



# Technical Memorandum #2



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**Subject:** Trail Geometric Design Criteria and Standards

**By:** Adam Isaacson, P.E.

**Date:** May 12, 2017

This design memorandum presents criteria, recommendations, and other relevant information for project consideration on the above referenced subject.

### Acknowledgement:

Significant discussion and agency comments during review are incorporated and reflected by date-revision, when shown. Information presented herein represents final concurrence and direction on referenced subject.	<u>Otak</u>	<i>initials</i>
	Mark Cole, PE, Proj.Mgr.	
	<u>F.C.M.P.D.</u>	<i>initials</i>
	Kirk Harris, Commissioner	

### Introduction

The purpose of this technical memorandum is to present the design criteria and standards to be used for the West Side Trail project.

### Design References:

#### American Association of State Highway and Transportation Officials (AASHTO) Publications

- A Policy on Geometric Design of Highways and Streets, 6th Edition, (AASHTO), 2011
- Roadside Design Guide, 4th Edition, (AASHTO), 2011
- Guide for the Development of Bicycle Facilities, 4th Edition,(AASHTO), 2012.
- Guide for the Planning, Design, and Operation of Pedestrian Facilities, (AASHTO), 2004.

United States Department of Transportation, Federal Highway Administration (FHWA)

- 2009 Manual of Uniform Traffic Control Devices (MUTCD) as amended - Revision 1 and Revision 2 (and approved by WSDOT). May 2012, FHWA, 2012.
- Equestrian Design Guidebook for Trails, Trailheads, and Campgrounds, Pub 0723-2816-MTDC, FHWA & USDA 2007

Washington State Department of Transportation (WSDOT) Publications

- Design Manual, Publication M 22-01. July, 2016.
- Geotechnical Design Manual, Publication M 46-03. May 2015.
- Traffic Manual, Publication M 51-02. July 2015.
- Roadside Policy Manual, Publication M 3110. August 2015.
- Standard Specifications for Road, Bridge, and Municipal Construction, Publication M 41-10. December 2015.
- Local Agency Guidelines Manual, Publication M 36-63. April 2016.
- Construction Manual, Publication M 41-01. April 2016.

King County Publications

- Road Design and Construction Standards, King Co., 2016

Design Considerations

The shared-use trail design will consider non-motorized modes to included pedestrians, bicycles, and potentially equestrian. The facilities will principally be designed in accordance with the WSDOT Design Manual and supplemented by AASHTO and other design references, when necessary.

Table 1 below describes which standards apply to various design elements of the proposed trail.

**Table 1 – Shared-Use Trails**

<b>Design Element</b>	<b>Value or Criteria</b>	<b>Standard Citation</b>
Facility Type	Shared-Use Path	WSDOT DM Chapter 1515
Posted Speed	N/A	
Bicycle Design Speed	20 MPH – Open Country (level or rolling); shared-use paths in urban areas	WSDOT DM Exhibit 1515-2

	12 MPH – Approaching Intersections	
Horizontal Curvature Radius (minimum)	74 feet – Open Country (level or rolling); shared-use paths in urban areas 27 feet – Approaching Intersections	WSDOT DM Exhibit 1515-2
Maximum Grade	5% - Max or Match slope of adjacent roadway	WSDOT DM 1515.04(3)
Vertical Curve	See Exhibit 1515-15 – Crest	WSDOT DM Chapter 1515
Stopping Sight Distance	137 feet -Upgrades 195 feet - Down grades	WSDOT DM Chapter 1515
Eye Height	4.50 feet	WSDOT DM 1515.04(5)
Object Height	0 feet	WSDOT DM 1515.04(5)
Buffer Width	5 feet - Minimum from edge of roadway pavement to edge of path shoulder; for buffer less than 5 feet provide barrier	WSDOT DM Exhibit 1515-4b & 1515-4c
Path Paved Width	12 feet - Desirable 10 feet - Minimum	WSDOT DM 1515.04(2)
Shoulder Width	2 feet - Unpaved where buffer is 5 feet wide or greater; paved where barrier is present.	WSDOT DM 1515.04(2), Exhibit 1515-4c
Clearance	2 feet or 3 feet <sup>1</sup> – Horizontal from edge of pavement 10 feet – Vertical from pavement surface	WSDOT DM 1515.04(2) or US FHA Equestrian Design Guidebook for Trails, Trailheads and Campgrounds <sup>1</sup>
Cross Slope	2% - Max	WSDOT DM 1515.04(2)
Side Slope	6:1 – Desirable 3:1 – Maximum Steeper than 3:1 – See 1515.04(2)(d)	WSDOT DM 1515.04(2)
Driveways	Design Vehicle SU-30 or smaller	WSDOT DM 1340

1. If equestrian accommodation is desired.

## Exhibit \_\_\_\_

### Significant Discussion Topics during Agency (Client) Memorandum Review

The below summary represent relevant discussion occurring during agency memorandum review in validating presented information and incorporating memorandum changes to reflect final agency direction.

*[To be completed at time of final concurrence]*