



## West Side Trail

Fall City Metropolitan Park District (FCMPD)

Otak # 32649

# Technical Memorandum #3



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Subject: Trail Section and Alignment Alternatives

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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><b>Otak</b></u>	<i>initials</i>
	Mark Cole, PE, Proj.Mgr.	
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	Kirk Harris, Commissioner	

## Introduction

The purpose of this design memorandum is to present site considerations in establishing the alignment and termination limits of the proposed trail along the Redmond-Fall City Road (SR 202). In general, the intended limits for the proposed trail are to extend from SE 40<sup>th</sup> Street (approximate Fall City limit line) easterly approximately 0.9 miles to the SE 42<sup>nd</sup> Street/334<sup>th</sup> Place SE intersection, containing both the Fall City Elementary School and the King County Library.

## Existing Conditions

Redmond-Fall City Road in this area is classified as U2 (Urban Minor Arterial) by WSDOT and has a posted speed of 45 mph within the western portion and 30 mph along the eastern portion of the project. The typical road section in this area of Redmond-Fall City Road is two 11- to 12-foot travel lanes with paved shoulders varying from 2 to 8 feet in width; however some localized stretches of

the south side roadway have shoulders as wide as 16 feet. The roadway widens at the entrance to Chief Kanim Middle School to include a westbound left turn pocket.

The proposed trail will be located on the south side of SR 202 within the southerly portion of the 100-foot wide existing right-of-way. Currently, the area beyond the roadway shoulder generally consist of grass/vegetated terrain sloping towards a ditch paralleling the roadway. In addition to existing utilities, three public street crossings (323<sup>rd</sup> Avenue SE; 324<sup>th</sup> Avenue SE and 332<sup>nd</sup> Avenue SE) occur within the project limits as well as a private entry road into Chief Kanim Middle School. Additionally, several adjacent properties have direct frontage access to SR 202 and contain private driveways, along with areas of trees, landscaping, and other improvement.

## Trail Typical Section

The primary users of the proposed non-motorized trail are intended to be pedestrians and bicyclist. Design requirements for the proposed typical cross section provides for a paved, hard-surface, trail between 10 and 12-foot wide, along with minimum 2-foot wide shoulders. For preliminary design, a 12-foot wide paved surface trail with 2-foot wide shoulders is proposed, as illustrated in Figure 1. With consideration for grading requirements and/or existing constraints, the horizontal and vertical alignment of the trail is based on a proposed 16-foot wide section.

An additional user consideration identified by the District is possible provisions for accommodating equestrian-uses. The Fall City community is in rural King County and for this area it is not uncommon for horse and riders from surrounding locations to be traveling adjacent to the SR 202 roadway and therefore accommodating this user maybe desirable.

Regardless of rider frequency it can be expected that horse travel will continue and the presence of the proposed hard-surface would likely force riders to travel adjacent to the edges. Existing trees/shrubs and other private constrains near the right-of-way line in addition to graded side-slopes, proposed drainage features, and likely areas where the trail/roadway separation narrows, all may create undesirable conditions for equestrians. To safely accommodate this user, a minimum 3-foot wide shoulder is more appropriate rather than 2-foot.

We recommend the District continue dialog with the community and user groups to gage usage. Should it be desired that provisions for equestrians be incorporated into the final trail typical section, our recommendation would be to accommodate this within the current preliminary design foot-print by reducing the hard-surface element to 10-foot wide to allow for 3-foot shoulders.

## Alignment Alternative Analysis

### Horizontal Alignment Consideration

The proposed alignment is intended to closely parallel the edge of existing right-of-way/property line.

**General Considerations:**

- Alignment approaching street intersections to transition closer to existing SR 202 pavement to be located in-line with proposed street crosswalk for safe crossing.
- Alignment at existing private driveways to be located close to the right-of-way/property line to allow ingress-turning vehicles to visually cross trail as close to right angles as possible.
- Allow adequate space for maintaining of existing roadside ditches and cross-road culvert inlets.
- Provide adequate separation between roadway and trail, where necessary in appropriate locations, to accommodate grading of proposed drainage facilities.
- Provide appropriate horizontal curve at all angle points in the alignment.
- Where possible, maintain clearances and avoid relocating of utility poles and existing underground utility pedestals.
- Maintain clearances from significant existing trees/vegetation lying adjacent (at) the right-of-way line.

**Other Considerations:**

Private properties adjacent to the right-of-way have, overtime, built improvements that either situate closely too, or encroach into, the existing right-of-way. Additional considerations have been given for these private improvements.

- Private fences located close to the right-of-way will be maintained, where possible.
- Private fences that significantly encroach on the right-of-way will be proposed to be relocated to the right-of-way/property line.
- Clearances will be maintained, where possible, from isolated non-moveable buildings and/or significant landscape structures that encroach into the right-of-way.
- Alignment in the vicinity of small, movable, structures or sheds that significantly encroach into the right-of-way will be assessed on a case by case basis to determine the beneficial merits of proposed relocation.

**Vertical Alignment (Grade) Considerations**

Generally, the design of proposed trail grades will closely follow the existing topography and elevations within the existing right-of-way.

**General Considerations:**

- Provide smooth grade transition approaching street intersections to maintain ADA compliant grades at curb-ramp street crosswalks.
- Maintain a uniform trail grade-slope across private driveways at an elevation that closely matches the existing driveway.
- Maintain minimum 0.5% grade-slope and provide vertical curves at all significant breaks in longitudinal grade.
- Minimize grading along right-of-way (property line) to eliminate the need to obtaining temporary construction easement, where possible.

- Maintain the existing “positive” sheet flow drainage paths toward roadside ditches or design provisions to avoid ponding on private properties.
- Minimize grading and excavation in the vicinity of existing utility lines to avoid relocation, where possible.

### **Westerly Alignment Terminus**

Conceptually, the planned limits for the proposed trail extend westerly to SE 40<sup>th</sup> Street, an east-west street lying west of 323<sup>rd</sup> Avenue SE and intersecting SR 202 near the Fall City limit line. The SE 40<sup>th</sup> Street intersection leg forms a “wye” (curbed island) at SR 202 on an extreme skew to a long horizontal curve in SR 202. This existing intersection configuration is very awkward and potentially unsafe. In the future this might be re-configured to a safer intersection, however it currently presents safety concerns relative to guiding where and how users, particularly bicycles traveling on SR 202, entering and exiting the proposed trail.

Base on street configuration and known user usage, the proposed trail should, at a minimum, extend westerly to 324<sup>th</sup> Avenue SE. Bicycles and other users approach SR 202 via 324<sup>th</sup> Avenue SE, at roadway that extends north and south into rural King County. Although placement of trail improvements can be accomplished within the existing right-of-way, considerations were given to alternative termination points between 324<sup>th</sup> Avenue SE and SE 40<sup>th</sup> Street.

### **Key Westerly Alignment Terminus Considerations:**

- Due to intersection configuration, proposed improvements should only extend westerly to some appropriate point at or near the existing SE 40<sup>th</sup> Street stop bar (associated with the eastbound SR 202 movement).
- Appropriate location for bicyclist traveling SR 202 to safely transition on and off the trail.
- Accommodating pedestrians and other users west of 324<sup>th</sup> Avenue SE (a worn path can be seen in the field that users travel along this section, particularly between 323<sup>rd</sup> Avenue SE and 324<sup>th</sup> Avenue SE).
- Area topography; significant trees and/or landscaping; and other private property constraints within the right-of-way lying west of 324<sup>th</sup> Avenue SE.
- Requirements and costs associated with constructing the improvements.

Based on the above considerations, four alternatives for improvements and termination points were developed, as illustrated in Figure 2.

### **Alternative 1:**

Extend trail westerly to the SE 40<sup>th</sup> Street intersection at SR 202

#### ***Advantages:***

- Provides full trail access to approximate Fall City limit line and residents/users between SE 40<sup>th</sup> Street and 324<sup>th</sup> Avenue SE

#### ***Disadvantages:***

- Potential safety concerns for bicyclist traveling SR 202 relative to “decision making” on when to cross intersection/roadway to enter/exist trail.
- Requires obtaining construction easements on parcels near SE 40th Street due to existing roadway pavement configuration.
- Requires additional significant-tree removal and relocating a small private out-building located within the right-of-way.

**Alternative 2:**

Extend trail to 323<sup>rd</sup> Avenue SE and construction nothing further west

***Advantages:***

- Provides trail access to residents/users between 323<sup>rd</sup> Avenue SE and 324<sup>th</sup> Avenue SE.

***Disadvantages:***

- Residents west of 323<sup>rd</sup> Avenue SE do not have a paved connected to the trail.
- Potential safety concerns for west bound bicyclist that may be existing trail and crossing SR 202 (323<sup>rd</sup> Avenue SE intersection is near the end of an east bound horizontal curve in SR 202).
- Requires additional significant-tree removal and relocating a small private out-building located within the right-of-way.

**Alternative 3:**

Extend trail to 323<sup>rd</sup> Avenue SE and construct a narrower paved walkway to SE 40<sup>th</sup> Street

***Advantages:***

- Provides trail access to residents/users between 323<sup>rd</sup> Avenue SE and 324<sup>th</sup> Avenue SE.
- Provides paved access to trail for residents/users west of 323<sup>rd</sup> Avenue SE.
- Does not require obtaining construction easements on parcels near SE 40<sup>th</sup> Street.

***Disadvantages:***

- Potential safety concerns for west bound bicyclist that may be existing trail and crossing SR 202 (323<sup>rd</sup> Avenue SE intersection is near the end of an east bound horizontal curve in SR 202).
- Requires additional significant-tree removal and relocating a small private out-building located within the right-of-way.

**Alternative 4:**

End trail at 324<sup>th</sup> Avenue SE and construct a narrower paved walkway to SE 40<sup>th</sup> Street

***Advantages:***

- Trail terminates at key intersection (324<sup>th</sup> Avenue SE) and safer “decision point” location for bicyclists entering/existing the trail travel on SR 202 or 324<sup>th</sup> Avenue SE.
- Provides paved access to trail for residents/users between SE 40<sup>th</sup> Street and 324<sup>th</sup> Avenue SE.
- Reduces significant-tree removal and does not require relocation of small private out-building.

- Does not require obtaining construction easements on parcels near SE 40th Street.

***Disadvantages:***

- Does not construct full trail to the approximate Fall City limit line (SE 40th Street).

From a comparison-evaluation of the four alternatives, Alternative 4: End trail at 324<sup>th</sup> Avenue SE and construct a narrower paved walkway to SE 40<sup>th</sup> Street, is determined to provide the best option given the key considerations defining the westerly terminus point of the proposed trail, based on:

- Provides the best alternative for a safer location for bicyclists travel along SR 202 or 324<sup>th</sup> Avenue SE to enter/exist the trail.
- Provides a paved-surface walkway along the entire length of the planned proposed project to connect residents within the Fall City limits and other users to the trail.
- Requires the least impact for constructing the improvements.

**Easterly Alignment Terminus**

Conceptually, the planned easterly alignment will leave SR 202 right-of-way at 334<sup>th</sup> Place SE and extend a short distance to terminate at the SE 42<sup>nd</sup> Street intersection, containing Fall City Elementary School on the northwest corner and King County Library on the southeast corner. The existing configuration of the 334<sup>th</sup> Place SE intersection approach to SR 202 consist of a “wyé” (painted island) where east bound SR 202 traffic diverges onto southbound 334<sup>th</sup> Place SE and the northbound approach to SR 202 is a stop condition. Currently, the gravel shoulder on the west side of 334<sup>th</sup> Place SE between SR 202 and SE 42<sup>nd</sup> Street is signed for parallel parking. This parking principally functions as “waiting area” for picking-up school children, which at times, is observed to have vehicles queuing back on the shoulder of SR 202. However, because of intersection’s configuration, a large portion of 334<sup>th</sup> Place SE right-of-way is unpaved and comprised of a large grassy area containing several significant mature trees.

**Key Easterly Alignment Terminus Considerations:**

- Maintain trail connection and alignment with crosswalk on the west leg of the SE 42<sup>nd</sup> Street intersection.
- Maximizing use of existing public right-of-way and minimizing property acquisitions.
- Existing shoulder-use as parking along 334<sup>th</sup> Place SE between SR 202 and SE 42<sup>nd</sup> Street.
- Significant trees, site features, and other constraints located within the right-of-ways.
- Potential future reconfiguration of the 334<sup>th</sup> Place SE/SR 202 intersection.

Based on the above considerations, two alternative alignments were developed (Refer to Figure 2).

**Alternative 1:**

The trail is located entirely within the public right-of-way of SR 202 and 334<sup>th</sup> Place SE

***Advantages:***

- Trail is completely within existing right-of-way and does not require property acquisition or obtaining a permanent easement from the school district.

- Trail improvements would likely not be impacted by any future reconfiguration of the 334<sup>th</sup> Place SE/SR 202 intersection.

***Disadvantages:***

- Requires eliminating either: 1) the existing shoulder parking on 334<sup>th</sup> Place SE; or 2) removing an additional significant tree (a 48-inch caliper) located within the right-of-way.
- Impacts the existing historic school steps and wall. (Although the cultural resource assessment identified these as not eligible for National Register, and therefore not required to avoid).
- SR 202 pavement clear-zone separation cannot be maintained due to the intersection configuration (334<sup>th</sup> Place SE diverge pavement) and requires constructing approximately 125 feet of barrier wall between trail/roadway pavement.

**Alternative 2:**

An alignment that maintains the existing parking on 334<sup>th</sup> Place SE and minimizes tree/site impacts

***Advantages:***

- Maintains the existing shoulder parking on 334<sup>th</sup> Place SE.
- Preserves the existing larger trees within the grassy right-of-way area of 334<sup>th</sup> Place SE.
- Does not impact the existing historic school steps or wall and maintains minimum SR 202 clear-zone separation, eliminating the need for barrier wall.
- Trail improvements would likely not be impacted by any future reconfiguration of the 334<sup>th</sup> Place SE/SR 202 intersection.

***Disadvantages:***

- Requires property acquisition or obtaining a permanent easement (approximately 5,000 sq. ft. +/-) from school district.
- A portion of the trail's alignment across the needed school property is adjacent to the school's old abandoned septic field.
- Requires modifying a portion of the existing parking lot on the school district's property.

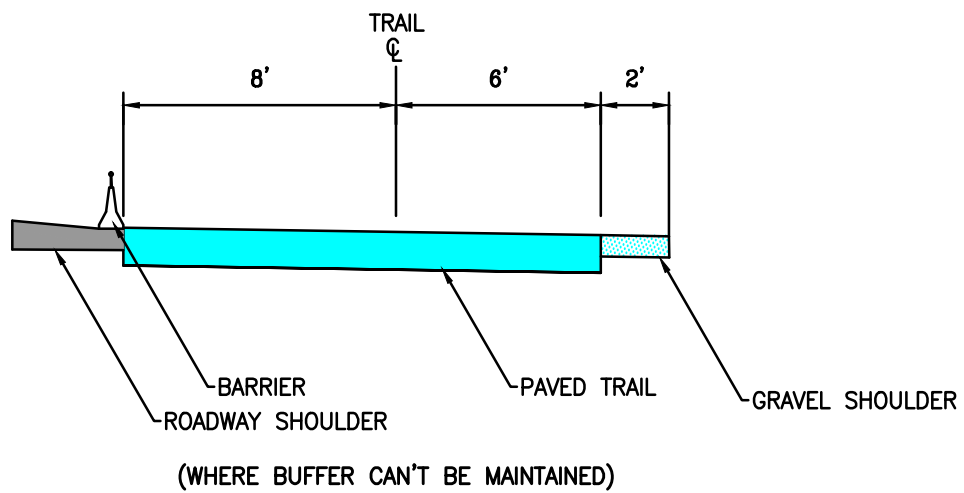
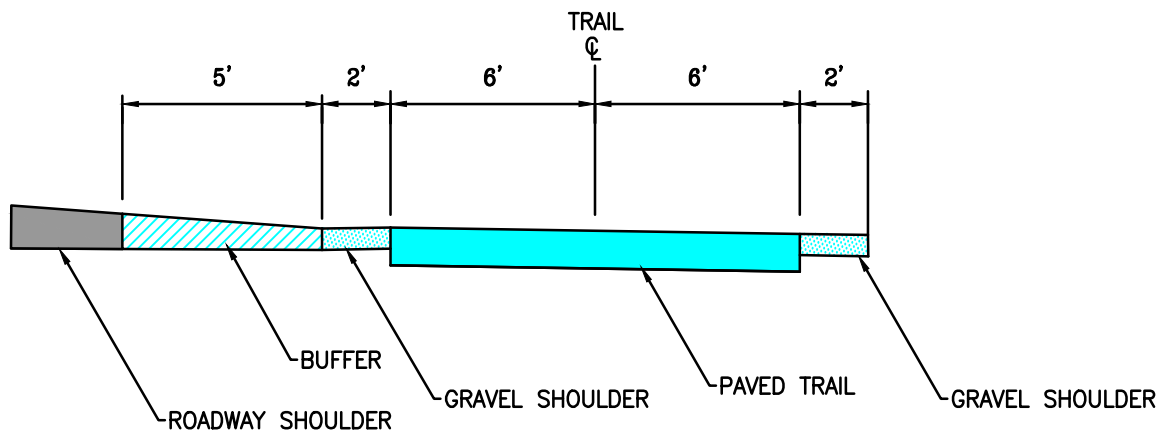
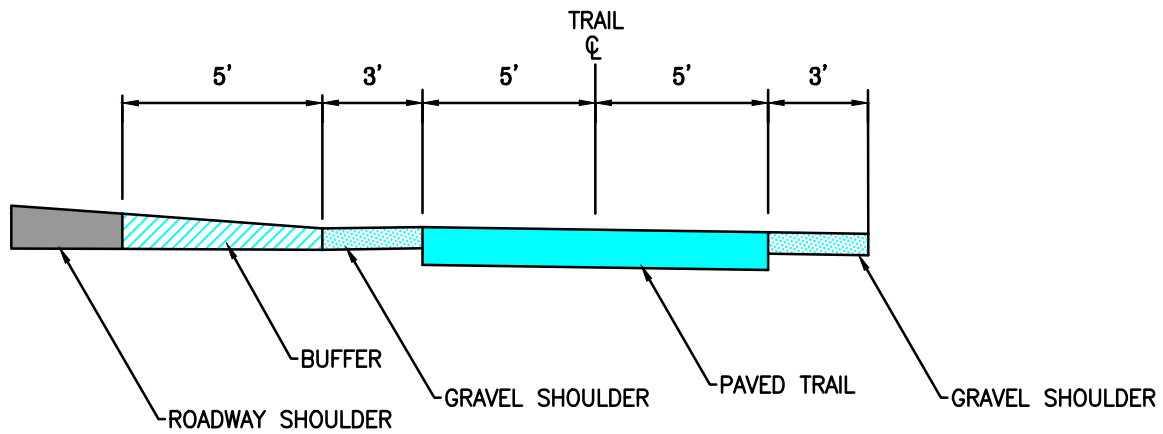
From a comparison-evaluation of the alternatives, Alternative 1: Located entirely within the public right-of-way of SR 202 and 334<sup>th</sup> Avenue SE, is determined to provide the best option given the key considerations, based on:

- Does not require acquisition or obtaining a permanent easement from the school district.
- The historic school steps can be relocated and incorporated in other parts of the project, if desired.
- There appears to be some potential opportunity for on-street parking on either SE 42<sup>nd</sup> Street or further south on 334<sup>th</sup> Place SE relative to the loss of existing (safe) shoulder parking on 334<sup>th</sup> Place SE.
- Avoids the old abandoned septic field on the school property that may potentially be more problematic (costly) in construction of the trail.

## Conclusions and Recommendations

1. Continue soliciting community and user-group feedback relative to desired for incorporating provides for equestrians.
2. Recommended for improvements within the westerly terminus is Alternative 4: End trail at 324<sup>th</sup> Avenue SE and construct a narrower paved walkway to SE 40<sup>th</sup> Street.
3. Recommended alignment within the easterly terminus is Alternative 1: Locate entirely within the public right-of-way of SR 202 and 334<sup>th</sup> Place SE.
4. During final design, engage individual property owner regarding relocation of fences and other significant structure lying within right-of-way.
5. During final design, further evaluate the potential “ultimate” configuration of the SR 202/324<sup>th</sup> Avenue SE intersection and user demands north of SR 202 to determine warrants, if any, for SR 202 crossing controls/treatments.
6. During final design, further evaluate potential to eliminate the barrier separation-wall via discussion with WSDOT on minor (safety-related) pavement modification to the 334<sup>th</sup> Place SE southbound diverge.





# Fall City Metropolitan Park District **WEST SIDE TRAIL TYPICAL SECTIONS**

**Figure 1**



# WEST SIDE TRAIL

Fall City, Washington  
September 2017



Figure 2

## LEGEND

- Proposed Full Width Trail
- Narrower Paved Walkway





## 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]*