



## Design Report

Lower Spring Creek Road  
M.P. 0.00 to 0.55  
CRP 335

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## INTRODUCTION

**PROJECT TITLE** Lower Spring Creek Road

**ROADWAY CLASSIFICATION** Local Access

**PROJECT TYPE**  2R  3R  **Reconstruction**

**Project Limits:** M.P. 0.00 to M.P. 0.55, from the Intersection of Spring Creek Road and Lower Spring Creek Road to M.P. 0.55 of Lower Spring Creek Road.

**See Vicinity Map Attached**

**Project Description:** Reconstruct horizontal and vertical alignment to minor collector standards, install a bridge, install a fish passage, install drainage, remove fish barriers, use existing road bed for a wetland mitigation site, install guardrail, place structural surfacing base, and provide a light bituminous surface treatment for 0.55 miles.

**Purpose of Project:** The purpose of the project is to Remove the fish barriers in the drainages, move the roadway up out of the wetland area and use the existing road bed for a wetland mitigation site, install a bridge, improve and enhance the safety for the traveling public by improving the width of the road, improving the curve radii, removing fixed objects from the clear-zone, and by improving drainage of the roadway.

**Principal Items of Work:** The principle items of work will include installing a bridge, installing fish passage, removing fish barriers, moving roadway out of the wetland area, widening the road from an existing 17.5 feet on average to 24 feet, improving drainage, improving all curves to meet a 25 mph curve standard, and installing a light bituminous surface treatment.

**Other Projects in Vicinity:** None known

**Existing Geometric Conditions:** The existing roadway runs through a wetland area created by the spring creek drainage and drainages that flow into spring creek. There are several fish barriers (culverts) that will not allow migratory fish to migrate up the stream any further. The existing roadway is on average a 17.5 foot wide gravel road. Other than signs there are no safety devices currently installed. Cut slopes and fill slopes are steeper than

2:1 in many areas. There are also quite a few fixed objects in the clear zone, mostly trees.

**TRAFFIC DATA**

The ADT volumes for this section of highway are as follows:

Location	Present		Design	
	Year	ADT	Year	ADT
Lower Spring Creek Road site 226 (MP 0.18)	2017	97	2027	107 (1%)
			2037	118 (1%)

**1.0 % Bikes**

**53.6 % Cars**

**32.0 % 2 Axle**

**0.0 % Buses**

**13.4 % 2 Axle 6 Tire**

**0.0 % 3 Axle Single**

**0.0 % 4 Axle Single**

**0.0 % 5 Axle Double**

**[ X ] Based upon actual traffic counts taken on 6/25/2015 by Klickitat County Traffic Engineering.**

**[ ] Traffic count reports are attached.**

**[ ] Traffic Turning Diagrams are attached.**

**85th Percentile Speed: 28.6 MPH**

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**ACCIDENT ANALYSIS**

**Severity & Number:**

<b>DATES:</b>	<b>From 2014</b>		<b>To 2017</b>		<b>TOTALS</b>
<b>Year</b>	2014	2015	2016	2017	
<b>Fatal Accidents</b>	0	0	0	0	0
<b>Fatalities</b>	0	0	0	0	0
<b>Injury Accidents</b>	0	0	0	0	0
<b>Injuries</b>	0	0	0	0	0
<b>Property Damage Only</b>	0	0	0	0	0
<b>Total Accidents</b>	0	0	0	0	0
<b>Property Damage \$</b>	\$0	\$0	\$0	\$0	\$0

See Collision Diagrams Attached for additional information

**Analysis:** There were no reported accidents on record for the period between 2014 and 2017.

Traffic Report is attached.

**Recommendations:** The project which will widen the roadway to two lanes, realign horizontal curves, add superelevations and guardrail will be installed in locations as warranted.

**SAFETY CONSIDERATIONS:**

<b>RECOVERY AREA ISSUES:</b>					
<input type="checkbox"/> A "Roadside Clear Zone Inventory" - DOT Form 410-026 has been completed for this project and is attached.					
<input type="checkbox"/> An abbreviated "Roadside Clear Zone Inventory" - DOT Form 410- 026 as required for 2R projects has been completed for this project and is attached.					
<b>Design Minimum Clear Zone:</b>					
<b>Sta</b>	<b>to</b>	<b>Sta</b>	<b>Cut Sections</b>	<b>Fill Sections</b>	<b>Design Speed</b>
0+00.00		28+97.03	10 feet	10 feet	25 mph
<input checked="" type="checkbox"/> This project will establish a clear zone to the minimum requirements.					
<input type="checkbox"/> The existing clear zone will be maintained. Deviation required.					
<input type="checkbox"/> Portions of clear zone minimum requirements are not met - deviation required.					
<b>Comments/Support for any Deviation:</b>					
No deviation anticipated.					

<b>Existing Guardrail</b>			
<b>Location</b>		<b>Condition</b>	<b>Adequacy</b>
None			
<b>Comments:</b>			
<b>Proposed Guardrail</b>		<b>(New and upgrades to standards)</b>	
<b>Location</b>	<b>Purpose</b>	<b>Justification; Why are other options not practical</b>	
0+84.17 to 3+09.17 LT 7+52.76 to 8+52.76 LT 9+14.79 to 10+14.79 LT 20+08.40 to 22+20.90 LT 7+23.21 to 7+85.71 RT 9+00.00 to 10+00.00 RT 20+29.94 to 22+17.44 RT	To prevent vehicles from going over unrecoverable slopes.	The slopes that the guardrail is protecting are not recoverable slopes. They had to be steepened to avoid the fill slope extended into wetland areas.	
<b>COMMENTS:</b>			
<b>OTHER SAFETY CONSIDERATIONS:</b> See above.			

**GEOMETRIC DESIGN**

**According to the Current Level of Development Plan:**

**Functional Classification**

<input type="checkbox"/>	<b>Rural Major Collector</b>
<input type="checkbox"/>	<b>Rural Minor Collector</b>
<input checked="" type="checkbox"/>	<b>Rural Local Access</b>
	<b>Project Proposal</b>
<input checked="" type="checkbox"/>	<b>Design Standards Level</b>
<input type="checkbox"/>	<b>3R Standards Level</b>
<input type="checkbox"/> <input type="checkbox"/>	<b>Maintain Structural Integrity and Operational Safety</b>

**Comments:**

*AASHTO Guidelines For Geometric Design of Very Low-Volume Local Roads 2001*, will be used as a guide for the geometric design of the roadway.

**Design Speed Limit:** 25 MPH

**Signed Speed Limit:** Un-posted 50 MPH

<b>Roadway Geometrics:</b>	<b>Existing</b>	<b>Proposed</b>	<b>Standard</b>
<b>Lane Width</b>	8.75 feet	12 feet	9 feet*
<b>Shoulder Width</b>	0 feet	1 foot	*included above
<b>Chann. Lane Width</b>			

**Evaluation of Existing Sight Distances:** There are two driveways that lack the required site distances because of objects in the site triangles. There are a few vertical curves that lack stopping site distance toward the end of the project.

**Horizontal Alignment:** The design will establish site distances for each curve based on the individual curve's radius for a 25 mph design speed.

**Vertical Alignment:** The design will establish site distances for each vertical curves. The

minimum site distance for 25 mph design with 100-250 ADT is 170 feet.

**Comments:** Site distances will be evaluated as each driveway entrance and each intersection. Improvements will be made to ensure the minimum requirements are met.

**Superelevation/Crown Slope/Shoulder Slope (Existing & Proposed):**

**Existing:** Super elevation exceeds 12% in some curves, crown slope from 0% to 7% and there are no shoulders.

**Proposed:** Super elevation will be designed at a maximum of 4%, crown slopes will be -2% and shoulder slopes will be -2%.

**Slope - (Ditch, Fill, & Cut):** The proposed ditches will have a 3:1 h/v in-slope and a 2:1 h/v back-slope. Fills will be 3:1 h/v or 2:1 h/v in areas of guardrail and Cuts will be set at 2:1 h/v.

**Other Areas/Comments:**

**ALTERNATIVE ALIGNMENTS**

Alternative alignments considered: Yes [  ] See attached No [  ]

**RESURFACING SOILS SURVEY**

**Deflection Survey**  
[  ] None Conducted  
[  ] Conducted on :

**Average Soil Resilient Modulus:**



<b>Existing Roadway Surface/Subsurface</b>
<b>Recommended Surfacing Depths</b> 0.33' Top Course and 0.67' Base Course
<b>Comments:</b>
[ ] <b>Unsuitable material has been identified at the following locations:</b>
<b>Proposed Action:</b>
<b>SUMMARY OF OTHER RECOMMENDATIONS:</b>

**DRAINAGE**

**Existing drainage facilities consist of:**

- Roadside Ditches**       **Cross-culverts**
- Inlets/catch basins**       **Storm sewer**
- Under drains**       **Approach culverts**
- Spillways**       **Longitudinal culverts**
- Other \_\_\_\_\_**       **Storm-water detention/retention.**

**Results of drainage condition survey indicate:**

- Existing systems are functioning properly.**
- Drainage problems exist at:**

Station	Problem Statement
Cross Culverts with plunge pools: 9+07.81 12+37.66 23+90.34	Cross culvert 9+07.81 will be removed as it is a fish barrier and too narrow. The culvert is to be replaced by a bridge in a new location. Cross culvert 12+37.66 will be removed and that drainage will have a fish passage (pipe arch) placed further up stream. Cross culvert 23+90.34 will be removed allowing for an open stream bed.
<b>Comments:</b>	

**Proposed Drainage:**

- No updates are required.**
- New cross-culverts to be installed.**
- Grates will be made traversable for bicycles.**
- Catch basins/inlets/manholes to be adjusted.**
- Culvert extensions will be installed where necessary.**
- Beveled ends will be installed where required.**
- Stormwater runoff control will be required.**
- Other Bio-filtration Swales\_\_\_\_\_.**
- See Hydraulics Report for details and calculations.**

**Recommendations:** Replace and remove culverts and fish barriers throughout the project limits, size all stream crossings to the 25 year flood event, install a bridge and fish passage and install new bio-filtration swales in the ditches before they enter typed streams.

**PEDESTRIAN AND BIKE WAYS**

- The existing shoulders are adequate to facilitate bicycle and pedestrian traffic.
- Shoulders are being added to facilitate bicycle and pedestrian traffic.
- This project is not within a designated bike way.
- Sidewalks exist within this project.
- Sidewalks will be constructed in this project.
- Curb cut ramps will be constructed in this project.

**Comments:** This project is located in a rural area where there does not exist any current significant pedestrian or bike traffic.

**PUBLIC TRANSFER FACILITIES**

**Local Public Transit Agency:**

**Bus Pullouts:**

- None exist within this project.
- All existing pullouts meet current design standards and will be overlaid.
- All existing pullouts will be updated at current design standards.
- \_\_\_\_\_ pullouts will be constructed; based upon the recommendations of \_\_\_\_\_.

**Comments:**

**STRUCTURES**

There are no existing structures within this project.

**Bridge Name/No.:**

<b>Structure Type</b>		
<b>Year Built/LE</b>		
<b>Bridge Deck Protect</b>		
Existing	Yes [ ] No [ ]	Yes [ ] No [ ]
Required	Yes [ ] No [ ]	Yes [ ] No [ ]
<b>Proposed Action</b>	N/A	
<b>Bridge Rail</b>		

<b>Meets Standards Existing Type</b>	<b>Yes [ ] No [ ]</b>	<b>Yes [ ] No [ ]</b>
<b>Proposed Action</b>	N/A	
<b>Bridge Rail End Treatment Meets Standards</b>	<b>Yes [ ] No [ ]</b>	<b>Yes [ ] No [ ]</b>
<b>Proposed Action</b>	N/A	
<b>Bridge Width Existing/Proposed</b>	N/A	
<b>Proposed Action</b>	N/A	
<b>Vertical Clearance Existing/Proposed</b>	N/A	
<b>Proposed Action</b>	N/A	
<b>Expansion Joints Existing Type</b>	N/A	
<b>Proposed Action</b>	N/A	
<b>Other Items:</b>		

**TRAFFIC SERVICES**

**Signing**

- Existing signing meets current MUTCD standards.
- All signing will be updated to current MUTCD standards.

**Delineation**

- No pavement markings or delineators are required.
- All pavement markings and delineators will be installed in accordance with the current MUTCD.

**Signalization**

- No traffic signals exist within this project.
- Traffic signals requiring no modification exist at:
- Traffic signals requiring modification and an amended signal permit exist at:
- No additional signalization is proposed.
- Signal permits will be submitted and traffic signals installed at:
- Grinding is proposed, detector loops will require replacement.
- Grinding is proposed, detector loops will not be affected.

**Other recommendations:**

**RAILROAD CROSSING SIGNALS**

- No crossing signals exist within this project.
- Crossing signals exist within this project. See Appendix \_\_\_\_\_.
- Crossing signals will be installed. See Appendix \_\_\_\_\_.
- Rubberized crossing(s) proposed at:

**Other Recommendations:**

**MAINTENANCE CONSIDERATIONS**

**This project has been reviewed by Maintenance for constructability and maintainability. Comments:**

**The following special maintenance needs, as a result of this project have been identified:**

**CONSTRUCTION CONSIDERATIONS**

- No staging or detours are required for traffic.**
- Staging and detours are required at:**

**RIGHT-OF-WAY**

**Existing Width: 40 FEET**

**Proposed:**

- No additional right-of-way will be required.**
- \_\_\_\_\_ acres of additional right-of-way will be required at \_\_\_\_\_.**
- Slope construction permits required at \_\_\_\_\_.**
- Easements required at \_\_\_\_\_.**
- R/W plan revisions will be submitted.**
- R/W plan revisions were submitted on \_\_\_\_\_.**
- Construction permits will be required to reconstruct approaches.**
- Centerline monumentation proposed.**
- Fencing will be installed at part of this project as detailed below.**
- Fencing will not be installed for reasons listed below.**
- This project involves railroad right-of-way.**

**Comments:** Fencing will be installed in the following locations:

Along the purchased Right of Way lines.

**ENVIRONMENTAL**

**SEPA REQUIREMENTS**

- Categorically exempted from SEPA on \_\_\_\_\_.
- A SEPA checklist will be prepared.
- DNS issued on \_\_\_\_\_.
- EIS finalized on \_\_\_\_\_.

**NEPA REQUIREMENTS:**

- NEPA E.A. prepared. FONSI signed on \_\_\_\_\_.
- NEPA EIS prepared. ROD signed on \_\_\_\_\_.
- Categorically excluded from NEPA on \_\_\_\_\_.

<b>Permits Required</b>	
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- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Hydraulic Project Approval | <input type="checkbox"/> Flood plains                            |
| <input checked="" type="checkbox"/> Corps of Engineers 404,    | <input checked="" type="checkbox"/> DOE Const. Stormwater Permit |
| <input type="checkbox"/> USCG Permit                           | <input checked="" type="checkbox"/> Forest Practices             |
| <input type="checkbox"/> Shorelines Permit                     | <input type="checkbox"/> WSDOT                                   |

**Wetlands impacted:** There will be 1.65 acres impacted.

**Proposed wetlands mitigation:** See mitigation report in project file.

**Commitments:** None

**Other Issues: (Historical, Archaeological, Contaminated Soils, Farmlands, etc.)** A search of our GIS data did not return any known Historical, Archaeological or other sensitive sites. An historic/archaeological survey has been conducted by the On-Call archaeologist. There were no sensitive site located on this project, but any sensitive sites will be designed around or mitigated for.

**Other Issues: (Endangered, Threatened or Protected Species)** A search of our GIS data did not return any listed or endangered terrestrial species.



**HEARING, PUBLIC MEETINGS**

- No public hearing(s) or meeting(s) are required.
- Public hearing(s) or meeting(s) were held on \_\_\_\_\_.
- An open house was held on \_\_\_\_\_.
- Newsletters were issued on \_\_\_\_\_.

**Summary: No public meeting or hearing has been held or scheduled.**

**COST ESTIMATE**

	<b>Construction</b>	<b>Right-of-Way</b>	<b>Total</b>
<b>Estimated Cost</b>	\$ 2,200,000	\$35,000	\$ 2,235,000
<b>Current Program</b>			
<b>Original Budget</b>			

**All costs are inflated to the Proposed Ad date:**

**The estimated construction cost includes:**

Sales Tax @ 7.0 %    Engineering @ 15 %  
Contingencies @ 10 %

**This project qualifies for Federal Aid:     Yes     No**