standards as well as other referenced or pertinent specifications. The County may appoint project assistants and inspectors as necessary to inspect the work on public and Private Roadways. They shall exercise such authority as the Engineer may delegate. On all other projects, the Project Engineer shall be responsible for all inspections as outlined in this chapter.
- C. It is the responsibility of the Applicant, Contractor and their agents to have an accepted set of plans and Permits on the job site wherever work is being accomplished. If requested by the County, the Applicant shall be required to provide tests to substantiate the adequacy and/or placement of construction materials.
- D. It is the responsibility of the Applicant, Contractor, or their agents to notify the County in advance of the commencement of any work on significant projects.
- E. Failure to comply with the provisions of these Standards may result in stop work orders, removal of work accomplished, or other penalties as established by law.
- F. Prior to commencing work on the project, the sponsor shall prepare and submit a signing plan to the Engineer for review and approval. From time to time, as progress of the work indicates, as conditions change, or as required by the Engineer, the sponsor shall revise the signing plan to conform with the existing conditions.

The Applicant shall provide, place, and maintain all Washington certified flagger, flagger protective apparel, barricades, lights, standard signs, cones and other devices, equipment, and personnel necessary for the protection of the public and maintenance of traffic through the limits of the project at the Applicant's expense.



If the County finds an unsafe condition, the Applicant, Contractor, and Project Engineer, if warranted, shall be notified and shall be required to correct the condition immediately. In some circumstances, the County may be required to make the appropriate corrections. The Applicant shall be responsible for all costs incurred by the County.

In addition to the requirements contained in the Standard Specifications, the following will be required:

1. The Applicant shall maintain at least one-way traffic through the limits of construction at all times and shall open the roadway to two-way traffic during periods when actual work is not in progress.
2. Unless otherwise directed by the Engineer, the roadway shall be open to two-way traffic at all times except between the hours of 8:00 a.m. to 4:00 p.m. weekdays.
3. Access to side roads and private approaches shall be maintained at all times unless otherwise authorized by the Engineer.
4. When it becomes necessary to restrict Access to private Driveways for construction purposes, as accepted by the Engineer, the Applicant shall advise affected residents at least 24 hours in advance and cooperate to the fullest extent to minimize inconvenience to residents of the area.

G. Road Closures

Refer to Section 4.13 C.

### **13.02 Engineer Certification**

County may require the Applicant to obtain certification from the Project Engineer to document and certify an inspection at any time during the construction process.

### **13.03 Inspection Criteria**

- A. On all road construction required by Thurston County Code and work performed within the County right-of-way, inspections shall be done under the control of the Engineer.
- B. Unless otherwise instructed by the Engineer, the following inspections are required to be performed by the Project Engineer for all non-platting projects with engineered plans:

1. The Project Engineer or certified erosion and sediment control lead shall ensure proper installation and maintenance of all temporary erosion and sediment control features in accordance with the Accepted Plans, stormwater pollution prevention plan (SWPPP) and according to the Drainage Design and Erosion Control Manual.
  2. Survey staking of invert elevations and catch basins prior to subgrade sign off.
  3. Underground utilities, including storm, sewer and water, shall be inspected prior to and during Backfilling for compliance with APWA Standard Specifications. General Roadway inspection at the stage that drainage system, underground utilities, roadway grading, subgrade and including gravel ballast and compaction is completed, as well as curbing, if required.
  4. General roadway at the stage that crushed surfacing top course has been placed and compacted.
  5. General roadway, while paving is in progress.
  6. Overall roadway, final, after paving, monument inspection, cleaning of drainage systems, and all necessary clean up.
  7. Structural inspections shall be at critical stages of foundation, placement and at assembly of components and final completion and tests, as directed by the Engineer.
  8. Drainage shall be inspected periodically during construction as directed by the Drainage Design and Erosion Control Manual.
- C. Unless otherwise instructed by the Engineer, the following inspections are required to be performed by the Project Engineer for all platting projects with engineered plans:
1. The Project Engineer or certified erosion and sediment control lead shall ensure proper installation and maintenance of all temporary erosion and sediment control features in accordance with the Accepted Plans, stormwater pollution prevention plan (SWPPP) and according to the Drainage Design and Erosion Control Manual.
  2. Survey staking of invert elevations and catch basins prior to subgrade sign off.
  3. Overall roadway, final, after paving, monument inspection, cleaning of drainage systems, and all necessary clean up.

4. Structural inspections shall be at critical stages of foundation, placement and at assembly of components and final completion and tests, as directed by the Engineer.
5. Drainage shall be inspected periodically during construction as directed by the Drainage Design and Erosion Control Manual.

#### **13.04 Notification Requirements**

- A. The County shall be notified 3 business days before construction is started. The Applicant shall be responsible for scheduling a pre-construction conference with the County. Other jurisdictions, Project Engineer, utility companies, subcontractors and other necessary parties to the project shall be present at the pre-construction conference.
- B. The Applicant shall notify the County's Development Review Division at least 2 business days in advance of each required inspection. Failure to comply with inspection requirements shall necessitate appropriate testing and certification as directed by the Engineer. Costs of such testing and certification shall be borne by the Contractor, and for subdivision roads, it shall be the Applicant. At the time that such action is directed by the Engineer, no further work shall be Permitted on the road or subdivision until all tests have been completed and all corrections have been made to the satisfaction of the Engineer.

A list of the required inspections can be found in the associated Permit language, the Standard Construction Notes on the Accepted Plans or as directed by the County Inspector.

#### **13.05 Revisions to Inspection Sequence**

If the Contractor believes that the inspection sequence indicated above does not fit the requirements of a particular project, the Contractor should make a request to the Engineer in sufficient time to Permit revision to the inspection schedule.

#### **13.06 Required Inspections to be Performed by the Applicant**

When it is determined by the Engineer that work being performed requires quality control inspection, the Applicant performing the work shall be required to furnish a qualified inspector(s). All inspection work performed shall be coordinated with the Engineer.

#### **13.07 Materials Sampling and Testing**

Materials sampling and testing shall be by the Applicant in accordance with the Washington State Department of Transportation Standard Specifications or as otherwise determined by the Engineer. All testing results shall be made available to the County Inspector for verification.

## **CHAPTER 14**

### **FRONTAGE IMPROVEMENTS**

#### **14.00 FRONTAGE IMPROVEMENTS**

14.01 Exceptions

14.02 Alternatives

## **14.00 FRONTAGE IMPROVEMENTS**

Frontage Improvements shall be required for all improvement and development projects which have frontage on a Public Road.

Frontage improvements shall include, without limitation, dedication of right-of-way, road widening, bus stop pads, bus shelter pads, passenger shelters, bus pullouts, urban features, bike paths where designated in the current County Comprehensive Plan and safety and drainage improvements, including all tributary runoff. Also required is the upgrading of all existing improvements to meet current ADA standards including, without limitation, sidewalks, pedestrian crossings, Driveway aprons and pedestrian ramps to include the receiving ramp on the other side of the road.

Frontage improvements, including the dedication of right-of-way, shall be installed at the time of development, including the purchase of passenger shelters using specifications and suppliers approved by the local transit authority, if required.

### **14.01 Exceptions**

The Engineer may accept an alternative as set out in Section 14.02 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.

### **14.02 Alternatives**

- A. Exempt from Frontage Improvements

Exemptions may be granted on a case by case basis and will typically be reserved for projects that do not increase traffic from the site by 20 or more ADT, where the cost of onsite improvements are less than 25% of the assessed value and/or the project is located outside of designated urban growth boundaries.

Requests for exemption shall be made in writing and shall explain in detail why the County Engineer should accept this alternative.

## B. Deferral of Frontage Improvements

Any deferred frontage 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 two methods of installation of the deferred frontage improvements. This agreement and covenant shall be executed before the issuance of any improvement and development Permits. The Engineer shall select which method to enforce against the property owner at the time when the deferred frontage improvements are required to be installed. Two methods the property owner shall agree to are:

### 1. Commitment to Participate in an Improvement District

The property owner shall execute and record an agreement and covenant running with the land that ensures the participation of the subject property owner in any local improvement district, road improvement district, transportation benefit district or other similar type of district formed for the construction of such frontage improvements. Said document shall be in a form acceptable to the County Prosecuting Attorney's Office and shall be effective for a period of thirty years from the date of recording. This document shall bind the owner and its designees, heirs, transferees, donees, and/or successors in interest.

### 2. Agreement to Participate in Improvement Project

The property owner shall execute and record an agreement 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 which encompasses the said deferred frontage improvements by paying their share thereof. Such share shall be equal to the County's costs for installing the deferred frontage improvements. 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 frontage 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 thirty years from the date of recording.

Requests for deferral shall be made in writing and shall explain in detail why the County Engineer should accept this alternative.

C. Voluntary Payments

See RCW 82.02.020 as hereinafter amended.

**CHAPTER 15**  
**Un-Opened County Right-of-Way**

**15.00 Un-Opened County Right-of-Way**

15.01 General



## **15.00 UN-OPENED COUNTY RIGHT-OF-WAY**

In order to obtain a land use permit, to include building permits, the Applicant desiring Access via an un-opened County Right-of-Way shall:

- A. Obtain an Access Permit, and
- B. Construct or improve Access within the un-opened County right-of-way in accordance with the following:
  - Serving 10 ADT (1 single family home) – Driveway (see Chapter 4)
  - Serving 11-60 ADT (2-6 single family homes) – Appendix 6B & 6F
  - Serving 61-160 ADT (7-16 single family homes) – Appendix 6A

For 17 lots or more, the Engineer will evaluate each request for access on a case by case basis. Evaluation by the Engineer may require submittal by the Applicant of traffic data and other information.

### **15.01 GENERAL**

- A. All un-opened County right-of-way shall be maintained by the users of the roadway. The County will not maintain nor be liable for un-opened County right-of-way until a Public Roadway is constructed and dedicated to Thurston County.
- B. It is in the best interest of the users of un-opened County right-of-way to have a maintenance agreement between all users of the roadway.

## **CHAPTER 16 URBAN FEATURES**

### **16.00 URBAN FEATURES**

- 16.01 General
- 16.02 Design Standards
- 16.03 Construction Standards for Concrete Work
- 16.04 Bikeways
- 16.05 Planter Strips
  
- Appendix 16 - A     Minor Local & Local Roadway Section
- Appendix 16 - B     Collector Roadway Section
- Appendix 16 - C     Arterial Roadway Section
- Appendix 16 - D     Bike Lane
- Appendix 16 - E     Driveway Apron
- Appendix 16 - F     Curb Cut Inlet
- Appendix 16 - G     Elderberry Access Detail

## **16.00 URBAN FEATURES**

### **16.01 General**

All properties within the Grand Mound Urban Growth Area shall have urban roadway improvements as shown on the typical roadway cross sections in this chapter. These improvements shall include bikeways within locations shown on the Comprehensive Bike Plan.

All existing and proposed Accesses onto the roadways within the Grand Mound Urban Growth Area shall be evaluated for conformance with these Standards.

### **16.02 Design Standards**

The County has set forth minimum standards for the Grand Mound Urban Growth Area as outlined in Appendices 16-A through 16-G which shall be met. Because these are minimum Standards, they may be modified by the Engineer when circumstances warrant it.

Roadway classification shall be according to the most current version of the Grand Mound Subarea Plan (or similarly named document).

The Construction Plans shall be developed and submitted according to Chapter 3.

### **16.03 Construction Standards for Concrete Work**

All concrete work (sidewalks, ramps, curbs, gutters, Driveways, etc.) shall be constructed in accordance with these Standards and the applicable Washington State Department of Transportation Standard Specifications and Standard Plans.

- A. All proposed sidewalk ramps shall have a receiving ramp opposite of them that meets current standards. This may require installation of new ramps or upgrading existing ramps adjacent to the project location.
- B. Sidewalks shall be poured separate from the curb and gutter. No monolithic curb and sidewalk pours will be allowed.
- C. Driveway aprons shall be constructed per Appendix 16-E.

## **16.04 Bikeways**

The minimum design Standards for bikeways shall be as defined in the “WSDOT Design Manual.”

Bike Paths are required within the Grand Mound Urban Growth Area as shown on the Comprehensive Bike Plan. These facilities are adjacent to the motor Vehicle roadway and are designated by signs and pavement markings for bicycle use.

Bikeways may also be required when the traffic analysis or traffic planning indicates substantial bicycle usage which would benefit from a designated bicycle facility as determined by the Engineer.

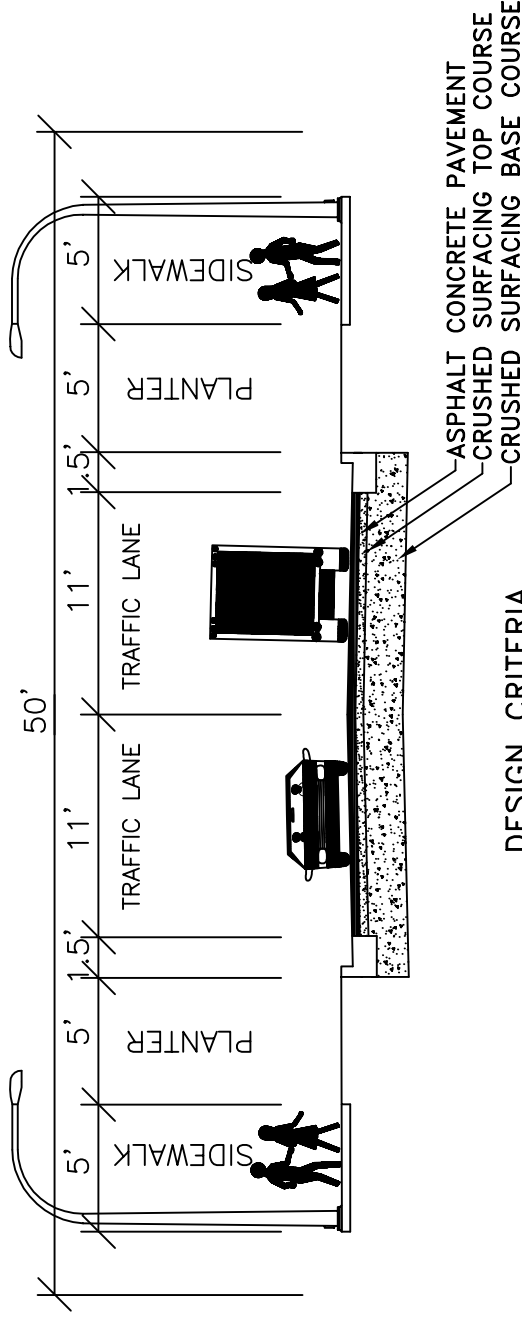
## **16.05 Planter Strips**

Planter strips shall be planted with grass and installed as shown in the roadway section appendices in this Chapter. Other vegetation types may be accepted by the Engineer on a case-by-case basis.

Planter strip locations are encouraged to be used for stormwater conveyance/treatment. Please consult the Drainage Manual for design/construction information for these different stormwater management options.

# GRAND MOUND ROADWAY DESIGN STANDARDS

ROADWAY CLASSIFICATION: MINOR COLLECTOR & LOCAL  
20-YR. PROJECTED AVERAGE DAILY TRAFFIC (ADT): LESS THAN 2,000



## DESIGN CRITERIA

DESIGN SPEED	20-25 M.P.H.
MAXIMUM ROAD GRADE	12%
MINIMUM ROAD GRADE	0.5%
MINIMUM SURFACING WIDTH	22'
MINIMUM ROADWAY WIDTH	22'
RIGHT-OF-WAY WIDTH	50' MIN.
ROADWAY GEOMETRICS	PER AASHTO AND WSDOT STDS.
MINIMUM REQUIRED:	
ASPHALT CONCRETE PAVEMENT	0.20 COMPACTED DEPTH
CRUSHED SURFACING TOP COURSE	0.17' COMPACTED DEPTH
CRUSHED SURFACING BASE COURSE	0.75' COMPACTED DEPTH
VERTICAL CLEARANCE	16.5'

## NOTES:

R/W WIDTHS MAY BE REDUCED WHERE THE COUNTY ENGINEER HAS DETERMINED THAT ADEQUATE PROVISIONS HAVE BEEN MADE FOR THE PRIVATE MAINTENANCE OF WALKWAYS, TRAILS, BIKEWAYS AND DRAINAGE FACILITIES.

DRAINAGE FACILITIES MAY BE LOCATED IN DESIGNATED PLANTER STRIP AREAS. THESE FACILITIES SHALL BE MAINTAINED BY THE HOME OWNERS ASSOCIATION OR ADJACENT PROPERTY OWNERS.

STRUCTURAL ROADWAY SECTION TO BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN WASHINGTON.

LAST REVISED

7/2016



THURSTON COUNTY  
WASHINGTON  
SINCE 1862

THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

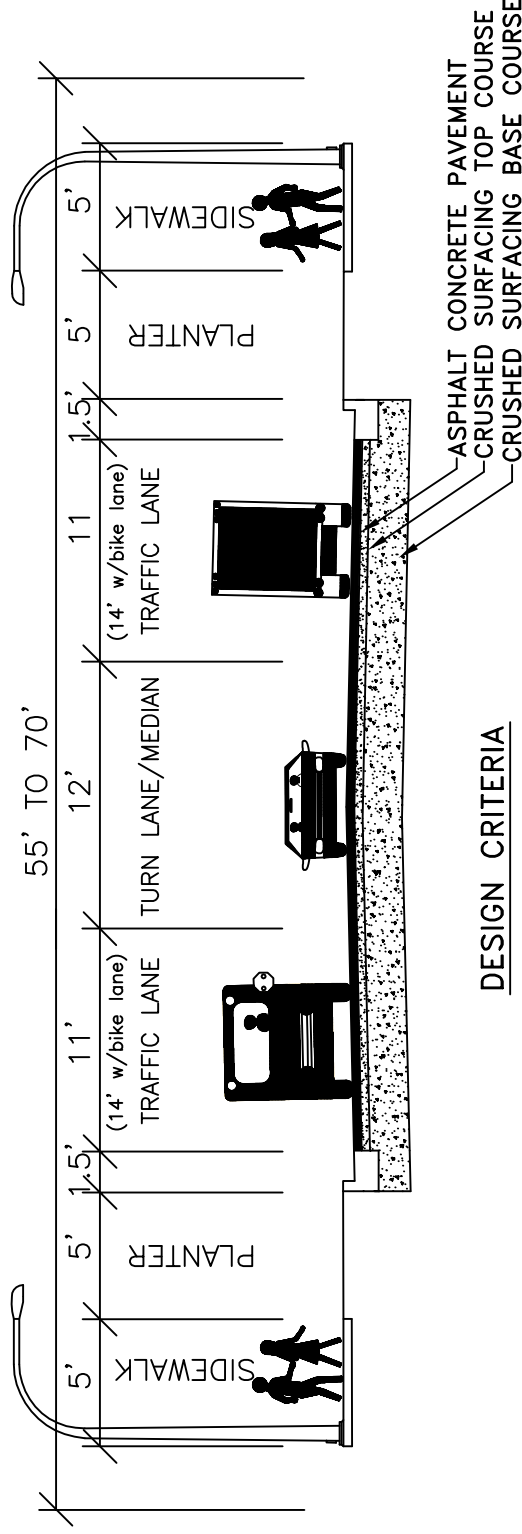
ROADWAY  
STANDARDS

MINOR COLLECTOR  
& LOCAL  
ROADWAY  
SECTION

APPENDIX 16 - A

# GRAND MOUND ROADWAY DESIGN STANDARDS

ROADWAY CLASSIFICATION: COLLECTOR  
20-YR. PROJECTED AVERAGE DAILY TRAFFIC (ADT): 2,000 TO 15,000



## DESIGN CRITERIA

DESIGN SPEED	20 TO 35 M.P.H.
MAXIMUM ROAD GRADE	10%
MINIMUM ROAD GRADE	0.5%
MINIMUM SURFACING WIDTH	24' MIN.
MINIMUM ROADWAY WIDTH	24' MIN.
RIGHT-OF-WAY WIDTH	55' MIN.
ROADWAY GEOMETRICS	PER AASHTO AND WSDOT STDS.
MINIMUM REQUIRED:	
ASPHALT CONCRETE PAVEMENT	0.25 COMPACTED DEPTH
CRUSHED SURFACING TOP COURSE	0.17' COMPACTED DEPTH
CRUSHED SURFACING BASE COURSE	0.75' COMPACTED DEPTH
VERTICAL CLEARANCE	16.5'

## NOTES:

- CENTER MEDIAN MAY TAKE THE FORM OF A TWO-WAY LEFT TURN LANE, LEFT TURN POCKET AT MAJOR INTERSECTION/DRIVEWAYS, OR RAISED MEDIAN.
- R/W WIDTHS MAY BE REDUCED WHERE THE COUNTY ENGINEER HAS DETERMINED THAT ADEQUATE PROVISIONS HAVE BEEN MADE FOR THE PRIVATE MAINTENANCE OF WALKWAYS, TRAILS, BIKEWAYS AND DRAINAGE FACILITIES.
- CLEAR ZONE REQUIREMENTS OUTLINED IN SECTION 4.18 OF THESE STANDARDS SHALL BE COMPLIED WITH.
- STRUCTURAL ROADWAY SECTION TO BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN WASHINGTON.
- PLANTER STRIPS SHALL BE PLANTED WITH GRASS. OTHER VEGETATION TYPES MAY BE ACCEPTED ON A CASE BY CASE BASIS.
- DRAINAGE FACILITIES MAY BE LOCATED IN DESIGNATED PLANTER STRIP AREAS. THESE FACILITIES SHALL BE MAINTAINED BY THE HOME OWNERS ASSOCIATION OR ADJACENT PROPERTY OWNERS.

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THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

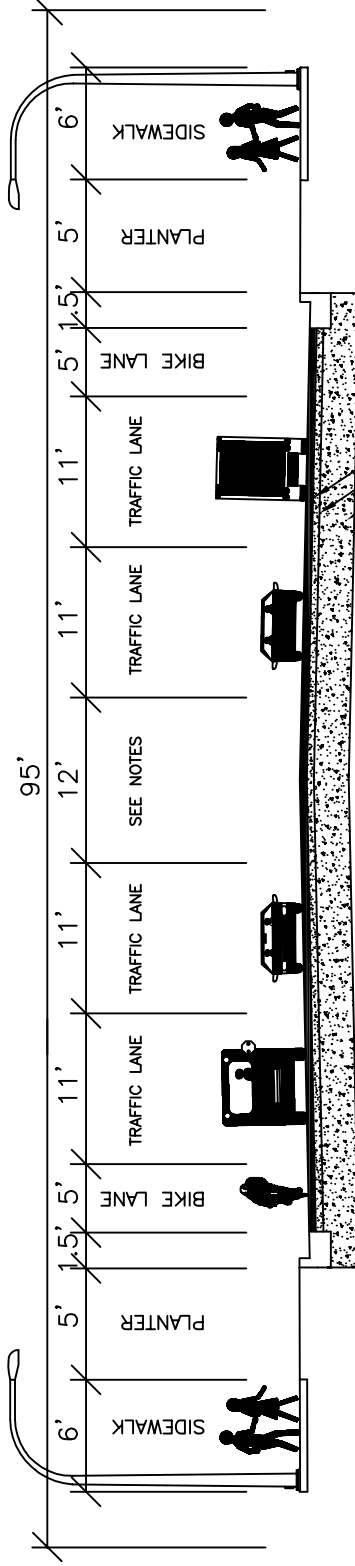
ROADWAY  
STANDARDS

MAJOR  
COLLECTOR  
ROADWAY  
SECTION

APPENDIX 16 - B

# GRAND MOUND ROADWAY DESIGN STANDARDS

ROADWAY CLASSIFICATION: ARTERIAL  
20-YR. PROJECTED AVERAGE DAILY TRAFFIC (ADT): ABOVE 15,000



## DESIGN CRITERIA

DESIGN SPEED	30 TO 45 M.P.H.
MAXIMUM ROAD GRADE	8%
MINIMUM ROAD GRADE	0.5%
MINIMUM SURFACING WIDTH	54' INCLUDES TWO 5' BIKE LANES
MINIMUM ROADWAY WIDTH	44'
RIGHT-OF-WAY WIDTH	95' MIN.
ROADWAY GEOMETRICS	PER AASHTO AND WSDOT STDS.
MINIMUM REQUIRED:	
ASPHALT CONCRETE PAVEMENT	0.33' COMPACTED DEPTH
CRUSHED SURFACING TOP COURSE	0.17' COMPACTED DEPTH
CRUSHED SURFACING BASE COURSE	0.75' COMPACTED DEPTH
VERTICAL CLEARANCE	16.5'

## NOTES:

CENTER MEDIAN MAY TAKE THE FORM OF A TWO-WAY LEFT TURN LANE, LEFT TURN POCKET AT MAJOR INTERSECTION/DRIVEWAYS, OR RAISED MEDIAN.

R/W WIDTHS MAY BE REDUCED WHERE THE COUNTY ENGINEER HAS DETERMINED THAT ADEQUATE PROVISIONS HAVE BEEN MADE FOR THE PRIVATE MAINTENANCE OF WALKWAYS, TRAILS, BIKEWAYS AND DRAINAGE FACILITIES.

CLEAR ZONE REQUIREMENTS OUTLINED IN SECTION 4.18 OF THESE STANDARDS SHALL BE COMPLIED WITH.

STRUCTURAL ROADWAY SECTION TO BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN WASHINGTON.

PLANTER STRIPS SHALL BE PLANTED WITH GRASS. OTHER VEGETATION TYPES MAY BE ACCEPTED ON A CASE BY CASE BASIS.

DRAINAGE FACILITIES MAY BE LOCATED IN DESIGNATED PLANTER STRIP AREAS. THESE FACILITIES SHALL BE MAINTAINED BY THE HOME OWNERS ASSOCIATION OR ADJACENT PROPERTY OWNERS.

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THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

ARTERIAL  
ROADWAY  
SECTION

APPENDIX 16 – C

LAST REVISED	7/2016



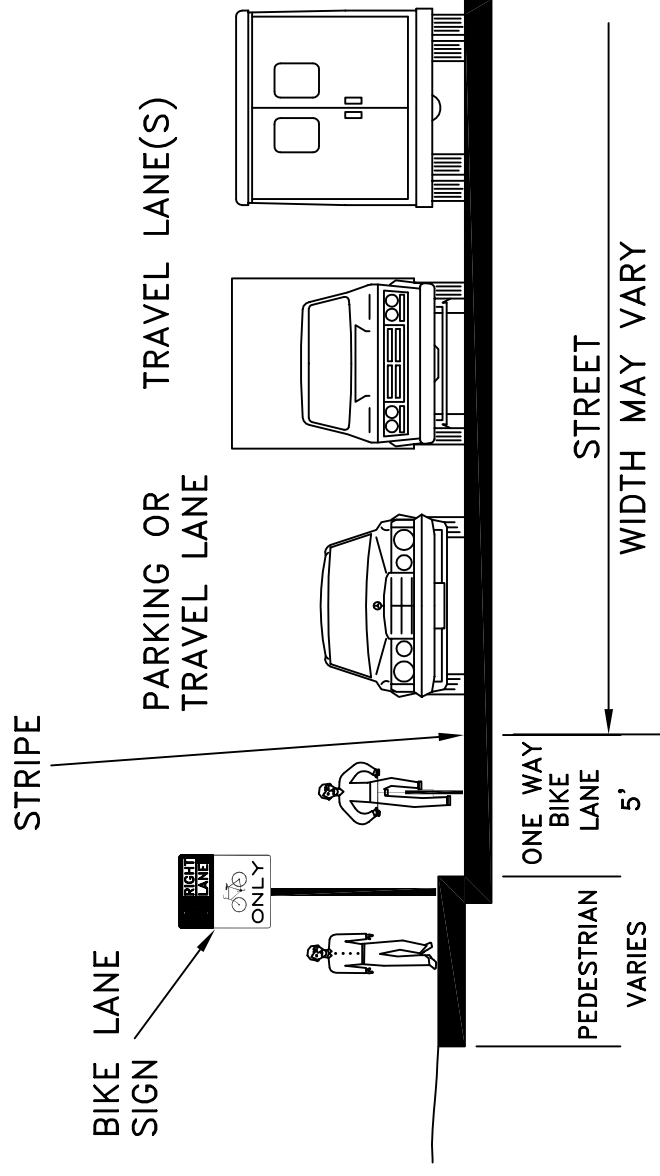
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PUBLIC WORKS

DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

BIKE  
LANE

APPENDIX 16 – D





LAST REVISED	7/2016



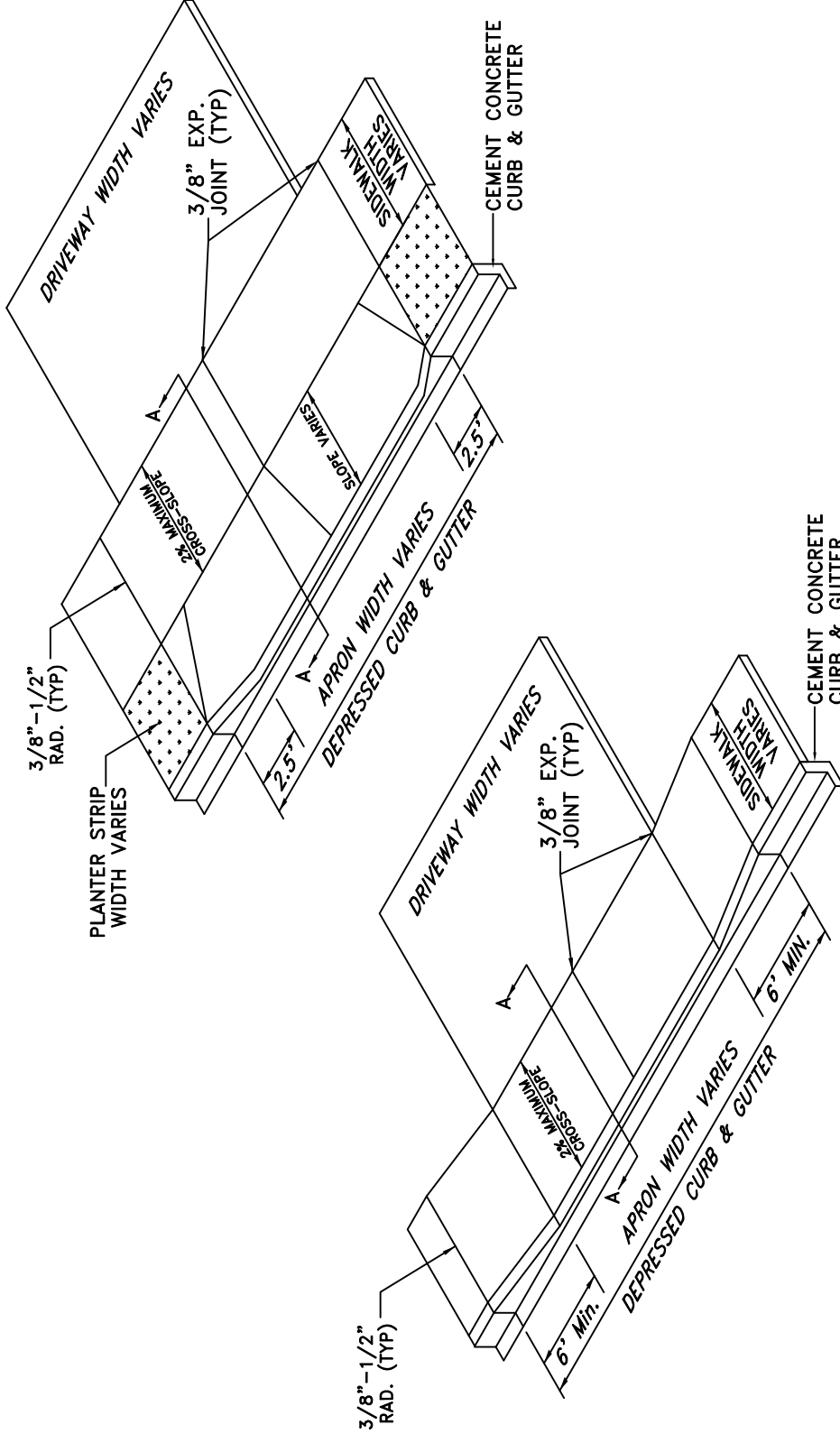
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PUBLIC WORKS

DEVELOPMENT  
REVIEW

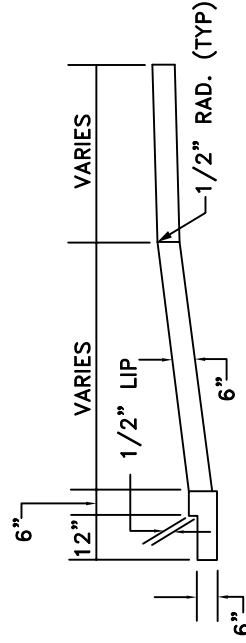
ROADWAY  
STANDARDS

DRIVEWAY  
APRON

APPENDIX 16 – E



- NOTES:
1. WHERE D/W EXCEEDS 16' WIDTH AN EXPANSION JOINT SHALL BE PLACED TRANSVERSELY, CENTERED IN DRIVEWAY.
  2. EXPANSION JOINT MATERIAL TO BE 3/8" THICK PRE MOLDED JOINT FILLER FULL THICKNESS.
  3. FORM AND SUBGRADE INSPECTION ARE REQUIRED BEFORE PLACING CONCRETE.
  4. WHEN CHECKED WITH A 10 FOOT STRAIGHTEDGE, GRADE SHALL NOT DEVIATE MORE THAN 1/8 INCH, AND ALIGNMENT SHALL NOT VARY MORE THAN 1/4 INCH.
  5. MIN. DEPTH OF DRIVEWAYS SHALL BE 6" INCLUDING THAT PORTION THROUGH THE SIDEWALK SECTION.



SECTION A-A

LAST REVISED	7/2016



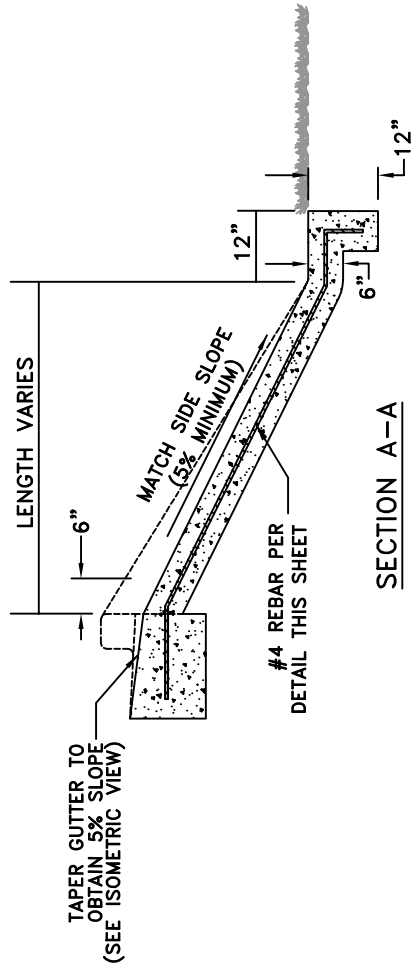
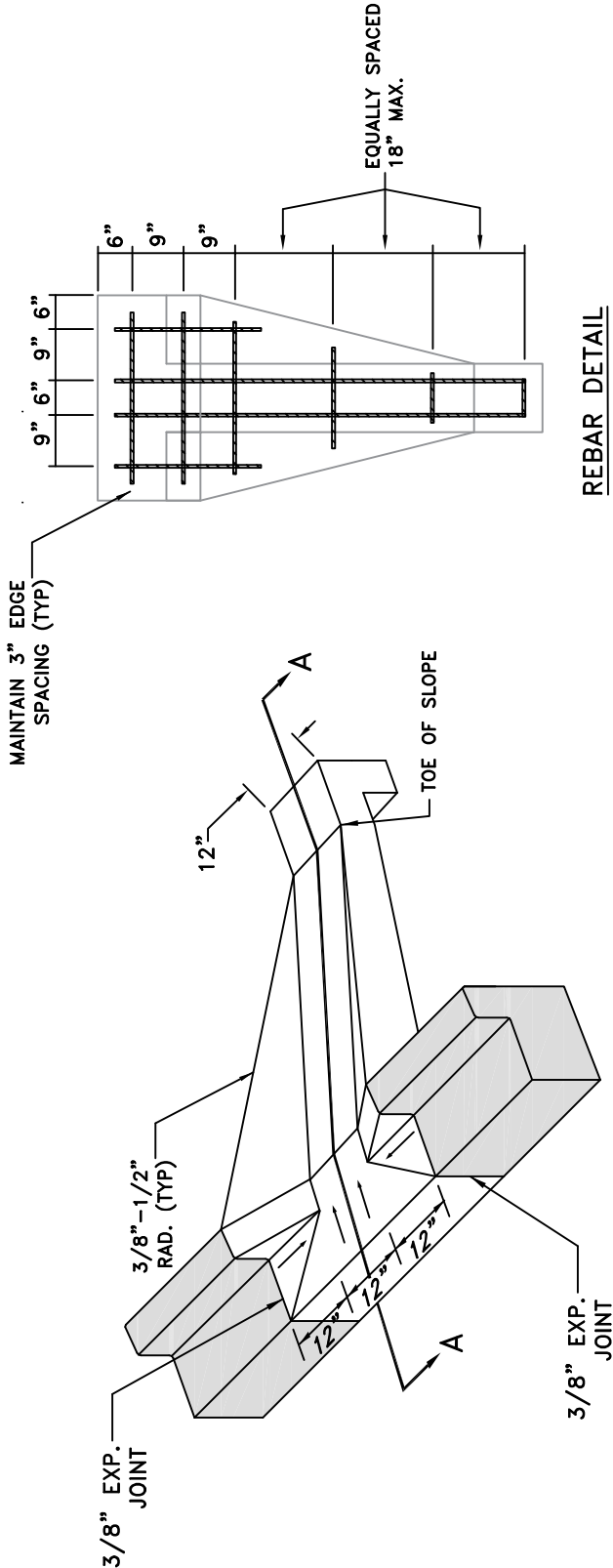
THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

CURB CUT  
INLET

APPENDIX 16 – F



- NOTES:
1. EXPANSION JOINT MATERIAL TO BE 3/8" THICK PRE MOLDED JOINT FILLER FULL THICKNESS.
  2. FORM AND SUBGRADE INSPECTION ARE REQUIRED BEFORE PLACING CONCRETE.




THURSTON COUNTY  
PUBLIC WORKS

DEVELOPMENT  
REVIEW

ROADWAY  
STANDARDS

ELDEBERRY  
ACCESS  
DETAIL

