

Coal Creek Trail Construction

Part of the Middle Fork Willamette Trail

Request for Proposals (RFP)



Proposals due by 5PM on June 13th, 2019

Submit proposals electronically to:

audrey@middleforkwillamette.org

Address RFP questions to:

Audrey Squires

Office Phone: 458-215-8200

Cell Phone: 541-915-7235

audrey@middleforkwillamette.org

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1.0 INTRODUCTION

1.1 Middle Fork Willamette Trail

The Middle Fork Willamette Trail #3609 is a gem of the Willamette National Forest and Middle Fork Ranger District. This National Recreation Trail begins at Timpanogas Lake and follows the Middle Fork Willamette River to Hills Creek Reservoir for approximately 30 miles, 95% of which is singletrack. The trail passes through diverse ecosystems while also providing a diversity of trail experiences for a wide variety of recreationists as they explore the headwaters of the Willamette River. The trail is open to all non-motorized use, including trail runners, hikers, mountain bikers, and equestrians.

1.2 Trail Construction Project

Currently, the Middle Fork Trail utilizes Forest Road 2133 for approximately 0.8 miles to connect two trail sections. This exciting project will increase singletrack distance on the Middle Fork Trail by more than two and a half miles while also removing the need for that road section. Approximately a half mile of the new trail has been completed by volunteer groups, the remaining 2.14 miles of trail construction are the focus of this RFP and contract. This section will travel along the hillside above FS Road 2133 into the Coal Creek watershed.

The Middle Fork Willamette Watershed Council (MFWWC) and the USFS Middle Fork Ranger District (MFRD) are partnering on this project. The MFRD has designed and planned the trail project while MFWWC will provide contract management and oversight. The contractor will work with the MFRD field contact during implementation and with the MFWWC project manager for contracting and payment.

1.3 Project Location and Site Access

This trail is located on the Middle Fork Ranger District of the Willamette National Forest. Access to the general project area from Oakridge, OR consists of 23 miles of paved road (Forest Road 21) and one mile of unpaved road (Forest Road 2133). Project elevation ranges from approximately 2000 – 2400 feet. The site is typically accessible year-round except during heavy snowfall.

1.4 Timeline

Trail construction can begin as early as July 2019 and needs to be completed by March 2020. The successful bidder will need to manage timing of work around soil moisture levels and fire season. If funding does not allow for the full project to be completed within this window, the project will be broken into two phases and the second phase will be completed with additional funds in 2020.

1.5 Coal Creek Floodplain Restoration

This trail project has been spurred by the need to move part of the Middle Fork Trail out of the Coal Creek floodplain so that habitat restoration can occur. Coal Creek is a priority stream for restoration by the US Forest Service. The lower reaches of Coal Creek historically provided spawning, rearing, and foraging habitats for Endangered Species Act-listed spring Chinook salmon and bull trout. Many avian and terrestrial species have also relied on this habitat. However, the area has been impacted by timber harvest, streamside tree cutting, road and trail building, and berming. This management history has resulted in a degraded stream that is straight, channelized, and disconnected from the floodplain. Moving the Middle Fork Trail out of the floodplain is a key step in fully restoring the habitat while also making the trail more sustainable and ecologically-friendly. (The photo on the cover page is where the trail formerly crossed Coal Creek, which has now been re-routed.)

2.0 REQUEST FOR PROPOSALS

2.1 Mandatory Pre-Bid Meeting

All interested parties are **required** to attend a site visit with project managers from MFWWC and MFRD in order to bid on this project. This pre-bid meeting will be held on June 5th from 9am to 12pm. Please contact Audrey Squires at the Middle Fork Willamette Watershed Council to RSVP [458-215-8200 (office), 541-915-7235 (cell), audrey@middleforkwillamette.org].

2.2 Proposal Requirements

Proposals shall include the following:

1. Completed bid sheet (Appendix C);
2. Narrative responses to questions outlined in Appendix C;
3. Contact information for two references who can speak to the applicant's successful execution of the type of work described within this RFP; and
4. Proof of an Oregon Construction Contractors Board license.

2.3 Proposal Process

Interested parties shall present the MFWWC with electronic proposals by 5PM on June 13th, 2019. The proposal must include a complete proposal packet as outlined in the Proposal Requirements including responses to all questions in the RFP. MFWWC will review bids based on criteria described in Evaluation/Selection Process and will notify applicants of the decision on or before June 21st, 2019.

Completed proposals and questions regarding the RFP should be directed to Audrey Squires at the MFWWC: audrey@middleforkwillamette.org
458-215-8200 (office)
541-915-7235 (cell)

Responses to questions will be sent to all bidders. Questions received after 3PM on June 7th, 2019 will not be answered.

Table 1: PROPOSAL TIMELINE	
Mandatory pre-bid meeting	June 5, 2019, 9AM – 12PM
Question deadline	June 10, 2019, 3PM
Bid proposals due	June 13, 2019, 5PM
Bidders notified of decision	June 24, 2019

2.4 Evaluation/Selection Process

Award of the contract will be made based on the following criteria:

1. Proposal submitted on time and containing all requested information;
2. Documentation of relevant experience and technical expertise;
3. Ability to meet preferred schedule;
4. Positive references;
5. Demonstration of clear vision for project implementation including appropriate equipment to successfully and efficiently complete the work;
6. A technical/cost relationship that is most beneficial for the long-term success of the project as determined by the MFWWC; and
7. Preference may be given to those with membership in a professional association such as the Professional TrailBuilders Association.

Contract awards may not necessarily be made based on lowest offer. Conversely, awards may not be based solely on technical capabilities if associated costs appear to exceed those deemed necessary for the successful completion of the work.

The MFWWC reserves the right to make award decisions without conducting discussions regarding proposals. Discussions (written or oral) regarding proposals may be initiated by the MFWWC at its discretion for proposals deemed to be within a competitive range. The MFWWC will provide a phone consultation regarding unsuccessful proposals upon request.

3.0 PROJECT DETAILS

3.1 Overview

This trail construction project covers 11,303' linear feet. That distance will need to be cleared, grubbed and excavated. The trail is technical and on challenging terrain, and as such, it requires a variety of specific elements, including five shallow stream fords and gully crossings, nine grade dips, 170 linear feet of retaining wall, seven switchbacks, six climbing turns, 320 linear feet of rock excavation work, rock loading and delivery, and ten stumps to remove. A detailed work summary is included in Section 3.3 and a bid sheet with these line items is included at the end of this document in Appendix A.

3.2 General Construction Notes

1. Logs and trees larger than 24" diameter at breast height which need to be cut from the trail corridor will be cut by USFS trail crews at no charge to the contractor. This work must be scheduled two weeks prior to the date the work needs to be completed.
2. Except where noted in the work summary, general trail construction specifications to be used on this project are listed in the table on the next page. This trail is utilized by hikers, runners, mountain bikers, and equestrians, so the trail will need to meet all of their needs.
3. In general, the orange pin flags marking the route are to be followed precisely. On tangents the pin flags mark the centerline of the trail. In rocky areas, the pin flags may be marking the upper edge of the cut slope to help the contractor avoid unnecessary rock work. On corners, the pin flag line marks the outside radius of the turn. If necessary, the pin flag line can be moved by the MFRD field contact if undiscovered issues arise during construction. This must be arranged in advance before the ground is disturbed at that station.
4. This trail construction project does not interfere with other sections of the Middle Fork Trail and, therefore, detours will not be necessary as the 2133 road is already in use for trail traffic. Additionally, no trail use will be allowed until trail is fully complete and so the contractor should take care to clearly close off the entrances to the new trail during construction.

Table 2: GENERAL TRAIL CONSTRUCTION SPECIFICATIONS		
Designed Use PACK AND SADDLE		Trail Class 2
Design Tread Width	Non-Wilderness (Single Lane)	12" – 24" May be up to 48" along steep side slopes 48" – 60" or greater along precipices
	Non-Wilderness (Double Lane)	60"
	Structures (Minimum Width)	Other than bridges: 36" Bridges without handrails: 60" Bridges with handrails: 84" clear width
Design Surface	Type	Native, limited grading May be frequently rough
	Protrusions	≤ 6" May be common and continuous
	Obstacles (Maximum Height)	12"
Design Grade	Target Grade	5% – 20%
	Short Pitch Maximum	30%
	Maximum Pitch Density	15% – 20% of trail
Design Cross Slope	Target Cross Slope	5% – 10%
	Maximum Cross Slope	10%
Design Clearing	Height	8' – 10'
	Width	72" Some light vegetation may encroach into clearing area
	Shoulder Clearance	6" – 12" Pack clearance: 36" x 36"
Design Turn	Radius	4' – 5'

3.3 Work Summary

The following table provides a detailed description of the work to be completed for this trail project.

Table 3: WORK SUMMARY – COAL CREEK TRAIL CONSTRUCTION		
Station (feet)	Work Item	Comments
Station 1 Ford 0+00	Tangent Begin Clearing and grubbing Begin Excavation and embankment Follow flags at 10-15% grade to station 2	Begin Coal Creek Trail Construction, FS Rd. No. 2133-200. Roadside ditch shall be armored with rock from road edge leading up-trail for 10 feet. Rock will be loaded and delivered to work site by contractor.
Station 2 Corner 1	Switchback (SWB), 12' radius, Construct Rock Retaining Wall	Fill approximately 2' tall for 10 feet length. Borrow as needed from trail bed. Rocks on site.
Station 2 to Station 3	Tangent Clearing and grubbing, excavation and embankment, follow flags to Station 3	Conserve rock for rock retaining walls. Grade 0 to 10%. Cut and fill as needed. Appx. 3x3' rocks to remove from trailway. 4 trees up to 20" to cut.
Station 3 Corner 2	Climbing Turn, 25' radius	As flagged on ground
Station 3 to Station 4	Tangent Clearing and grubbing, excavation and embankment, follow flags to Station 4	0-15% grade, conserve rocks, cut and fill as needed
Station 4 Corner 3	SWB, 15' radius, construct Rock Retaining Wall	Retaining wall with rocks on site 3.5 tall x 15' long, borrow from trail bed as needed
Station 4 to Station 5	Tangent Clearing and grubbing, excavation and embankment, follow flags to station 5	5-15% grade
Station 5 Ford	Shallow ford or step-down drain, appx. 16' long	Ford, rock armor for 5' either side of extent of wet area, use "spill over" rock, bury rocks 2/3 of their depth, ford shall be 36" wide.
Station 5 to Station 6	Tangent Clearing and grubbing, excavation and embankment, follow flags to station 6	Cut and fill as needed. Conserve rocks, 0-10% grade.
Station 6 Corner 4	Climbing turn, 20' radius, Construct Rock Retaining Wall	Retaining wall with rocks on site 1.5 tall x 15' long.
Station 6 to Station 7	Tangent Clearing and grubbing, excavation and embankment, follow flags to station 7	Conserve rock for rock retaining walls. Grade 0 to 10%. Cut and fill as needed.

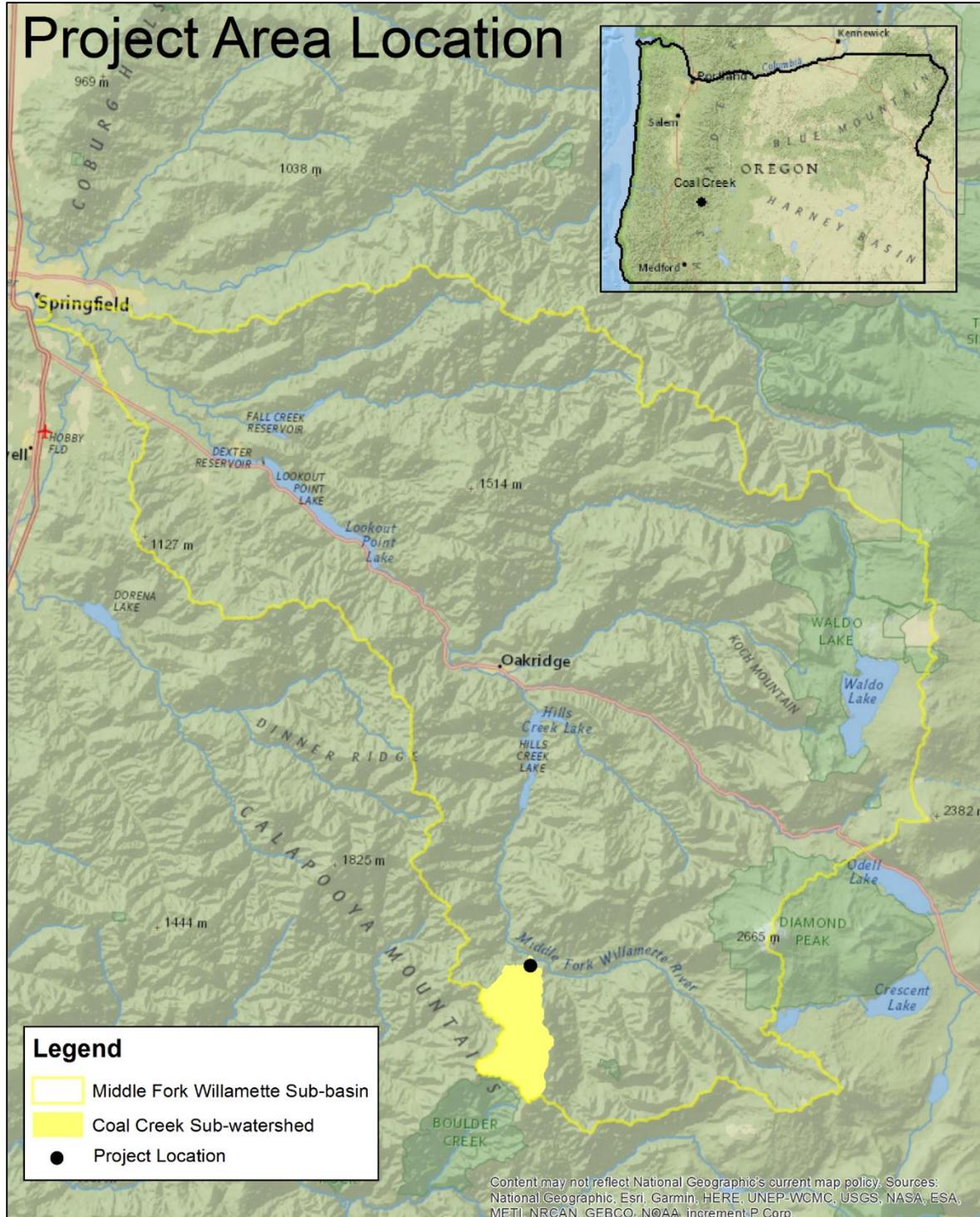
Station (feet)	Work Item	Comments
Station 7 Corner 5	Climbing turn, 25' radius, Construct Rock Retaining Wall	Cut 3 trees, Use rocks on site to build 2 X 15' retaining wall
Station 7 to Station 8	Tangent Clearing and grubbing, excavation and embankment, follow flags to station 8	Conserve rock for rock retaining walls. Grade 0 to 15%. Cut and fill as needed.
Station 8 Corner 6	SWB, 12' radius, Construct Rock Retaining Wall	Build retaining wall with on-site rocks 1.5 x 15' long
Station 8 to Station 9	Tangent Clearing and grubbing, excavation and embankment, follow flags to station 9 3 grade reversals	Construct grade reversals as flagged, follow flags at 0-15% grade
Station 9	Rock garden with five curves	Five shallow curves as flagged through rocks up to 24 x 24". A smooth trailway with obstacle height no taller than 10" shall be provided at 18" wide. One optional line for descending bicycles within 24" of trail centerline shall be provided with obstacles up to 18" height.
Station 10 Corner 7	Shallow curve as flagged	Rocky curve, Just digging, no retaining wall.
Station 10 to Station 11	Tangent Clearing and grubbing, excavation and embankment, Rock Garden Construction, follow flags to station 11	Steep (22%) entrance to rock garden. Skill filter. This segment may be difficult or impossible to ride uphill on a mountain bike for up to 80 feet.
Station 11 Steep Slopes	Tangent Clearing and grubbing, excavation and embankment	Begin 65-75% cross slopes. There are 9 trees 11-20" diameter to fell. Stumps must be removed if they are in the tread.
Station 11 to Station 12	Tangent Clearing and grubbing, excavation and embankment	Traverse at 0-5% grade.
Station 12 Gully Crossing Ford	Rock work and Ford Construction, Construct Rock Retaining Wall	Steep slopes for 80-100 lineal feet with mixed rock hammering and cracking, plus retaining wall and ford construction. Wet area below a weeping cliff face should be armored with on-site rocks 5 feet past the extent of wet area, approximately 15 feet.

Station (feet)	Work Item	Pay Item	Comments
Station 12 to Station 13	Tangent Clearing and grubbing, excavation and embankment, stump removal		There is one, old 36" stump that needs removed in this segment.
Station 13 Rocky choke point 66+53	Rock work		Moderate slopes with 20 lineal feet of rock work and jackhammering
Station 13 to Station 14	Tangent Clearing and grubbing, excavation and embankment, follow flags to Station 14		0-5% grades
Station 14 Gully Crossing Ford	Rock work and Ford Construction		40 feet of brittle, fractured rock to build tread through. Steep gully with small (5') ford to build with native rock. Trail grades leading to ford shall be armored for 5' on either side of crossing.
Station 15 Rock work	Talus		120 feet of talus up to 24x24" to build tread through
Station 15 to Station 16	Tangent Clearing and grubbing, excavation and embankment, follow flags to Station 16		0-5% grades. A gentle climb/descent makes shallow curves to keep the grade under 5%
Station 16 The Nose	Tangent Clearing and grubbing, excavation and embankment, follow flags to Station 17		Trail route crosses a broad nose/ridge heading toward corner 8
Station 17 Corner 8	SWB, radius 15 feet, Construct Rock Retaining Wall		SWB with rock retaining wall. Wall should be 2 x 20'. Rocks on site.
Station 17 to Station 18	Tangent Clearing and grubbing, excavation and embankment, follow flags to Station 18		0-20% grades. 2-4 trees to remove.
Station 18 Corner 9	Climbing turn, 25' radius		Just digging, no retaining wall needed.
Station 18 to Station 19	Tangent Clearing and grubbing, excavation and embankment, follow flags to Station 19		Gentle slopes
Station 19 Corner 10	SWB, 12' radius, Construct Rock Retaining Wall		SWB with rock retaining wall. Wall should be 2 x 15'. Rocks on site.
Station 19 to Station 20	Tangent Clearing and grubbing, excavation and embankment, follow flags to Station 20		Gentle slopes, gentle <8% grades.

Station (feet)	Work Item	Pay Item	Comments
Station 20 Corner 11	Climbing Turn, 25 feet radius		Just digging, no retaining wall. Located directly above quarry.
Station 20 to Station 21	Tangent Clearing and grubbing, excavation and embankment, follow flags to Station 20		Gentle slopes, <10% grades.
Station 21 Corner 12	Climbing Turn, 15' radius.		Just digging, no retaining wall. Several small trees to clear.
Station 21 to Station 22	Tangent Clearing and grubbing, excavation and embankment, follow flags to Station 22		Hummocky ground leading approximately 100 feet to the final corner. Conserve all rock and fill to backfill corner 13.
Station 22 Corner 13	SWB, 10' radius, Construct Rock Retaining Wall		Steep road cut needs a 4 x 25' retaining wall just above the roadside ditch. Rock will be provided from a USFS quarry located within 5 miles of work site. Contractor shall load and deliver rock to work site.
Station 23 Ford End of Construction 113+03			End Coal Creek Trail Construction, FS Rd. No. 2134. Roadside ditch shall be armored with rock from road edge leading up-trail for 10 feet. Rock will be loaded and delivered to work site by contractor.
End of Coal Creek Trail Construction Work Summary			

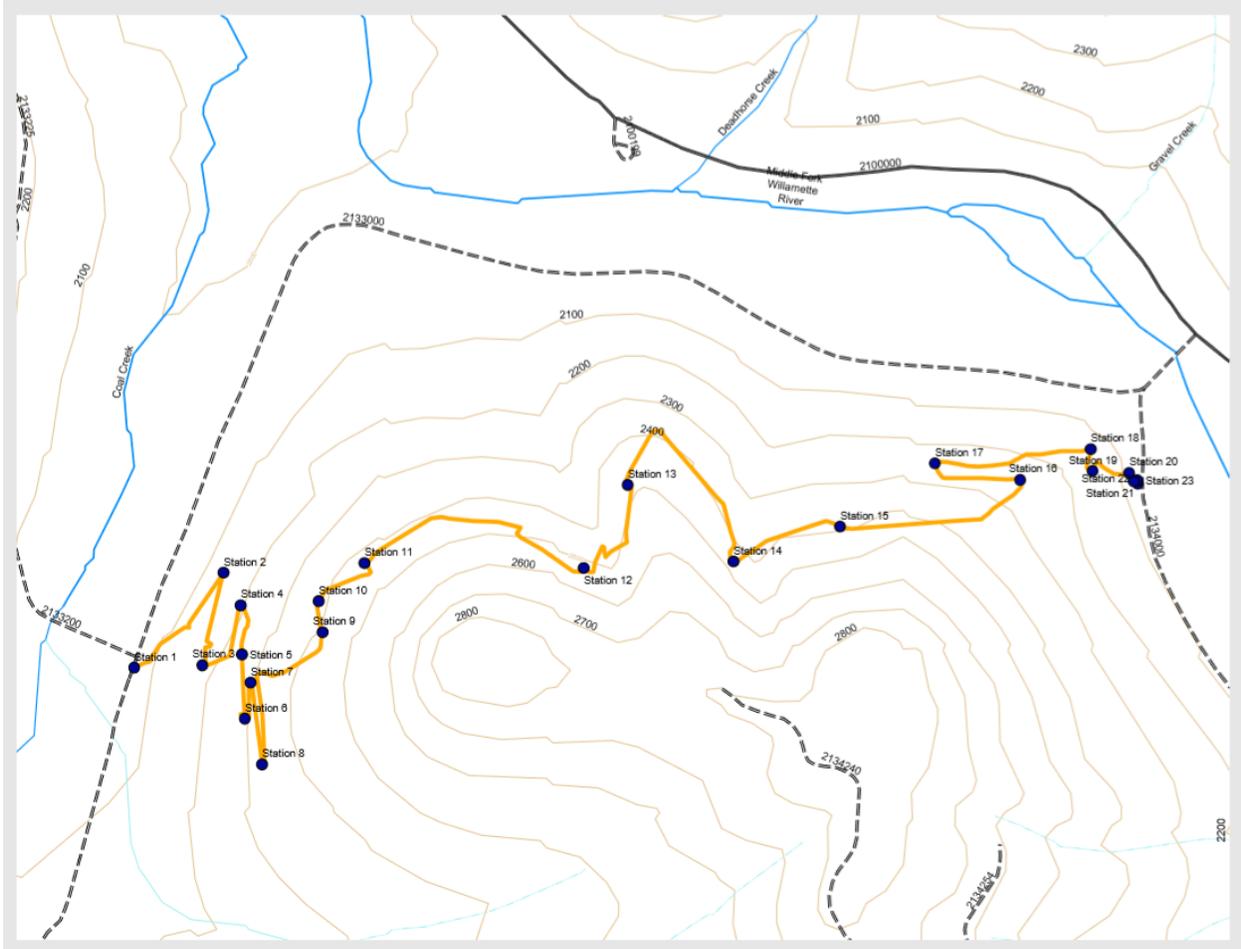
3.4 Region and Project Maps

Region Map



Project Map

The following map show the layout for the trail to be constructed (yellow) with the stations that correspond to the Work Summary. Work will begin on the west end of the trail, accessed from the 2133 Road.



4.0 ADDITIONAL REQUIREMENTS/CONSIDERATIONS

4.1 Contractor's Supervisor and Furnished Items

Contractor shall provide an on-site manager to be physically present when the work is being performed. This person will serve as the point of contact for MFWWC and will be responsible for regular check-ins with MFWWC and MFRD.

The Contractor shall provide all equipment, repair parts, and materials/supplies to perform contract work according to specification. Equipment includes but is not limited to:

- Hydraulic fluids, oils, lubricants (biodegradable lubricants and bar oil are required);
- Hand tools;
- Equipment repair parts;
- Safety equipment;
- Spill containment kit (see *Hazardous Material Containment/Clean Up*); and
- Fire extinguishing tools (see Appendix A).

4.2 Permits

The MFRD and MFWWC will be responsible for the procurement of any necessary State, Federal and County permits for project implementation. Permits will be supplied to the Contractor prior to the start of work. A copy of relevant permits shall be kept on site while work is performed. If ODOT permits are required for equipment transport, the contractor is responsible for obtaining them.

4.3 Environmental Protection

Contractor shall adhere to all applicable Federal, State and local environmental protection laws and regulations. Any maintenance work, equipment repairs and refueling of equipment shall be completed 100 feet from streams. Equipment furnished shall be free from any leakage of petroleum products. Excessive leakage shall be a basis for issuing an immediate shutdown of the operation.

Care shall be taken to minimize impact to soils and established native vegetation as possible. Impact to soils native vegetation should be confined to the trail corridor. If excessive damage to soils or native vegetation is documented outside of the trail corridor, operations shall be halted until techniques can be developed that do not result in excessive damage.

4.4 Equipment Cleaning

In order to prevent the spread of noxious weeds, the Contractor shall clean all construction equipment prior to moving it to the project area. This cleaning shall remove all soil, plant parts, seeds, vegetative matter, or other debris that could contain or hold seeds. Only construction and maintenance equipment and the equipment necessary to transport said equipment, shall be cleaned and inspected by the Forest Service prior to operating within the project area. All subsequent move-ins of equipment to the project area shall be treated in the same manner as the initial move-in. This requirement does not apply to service vehicles, water trucks, pickups, cars, and/or similar vehicles.

Contractor shall employ whatever cleaning methods necessary to ensure that construction and maintenance equipment is free of noxious weeds. Equipment shall be considered free of soil, seed, and other such debris when a visual inspection does not disclose such material. Equipment or components disassembly, or the need for specialized tools, are not required.

Unless otherwise agreed, Contractor shall give the Forest Service at least 24 hours' notice when equipment is ready for inspection. Inspection will occur at the Middle Fork Ranger Station in Westfir.

Inspection will be required after every subsequent cleaning ordered by the Forest Service. Forest Service shall approve the methods of cleaning and the locations for the subsequent cleaning.

New infestations of noxious weeds of concern to Forest Service and identified by Contractor or Forest Service on the project area or on the haul route shall be promptly reported to the other party. Contractor and Forest Service shall agree on treatment methods to reduce or stop the spread of noxious weeds when new infestations are found. A current list of noxious weeds of concern to Forest Service is available at each Forest Service office.

4.5 Hazardous Material Containment/Clean Up

The Contractor shall keep a Spill Containment Kit (SCK) on site during any operation and provide training to employees on how components of the SCK are used. The SCK must be designed for use with petroleum products.

Any and all spills of chemicals, including but not limited to petroleum products, shall be reported to the MFRD field contact and immediately contained and disposed of in accordance with State and Federal regulations. Disposal includes the removal of any contaminated soil and rock material.

4.6 Fire Precautions

All State of Oregon and applicable federal fire laws shall be followed. Fire restrictions may result in limited hours of equipment operations at the work site, including the use of gasoline vehicles and power tools. Contractor is responsible for providing any equipment required by the Oregon Department of Forestry. Smoking or flaming materials are not allowed on the project site or nearby areas with significant fuel loads during fire season. If large accumulations of slash vegetation are created, concentrations shall be reduced by scattering slash or hand piling and burning. See Appendix A for additional details regarding fire protection and suppression on Forest Service lands.

4.7 Heritage Resource Considerations

If cultural resources are encountered during the course of the project, earth disturbing activities in the vicinity must be suspended in accordance with federal regulations and the Project Manager must be notified. Forty-eight-hour notice must be given prior to subsoiling and other earthwork activities. The MFRD Archaeologist may need to be present during certain sections of trail work.

4.8 Insurance Requirements

Contractor shall maintain the minimum of the insurance coverages below and provide MFWWC with certification prior to initiation of work. Contractor shall carry Commercial General Liability Insurance in the amount of \$1,000,000 per occurrence; \$2,000,000 in the aggregate. Contractor shall also carry automobile insurance with limits equal to the minimum required by the State of Oregon. Contractor shall comply with the Oregon Worker's Compensation law by qualifying as a carrier-insured employer or as a self-insured employer and shall comply with all other applicable provisions of such law.

4.9 Prevailing Wage Rate Law

Contractor must comply with Oregon's prevailing wage rate law which requires that entities using public funds for public works must pay not less than the prevailing rate of wage for an hour's work, including fringe benefits, in the same trade in the locality where the work is performed. Public works is defined as including "roads, highways, buildings, structures and improvements of all types, the construction, reconstruction, major renovation or painting of which is carried on or contracted for by any public agency to serve the public interest..." ORS 279C.800(6)(a). Construction is defined as "the initial construction of buildings and other structures, or additions thereto, and of highways and roads." OAR

839-025-0004(5). More information can be found here:
http://www.oregon.gov/boli/whd/pwr/pages/w_pwr_pwrbk.aspx.

4.10 Payments

Contract between the MFWWC and the successful bidder will establish a not-to-exceed amount that is within the funding constraints of the MFWWC. Payment requests from the contractor shall be made by submitting detailed invoices to the MFWWC no more frequent than every other month. Payment will occur within 30 days of receipt and approval by the MFWWC.

APPENDIX A – Fire Protection and Suppression: USDA Forest Service, PNW Region

Fire Period and Closed Season

Specific fire prevention measures are listed below and shall be effective for the period April 1 to October 31 of each year. The Forest Service may change the dates of said period by advance written notice if justified by unusual weather or other conditions. Required tools and equipment shall be kept in serviceable condition and immediately available for initial attack on fires.

Fire Plan

Before starting any operations on the project, the Contractor shall prepare a fire plan in cooperation with the USFS providing for the prevention and control of fires in the project area. The Contractor shall certify compliance with fire protection and suppression requirements before beginning operations during the fire period and closed season, and shall update such certification when operations change.

Substitute Measures

The USFS may by written notice authorize substitute measures or equipment or may waive specific requirements during periods of low fire danger.

Emergency Measures

The Forest Service may require emergency measures including the necessary shutting down of equipment or portions of operations in the project area during periods of fire emergency created by hazardous climatic conditions.

Fire Control

The Contractor shall, independently and in cooperation with the Forest Service, take all reasonable action to prevent and suppress fires in the project area. Independent initial action shall be prompt and shall include the use of all personnel and equipment available in the project area. For the purpose of fighting forest fires on or in the vicinity of the project which are not caused by the Contractor's operations, the Contractor shall place employees and equipment temporarily at the disposal of the Forest Service. Any individual hired by the Forest Service will be employed in accordance with the Interagency Pay Plan for Emergency Firefighters. The Forest Service will compensate the Contractor for equipment rented at firefighting equipment rates common in the area, or at prior agreed to rates.

Compliance with State Forest Laws

Listing of specific fire precautionary measures herein is not intended to relieve the Contractor in any way from compliance with the State Fire Laws covering fire prevention and suppression equipment, applicable to operations under this contract, permit or license.

Fire Precautions

Specific fire precautionary measures are as follows:

Smoking and Open Fires

Smoking and fires shall be permitted only at the option of the Contractor. The Contractor shall not allow open fires on the project area without advance permission in writing from Forest Service. Unless restricted by State Law or Federal Regulation, smoking shall be permitted only in such portions of the project area that are free of flammable material. Smokers shall sit down to smoke in such a position that

any burning material will fall within a cleared area, and shall extinguish and press out in mineral soil all burning material before leaving the cleared area.

Fire Extinguishers and Equipment on Trucks, Tractors, etc.

All power-driven equipment operated by the Contractor on National Forest land, except portable fire pumps, shall be equipped with one fire extinguisher having a UL rating of at least 5 BC, and one "D" handled or long handled round point shovel, size "0" or larger. In addition, each motor patrol, truck and passenger-carrying vehicle shall be equipped with a double-bit axe or Pulaski, 3-1/2 pounds or larger. Equipment shall be kept in a serviceable condition and shall be readily available.

Power Saws

Each gasoline power saw operator shall be equipped with a pressurized chemical fire extinguisher of not less than 8-ounce capacity by weight, and one long-handled round point shovel, size "0" or larger. The extinguisher shall be kept in possession of the saw operator at all times. The shovel shall be accessible to the operator within 1 minute.

Extinguishers

One refill for each type or one extra extinguisher sufficient to replace each size extinguisher required on equipment shall be safely stored in the fire tool box or other agreed upon place on the project area that is protected and readily available.

Spark Arresters and Mufflers

Each internal combustion engine shall be equipped with a spark arrester meeting either (1) USDA Forest Service Standard 5100-1a, or (2) appropriate Society of Automotive Engineers (SAE) recommended practice J335(b) and J350(a) as now or hereafter amended unless it is:

- (1) Equipped with a turbine-driven exhaust supercharger such as the turbocharger. There shall be no exhaust bypass.
- (2) A passenger-carrying vehicle or light truck, or medium truck up to 40,000 GVW, used on roads and equipped with a factory-designed muffler complete with baffles and an exhaust system in good working condition.
- (3) A heavy duty truck, such as a dump or log truck, or other vehicle used for commercial hauling, used only on roads and equipped with a factory designed muffler and with a vertical stack exhaust system extending above the cab.

Exhaust equipment described in this subsection, including spark arresters and mufflers, shall be properly installed and constantly maintained in serviceable condition.

Emergency Fire Precautions

The Contractor shall restrict operations in accordance with the Industrial Fire Precaution Levels listed below. The Forest Service may change the Industrial Fire Precaution Levels to other values upon revision of the National Fire Danger Rating System and may change the specific Industrial Fire Precaution Levels when such changes are necessary for the protection of the National Forest. When sent to the Contractor, the revised Industrial Fire Precaution Levels will supersede the attached levels.

INDUSTRIAL FIRE PRECAUTIONS SCHEDULE

LEVEL INDUSTRIAL FIRE PRECAUTION (IFPL)

- I. Closed season - Fire precaution requirements are in effect. A fire watch/security is required at this and all higher levels unless otherwise waived.

- II. Partial hootowl - The following may operate only between the hours of 8 p.m. and 1 p.m., local time:
- a. power saws, except at loading sites;
 - b. cable yarding;
 - c. blasting;
 - d. welding or cutting of metal.

- III. Partial shutdown - The following shall be prohibited except as indicated:
- a. cable yarding - except that gravity operated logging systems employing non-motorized carriages may be operated between the hours of 8 p.m. and 1 p.m., local time, when all block and moving lines, except the line between the carriage and the chokers, are suspended 10 feet above the ground;
 - b. power saws - except power saws may be used at loading sites and on tractor/skidder operations between the hours of 8 p.m. and 1 p.m., local time.

In addition, the following are permitted between the hours of 8 p.m. and 1 p.m., local time:

- a. tractor/skidder operations;
 - b. mechanized loading and hauling of any product or material;
 - c. blasting;
 - d. welding or cutting of metal;
 - e. any other spark-emitting operation not specifically mentioned.
- IV. General shutdown - All operations are prohibited.

The following definitions shall apply to these Industrial Fire Precaution Levels:

Cable yarding systems: A yarding system employing cables and winches in a fixed position.

Closed season (Fire Precautionary Period): That season of the year when a fire hazard exists as declared by the responsible agency official.

Loading sites/woods site/project area: A place where any product or material (including but not limited to logs, firewood, slash, soil, rock, poles, posts, etc.) is placed in or upon a truck or other vehicle.

Low hazard area: Means any area where the responsible agency representative (WDNR, ORF, BIA, BLM) determines the combination of elements reduces the probability of fire starting and/or spreading.

Tractor/skidder operations: include a harvesting operation, or portion of a harvesting operation, where tractors, skidders, or other harvesting equipment capable of constructing fire line, are actively yarding forest products and can quickly reach and effectively attack a fire start.

Waivers, written in advance, may be used for any and all activities. Activities for which waivers may be issued include, but are not limited to:

- a. mechanized loading and hauling;
- b. road maintenance such as sprinkling, graveling, grading and paving;
- c. cable yarding using gravity systems or suspended lines and blocks, or other yarding systems where extra prevention measures will significantly reduce the risk of fire;
- d. powers saws at loading sites or in felling and bucking where extra prevention measures will significantly reduce the risk of fire;
- e. maintenance of equipment (other than metal cutting and welding) or improvements such as structures, fences and powerlines.

Such waiver, or substitute precautions will prescribe measures to be taken by the Contractor to reduce the risk of ignition, and/or the spread of fire. A project representative shall consider site specific

weather factors, fuel conditions, and specific operations that result in less risk of fire ignition and/or spread than contemplated when precaution level was predicted. Consideration shall also be given to measures that reduce the precaution levels above. The Contractor shall assure that all conditions of such waivers or substitute precautions are met prior to the start of work, from the appropriate Ranger District headquarters. If predictions made after 6:00 p.m., local time, are significantly different than the original prediction, the Forest Service will inform the Contractor when changes in restrictions or industrial precautions are made.

Where hauling involves transit through more than one shutdown/regulated use area, the precaution level at the woods loading site shall govern the level of haul restriction, unless otherwise prohibited by other than industrial precaution level system.

Fire Tools

The Contractor shall furnish serviceable firefighting tools in a readily accessible fire tool box or compartment of sound construction with a hinged lid and hasp so arranged that the box can be secured or sealed. The box shall be red and marked "Fire Tools" in letters one inch high. It shall contain a minimum of:

- a. 2 axes or Pulaskis with a 32-inch handle;
- b. 3 adze eye hoes. One Pulaski may be substituted for 1 adze eye hoe;
- c. 3 long-handled, round point shovels, size "0" or larger.

Fire Security

When the Industrial Fire Precautions Level is "I" or higher, unless a waiver is granted, the Contractor shall designate a person who shall perform fire security services listed below on the project area and vicinity. The designated person shall be capable of operating the Contractor's communications and firefighting equipment specified in the contract, excluding helicopters, and of directing the activities of the Contractor's personnel on forest fires. In lieu of having the designated person perform the required supervisory duties, the Contractor may provide another person meeting the qualifications stated above to direct the activities of Contractor's personnel and equipment during all firefighting activities.

Services described shall be for at least 1 hour from the time the Contractor's operations are shut down. For the purposes of this provision, personnel servicing equipment, and their vehicles, who are not engaged in cutting or welding metal are excluded.

Fire security services shall consist of moving throughout the operation area or areas constantly looking, reporting, and taking suppression action on any fires detected. Where possible, the designated person shall observe inaccessible portions of helicopter operating areas from vantage points within or adjacent to project area.

Communication

The Contractor shall provide adequate two-way communication facilities to report a fire to Forest Service within 15 minutes of detection. FCC Regulations prohibit commercial use of Citizen Band (CB) radios. (CB's are not considered adequate two-way communication). Such communication shall be operable during periods of operation of power-driven equipment, including the time fire security is required.

APPENDIX B – Selected USFS Standard Trail Specifications and Definitions

Section 902-Definitions

When the following terms, or pronouns in place of them, are used in these specifications or in other contract documents, the intent and meaning are as follows:

Base Course. The layer or layers of specified material of designed thickness placed on a trailbed to support surfacing.

Batter. A backward and upward slope of the face of a wall.

Berm. The ridge of material formed on the outer edge of the trail that projects higher than the tread.

Borrow. Suitable materials taken from approved sources designated on the drawings or on the ground, to be used for embankments and backfilling.

Bridge. A structure, including supports, erected over a depression or stream, and having a deck for carry traffic.

Cap Rock. Rock placed in the top or uppermost layer in a constructed rock structure, such as a talus or rubble rock section or rock retaining wall.

Catch Point. The outer limits of a trailway where the excavation and/or embankment intersect with the ground line.

Clearing Limit. The area over and beside the trail that is cleared of trees, limbs, and other obstructions.

Climbing Turn. A reverse in direction of trail grade without a level landing used to change elevation on a steep slope.

Compacted. Consolidation that is obtained by tamping or rolling suitable material until no noticeable displacement of material is observed.

Culvert. A drainage structure composed of rock, metal, or wood that is placed approximately perpendicular to and under the trailway.

Cushion Material. Native or imported material, generally placed over rocky section of unsurfaced trail to provide a usable and maintained traveled way.

Danger Tree. An unstable tree 5" or greater in diameter at breast height that is likely to fall across the trail.

Designated on the Ground. The location of materials, work areas, and construction items, including lines and grades, marked on the ground with stakes, flagging, tags, or paint.

Drawings. Documents showing details for construction of a facility, including but not limited to straightline diagrams, trail logs, standard drawings, construction logs, plan and profile sheets, cross-sections, diagrams, layouts, schematics, descriptive literature, and similar materials.

Drift Pin. Smooth steel rod meeting requirements of AASHTO M 270, Grade 36.

Duff. Organic material overlying rock or mineral soil.

Embankment. A structure of suitable material placed on the prepared ground surface and constructed to the trailbed elevation.

Excess Excavation. Material in the trailway in excess of that needed for construction of designed trailways.

Ford. A water-level stream crossing constructed to provide a level surface for safe traffic passage.

Full Bench. Trailbed constructed entirely on undisturbed material.

Grade. The vertical distance of ascent or descent of the trail expressed as a percentage of the horizontal distance.

Header Rock. Rock laid with the narrow end towards the face of the wall.

Inslope. Where the trail tread is sloped downward toward the backslope.

Mineral Soil. Soil or aggregate that is free from organic substances and contains no particles larger than 2" at their greatest dimension.

Outslope. Where the trail tread is sloped downward toward the embankment or daylight side of the trailway.

Sideslope. The natural slope of the ground, usually expressed as a percentage.

Slough. That material from the backslope or the area of the backslope that has raveled onto the trailbed

Slump. Where the trailbed material has moved downward, causing a dip in the trail grade.

Special Project Specification. Specifications that detail the conditions and requirements peculiar to an individual project, including additions and revisions to the standard specifications.

Surfacing. Material placed on top of the trailbed or base course that provides the desired tread.

Suitable Material. Rock that can be accommodated in the trail structure, and soil free of duff with a recognizable granular texture.

Switchback. A reverse in direction of trail grade with a level landing used to change elevation on a steep slope, usually involving special treatment of the approaches, barriers, and drainages.

Trailbed. The finished surface on which base course or surfacing may be constructed. For trails without surfacing the trailbed is the tread.

Trailway. The portion of the trail within the limits of the excavation and embankment.

Tread. The surface portion of the trail upon which traffic moves.

Turnout. A short section of extra trail width to provide for passage of trail users.

Waterbar. A structure used for turning water off the trail, usually made of logs or stones.

Water Courses. Any natural or constructed channel where water naturally flows or will collect and flow during spring runoff, rainstorms, etc.

Section 905-Control of Materials

905.01 Handling Materials. Transport and handle all materials to preserve their quality and fitness for the work. Stockpile, load, and transport aggregates in a manner that will preserve specified gradation and avoid contamination.

Store materials to assure the preservation of their quality and fitness for the work. Locate stored materials to facilitate their prompt inspection. Sites on Government-administered land that are not already designated may be used for storage purposes and for placing of equipment only when approved in advance by the USFS. Restore all storage sites in accordance with requirements SHOWN ON THE DRAWINGS or as otherwise specified. Arrangements for storage on other than designated sites are the responsibility of the contractor.

905.02 Material Sources.

(a) Designated Sources. Sources for materials such as, but not limited to, soil, rock, or logs that are not available from trailway excavation or clearing operations will be designated. Sources of local materials designated in the SPECIAL PROJECT SPECIFICATIONS or SHOWN ON THE DRAWINGS are guaranteed by the Government for the quality and quantity of material in the source.

Use all needed suitable material from the source. The designation of a source includes the right to use areas SHOWN ON THE DRAWINGS for the purposes designated (such as plant sites, stockpiles, haul roads). Operations are restricted to the confines of the area(s) designated.

(b) Contractor-Furnished Sources. Furnish material that produces an end product equivalent in performance to that specified.

905.03 Restoration. Shape and grade borrow areas on Government administered land to make them stable and to minimize future erosion. Dispose of debris resulting from development of material sources by scattering, unless otherwise specified. Do not scatter debris within the clearing limits of trails or within roadsides. Cut off stumps to less than 1" above the ground as measured on the uphill side of the stump.

Section 908-Staking, Flagging, and Cleanup

908.01 Work. This work consists of establishing any control points needed in addition to existing staking, and removing and disposing of all construction stakes, tags, flagging, and plastic ribbon from the project area.

908.02 General. The Government will set initial construction stakes or flagging, and control points, and furnish the contractor with all necessary information relating to lines, slopes, and grades. These stakes and flagging constitute the field control.

Furnish and maintain all additional stakes, flagging, templates, batter boards, and other materials and supplies necessary for marking and maintaining points and lines established. Do not perform work in the absence of control points. If any construction control points are destroyed, displaced, or erroneous, notify the MFRD field contact. Uniformly contour alignment and construct grade from control point to control point.

Remove all construction stakes, tags, flagging, and plastic ribbon from the project area within 7 days after the final inspection of all other work on the project. Dispose of all stakes, tags, flagging, and plastic ribbon off Government-administered lands unless otherwise designated.

Section 911-Clearing and Grubbing

911.01 Work. Work consists of clearing, grubbing, trimming, removing, or treating trees, logs, limbs, branches, brush, plants, and other vegetation within the clearing limits. Work includes the felling and treatment of designated trees outside the clearing limits. Also included are the protection from injury or defacement of trees and other objects not designated for removal and the treatment of damaged trees.

911.02 Clearing Limits. Clear to the dimensions SHOWN ON THE DRAWINGS or 12" beyond the fill and backslope catch points, whichever is greater.

911.03 Material to Be Cleared. Remove and dispose of trees, logs, limbs, branches, brush, herbaceous plants, and other vegetation within the clearing limits, except for the following:

- a) Live, sound, and firmly rooted trees of the size SHOWN ON THE DRAWINGS.

- b) Live brush, herbaceous plants, and trees between the trailway and the clearing limits that are less than 12" in height and less than ½" in diameter at ground line.

Except as provided above, cut all limbs and branches more than ½" in diameter that extend into the clearing limits. Cut limbs flush with the tree trunks or stems or cut at the ground surface as SHOWN ON THE DRAWINGS. Fall and limb designated trees.

911.04 Damaged Trees. When felling, cutting, or trimming, do not cause bark damage to standing timber. If damage does occur to standing trees, treat the injured trees as SHOWN ON THE DRAWINGS. Remove and dispose of trees with major roots exposed by construction that are rendered unstable.

911.05 Removal of Stumps. Remove all stumps within the trailbed. Remove stumps located between the edge of the trailbed and the edge of the tramway that cannot be cut flush with the finished slope or that are not tightly rooted.

911.06 Disposal of Clearing Slash, Logs, Stumps, Brush, and Roots. Limb all felled trees to a 4" diameter top, including designated trees outside the clearing limits.

Do not place clearing slash, logs, stumps, brush, or roots in concentrated piles. Scatter all logs, limbs, lopped tops, brush, and grubbed stumps and roots below the trailway and outside the clearing limits, with the following exceptions:

- (a) Where the sideslope above the trail is less than 10 percent, material may be scattered above the trail.
- (b) Logs may be left on the uphill side of the trail if they are placed so that they will not move into the clearing limits.

Do not place clearing and grubbing debris in water courses, snow ponds, lakes, meadows, or in locations where it could impede the flows to, through, or from drainage structures.

Section 912-Excavation and Embankment

912.01 Work. Work consists of the excavation and placement of excavated material, regardless of its nature, from within the trailway or from other sources, except for material included under other pay items SHOWN IN THE SCHEDULE OF ITEMS.

Includes excavation, embankment, and backfill construction required to shape and finish the trailbed, ditches, backslopes, fill slopes, drainage dips, trail passing sections, and turnouts. Also includes excavation and embankment work required to construct shallow stream fords and gully crossings, talus and rubble rock sections, and climbing turns.

912.02 Requirements. Use materials meeting the requirements of the following sections:

- 961 - Rock, Grid Pavement Units, and Aggregate
- 962 - Material for Timber Structures
- 964 - Geosynthetics

912.03 Use and Disposal of Excavated Material. Conserve and use all suitable material for specified work. Conserve excess excavated rock suitable for specified project work and use in place of materials from designated sources.

Remove all duff and debris from within trailway limits and uniformly spread outside the clearing limits, not more than 4" in depth (unless otherwise SHOWN ON THE DRAWINGS). Do not obstruct drainage or create piles, berms, or windrows of debris.

Place excess and unsuitable excavation beyond the downslope edge of the trailbed Do not obstruct drainage and spread to a depth not exceeding 4". This includes any material removed in the grubbing operation and deposited in the same area.

Place rocks over 4" in greatest dimension not used in construction beyond the hinge point on the downslope side. Place rocks so that the tops are at least 6" lower than the trailbed surface. Ensure that no blockage of drainage or creation of a windrow effect occurs

912.04 Trailway Excavation and Embankment. Minor deviations of ± 12 " in vertical alignment and 36" in horizontal alignment with smooth transitions of at least 30' on each side of the deviation are acceptable unless otherwise SHOWN ON THE DRAWINGS.

Construct embankments with suitable compacted material. Compact all disturbed soil within the trailbed area.

Remove any rock within or above the backslopes that is unstable. Use or dispose of rock in accordance with Subsection 912.03.

Leave the finished slope in a uniform and roughened condition.

Make necessary adjustments of horizontal or vertical alignment, within the tolerances specified in this subsection, to produce the designed trailway section and balance earthwork. Such adjustments shall not be considered as changes.

912.05 Trailbed Finish. Fill holes with suitable material, compact, and cut high points to provide a uniform trailbed finish.

912.06 Talus or Rubble Rock Sections. Through talus or rubble rock slide areas, fill all voids with suitable material to the depth SHOWN ON THE DRAWINGS. Use cap rocks that weigh a minimum of 130 lbs and have a length of at least twice their width. At least 50 percent of all hand-placed outer rocks should weigh a minimum of 130 lbs. Construct tread by building out rather than by removing material from the inner bank.

912.07 Ditches. Construct ditches to be free of loose rocks, roots, sticks, and other obstructions.

912.08 Geosynthetics. Where SHOWN ON THE DRAWINGS, place geosynthetics flat and parallel to centerline of the trail before placing embankment. Overlap geosynthetics a minimum of 24". Install anchors or fasteners as recommended by the geosynthetic manufacturer.

Section 914-Switchbacks

914.01 Work. Work consists of construction of switchbacks, including excavation, associated barriers, ditches, retaining walls, and approach sections.

914.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate

962 - Material for Timber Structures

914.03 Excavation and Embankment. Perform excavation and embankment in accordance with Section 912.

914.04 Retaining Walls. When SHOWN ON THE DRAWINGS, construct retaining walls in accordance with Section 934 or Section 935.

914.05 Barriers. When SHOWN ON THE DRAWINGS, construct barriers at each switchback in accordance with Section 953.

914.06 Ditches. When SHOWN ON THE DRAWINGS, construct ditches in accordance with Section 912.07.

914.07 Limits of Switchback. Beginning and ending of switchback will be as SHOWN ON THE DRAWING or as DESIGNATED ON THE GROUND.

Section 935-Rock Retaining Walls

935.01 Work. Work consists of constructing rock retaining walls, including excavating, placing borrow, backfilling, and trailbed and slope finishing.

935.02 Requirements. Use materials meeting the requirements of the following section:

961 - Rock, Grid Pavement Units, and Aggregate

964 – Geosynthetics

935.03 Excavation. Excavate in accordance with Section 912 to provide a full bench foundation.

935.04 Wall Construction. Construct rock retaining walls at locations SHOWN ON THE DRAWINGS and DESIGNATED ON THE GROUND. Stagger vertical joints a minimum of 4" horizontally from vertical joints in adjoining courses.

Use uniformly distributed header rocks for at least 25 percent of the rocks in the front and rear faces of the wall each having a length at least 2.5 times its width. Place all header rocks with the greatest dimension extending into the wall (at right angle to trail centerline), except at corners. At corners, lay alternating courses containing headers with greatest dimension parallel with wall.

Place the exposed face of each rock parallel to the face of the wall in which it is set. Stabilize each rock on the course that supports it. Do not break, loosen, or displace rocks already set. Use rocks of a general rectangular shape. Fill voids with small rock fragments or fine aggregate.

Section 951-Mobilization

951.01 Work. This work consists of moving personnel, equipment, material and incidentals to the project and performing all work necessary before beginning work at the project site. Mobilization includes the costs associated with obtaining permits, insurance, and bonds. Mobilization is not intended to pay for the costs of materials before they are used on the project site.

Section 961 Rock, Grid Pavement Units, and Aggregate

961.01 Rock. Use sound, durable rock free of rifts, seams, laminations, and minerals that could deteriorate as a result of weathering. Dress rock to remove thin or weak portions before use.

Furnish rock of the size, shape, weight, and face area necessary to produce the general characteristics and appearance SHOWN ON THE DRAWINGS.

961.02 Gabion Rock. Ensure that rock conforms to the requirements of Section 961.01 and the following specifications.

- (a) Unit weight of a filled gabion: 3,500 lb/CY min.
- (b) Gradation:
 - (1) Gabions 12" or greater in the vertical dimension:
 - Maximum dimension of rock 8"
 - Minimum dimension of rock 4"
 - (2) Gabions less than 12" in the vertical dimension:
 - Maximum dimension of rock 6"

- Minimum dimension of rock 3"

961.03 Concrete Grid Pavement Units. Use concrete grid pavement units that meet the requirements of ASTM C 936.

961.04 Pit-Run Aggregate. Use pit-run aggregates consisting of native materials that can be placed on the trail without crushing or screening. No gradation, other than a maximum size, will be required. Provide pitrun aggregate with a maximum size as SHOWN IN THE SCHEDULE OF ITEMS.

961.05 Screened Aggregate. Use screened material consisting of gravel, talus, rock, sand, shale, or other suitable material that is reasonably hard, durable, and free of organic material, mica, clay lumps, or other deleterious material. Use screened aggregate meeting the gradation requirements shown in Table 961-1 and of the grading SHOWN IN THE SCHEDULE OF ITEMS.

961.06 Crushed Aggregate for Base or Surface Course. Use crushed aggregate meeting the requirements of Tables 961-1 and 961-2 and SHOWN IN THE SCHEDULE OF ITEMS.

At least 50 percent, by weight, of the aggregate retained on the No. 4 sieve is to have one fractured face. Naturally fractured faces may be included in the 50 percent requirement.

The USFS may approve other gradations if they are similar to those specified. Grade aggregate from coarse to fine within the gradation band.

Table 961-1-Crushed and screened aggregate grading requirements for base or surface courses.

Sieve	Percent Passing (AASHTO T 11 and T 27)			
	Grading A	Grading B	Grading C	Grading D
1"				
¾"	100	100		
½"	50-90	70-100		
3/8"				
No. 4	30-65	45-75	60-85	70-90
No. 8	25-55	30-60	35-70	45-70
No. 30		15-40		20-40
No. 200	6-12	6-20	5-20	5-20

Table 961-2.-Crushed Aggregate Quality Requirements

Description	AASHTO Test Method	Requirement
Percent Wear	T 96	40 Max.
Durability Index,		
Coarse and Fine	T 211	35 Min.
Liquid Limit	T 89	35 Max.
Plasticity Index	T 91	2-11

Section 962-Material for Timber Structures

962.01 Timber. Select timber from designated sites on Government-administered land. Select the species and sizes of materials as SHOWN ON THE DRAWINGS. Select timber that is straight, sound, and free of defects. Obtain CO approval of logs and trees before felling or moving them to the site. Fell trees to prevent damage to standing timber and to minimize breakage of trees to be used. Buck logs from felled trees in such a way to minimize waste and to obtain the required length and diameter.

Peel logs, square the ends, and trim the knots and limbs flush unless otherwise SHOWN ON THE DRAWINGS. Scatter the debris from the processing of timber away from the trail and so it will not block the trail or plug water courses.

962.02 Structural Lumber. Use structural lumber meeting the requirements of AASHTO M 168.

962.03 Hardware. Use drift pins and dowels meeting the requirements of the American Society for Testing and Material (ASTM) A 307 and galvanized hardware meeting the requirements of AASHTO M 232.

Use nails of standard form or as SHOWN ON THE DRAWINGS.

Pre-drill all holes 1/8" under size of hardware to be used. When possible pre-drill all holes prior to treatment.

962.04 Preservative. Use wood preservative treatment methods meeting the requirements of AASHTO M 133 as SHOWN ON THE DRAWINGS. Completely and accurately fabricate all treated timber before treatment. Provide treated timber that is clean and free of dripping treatment liquids.

Submit a certified copy of the lot certification, by a qualified independent inspection and testing agency, to the CO for each charge of preservative, stating penetration in millimeters and retention in kilograms per cubic meter (assay method). In addition, provide a written certification from the producer of the treated products that "Best Management Practices for Treated Wood in Western Aquatic Environments," published by the Western Wood Preservers Institute and Canadian Institute of Treated Wood, were utilized. Include a description and appropriate documentation of the Best Management Practices used.

Except for pine, incise before treatment all surfaces greater than 2" in width and all Douglas fir and western larch surfaces. Field treat, as SHOWN ON THE DRAWINGS, any area hewn, notched, cut, or drilled after the initial preservative treatment.

Section 963-Drainage Pipe

963.01 General. Use pipe, coupling bands, and special sections such as elbows, tees, and wyes made of the same material and of the same thickness as the conduit to which they are joined, unless otherwise specified.

963.02 Corrugated Steel Pipe and Pipe Arches

(a) Riveted Pipe and Pipe Arches. Use pipes meeting the requirements of AASHTO M 36.

(b) Welded Pipe and Pipe Arches. Use corrugated metal pipe and pipe arches fabricated by resistance spot welding meeting the applicable requirements of AASHTO M 36.

(c) Helical Pipe. Use un-perforated helically corrugated pipe with continuous lock or welded seams meeting the applicable requirements of AASHTO M 36.

(d) Coupling Bands. Use coupling bands meeting the requirements of AASHTO M 36.

(e) Special Sections. Use special sections such as elbows, tees, and wyes meeting the same thickness as the conduit to which they are joined and meeting the applicable requirements of AASHTO M 36.

(f) Flared-End Sections. Use flared-end sections for inlet and outlet ends of pipe and pipe arch culverts meeting the applicable requirements of AASHTO M 36.

963.03 Corrugated Steel Pipe for Underdrains. Use perforated galvanized pipe meeting the requirements of AASHTO M 36. Use polymer-precoated perforated underdrains meeting the requirements of AASHTO M245

963.04 Corrugated Aluminum Alloy Culvert Pipe, Pipe Arches, and Underdrains. Use pipe meeting the requirements of AASHTO M 196.

963.05 Aluminum-Coated (Aluminized Type 2). Use pipe and coupling bands meeting the requirements of AASHTO M 36 except that they must be made from material meeting the requirements of AASHTO M 274.

963.06 Polyvinylchloride (PVC) Pipe. Use PVC drain and perforated pipe meeting the requirements of AASHTO M 278.

963.07 Plain or Corrugated Polyethylene (PE) Pipe. Use corrugated PE pipe and connections 1' through 3' in diameter meeting the requirements of AASHTO M 294

963.08 Acrylonitrile-butadiene-styrene (ABS) and PVC Composite Pipe. Use ABS and PVC pipe and connections meeting the requirements of AASHTO M 264.

Section 964-Geosynthetics

964.01 Geotextiles. Use geotextiles, alone or in combination with other geosynthetics that meet the requirements of AASHTO M 288 for the type of geotextile. Meet Class 2 requirements for subsurface drainage type geotextiles.

964.02 Geonet. Use geonet meeting the following critical physical properties unless otherwise SHOWN ON THE DRAWINGS.

- (a) Polymer Composition of Core
(Net or Mesh)..... Medium PE or HDPE
- (b) Permeability..... 0004 in/second min.
- (c) Geotextile..... Must meet all Section 964.01 requirements
- (d) Compressive Strength
of Core,ASTM D 1621 73 psi min.
- (e) Transmissivity with Gradient
at 0.1, Pressure at 1.5 psi0.01 S.F./second min.

964.03 Geogrids. Use geogrids made from polypropylene or coated polyester that meet the following critical physical properties.

- (a) Polymer TypeHDPE, Polypropylene, or Polyester with Acrylic or PVC coating
- (b) Mass per Unit Area, ASTM D 5261..... 0.6 ounces per square foot
- (c) Maximum Aperture Size
 - (1) Direction (MD)..... 4"
 - (2) Cross-Direction (XD)..... 3"
- (d) Wide-Width Strip Tensile Strength at 5 percent Strain, ASTM D 4595:
 - (1) Machine Direction (MD).....550 lb per ft
 - (2) Cross-Direction (XD).....410 lb per ft

964.04 Geocells. Use geocells meeting the following physical properties.

- (a) Composition.....PE or HDPE
- (b) Geocell
 - Sheet thickness according to ASTM D 5199..... .05" min.
- (c) Minimum Cell Seam Peel Strength, U.S. Army Corps of Engineers Technical Report G:-86-19, Appendix A..... 55 lb per inch of cell depth.
- (d) Expanded Dimensional Properties..... AS SHOWN ON DRAWINGS
- (e) Density according to ASTM D 1505:..... 0.541 to 0.558 oz per cubic inch

964.05 Sbeet Drains. Use sheet drains meeting the following critical physical properties.

- (a) Core Polymer Composition..... Polystyrene, HOPE, or
..... polypropylene attached.
- (b) Geotextile..... Nonwoven on one side, if core solid;
..... on both sides, if core perforated .
..... Must meet all Section 964.01 requirements
- (c) Core Thickness, ASTM D 5199..... 1/2" min.
- (d) Core Compressive Strength at Yield, ASTM D 162140 psi min.

964.06 Fasteners. Use anchors or fasteners of the design recommended by the manufacturer, and install per manufacturer's specifications.

964.07 Certification. Furnish a certificate or affidavit signed by an official from the company manufacturing the geosynthetic, verifying that the geosynthetic meets specifications.

964.08 Delivery, Storage, and Handling. During shipment and storage, wrap ALL geosynthetics to protect them from sunlight. When storing geosynthetics, protect them from mud, soil, dust, and debris. If materials are not installed immediately after delivery to site, do not store them in direct sunlight.

APPENDIX C – Proposal Forms

Bid Sheet

Please list unit prices and totals for each bid item. Include total bid amount at the bottom of the sheet. The bidder must bid on all items. If bidder does not intend to charge for a bid item, a price of “0” or “NO COST” should be shown. If the price is left blank or shown as “No Bid,” the entire bid may be considered Non-Responsive.

Table 4: BID SHEET					
Bid Item	Description	Unit	Estimated Quantity	Unit Price (\$)	Item Total (\$)
1	Clearing and Grubbing	Linear Foot	11303		
2	Excavation	Linear Foot	11303		
3	Shallow Stream Ford and Gully Crossing Structure	Each	5		
4	Grade Dip	Each	9		
5	Retaining Wall	Linear Foot	170		
6	Switchback	Each	7		
7	Climbing Turn	Each	6		
8	Mobilization	Lump Sum	1		
9	Rock Excavation Work	Linear Foot	320		
10	Rock Loading and Delivery	Lump Sum	1		
11	Stump Removal	Each	10		

Total Bid Amount: \$ _____

3. *Please list the staff that will be working on this project and which elements (if any) you will subcontract.*

4. *Please list the equipment and tools you plan to utilize for this project and why they are best suited for the work.*

5. *Are you a member of the Professional TrailBuilders Association?* YES NO

References

Please provide contact information for at least two references that can speak to your ability to successfully complete this project:

Reference 1

Name: _____

Organization: _____

Phone: _____

Email: _____

Trail project you completed for them: _____

Reference 2

Name: _____

Organization: _____

Phone: _____

Email: _____

Trail project you completed for them: _____

Reference 3 (optional)

Name: _____

Organization: _____

Phone: _____

Email: _____

Trail project you completed for them: _____

Proposal Certification

The name of the Proposer submitting this Proposal is: _____

Oregon CCB License Number: _____

Business name: _____

Address: _____

The undersigned, hereinafter called the Proposer, declares that the only person(s) interested in this Proposal are those named herein; that the Proposal is in all respect fair and without fraud; and, that is made without collusion with any other person submitting a Proposal on this Project.

The Proposer further declares that he/she has carefully examined the information presented within the RFP Document and is satisfied as to the type and quantities of materials, conditions, and the work involved. The Proposer further agrees that they have used their own judgement regarding the Project and obtained the information they believe pertinent and appropriate for arriving at their conclusion.

Signature of Proposer: _____

Title: _____

Date: _____