PART III: EXHIBITS

OREGON DEPARTMENT OF FORESTRY

TIMBER SALE OPERATIONS PLAN
(See Page 2 for instructions)

Date Received by STATE: _____

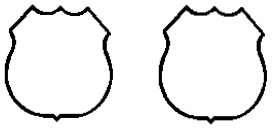
(1) Contract No.: 341-16-57

(2) Sale Name: Sam Hill

(3) Contract Expiration Date: October 31, 2017

(4) Purchaser: _____

(5) State Brand Information (complete):



Project Completion Dates: _____

_____

(6) Purchaser Representatives:

Projects: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Projects: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Projects: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Projects: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Home: _____

(7) State Representatives:

Projects: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Home: _____

(8) Name of Subcontractors & Starting Dates:

Projects: No(s) _____-_____	Date: _____	Phone: _____
No(s) _____-_____	Date: _____	Phone: _____
No(s) _____-_____	Date: _____	Phone: _____
No(s) _____-_____	Date: _____	Phone: _____
Logging: Felling _____	Date: _____	Phone: _____
Yarding: _____	Date: _____	Phone: _____

(9) Comments: _____

_____

_____

_____

_____

_____

(10) Operations Map: Attach a copy of timber sale Exhibit A or other suitable map which plainly shows the items listed on the instruction sheet.

EXHIBIT B

INSTRUCTION SHEET FOR OPERATIONS PLAN

SUBMIT ONE COPY OF PLAN TO STATE

Operations shall be limited to the work shown in the plan until a revised plan or supplemental plan is submitted covering additional work. Compliance with this plan is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act. If STATE has prepared a required Forest Practices Act (FPA) "Written Plan" for operations, PURCHASER shall comply with all provisions of the Written Plan.

Explanation of Item No. (from Page 1)

(5) All sales require you to use a brand furnished by STATE. If the State brand has not been assigned when the plan is submitted, it will be furnished and assigned later. Complete drawing. If more than one brand is assigned to the sale, complete both drawings.

(6) The contract requires you to have a designated representative available on the sale area or work location who is authorized to receive in your behalf any notice or instruction given by STATE and to take action in regard to performance under the contract. If logging and project work is widely separated, a representative is required for each.

(7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.

(8) Show names of subcontractors to be used for any or all phases of the operations. If subcontractors are not known, or are changed later, give notification to the STATE representative prior to commencement of work by subcontractor.

Show projected dates for commencement of both projects and logging. If projected dates need to be changed at a later date, notification must be given to the STATE representative by supplemental plan or otherwise, prior to commencement of such operations.

(10) The STATE representative will furnish extra copies of Exhibit A of the contract for your use in preparing the operations map. The map shall use the following legend and show:

1. Landing locations, approximate setting boundaries, and probable sequence of logging the settings. Number the settings in sequence.
2. Locations of spur roads planned for construction, other than those required by the timber sale contract. Provide spur road specifications.
3. Location of proposed tractor yarding roads. Show if and how marked on the ground.
4. Location of temporary stream crossings.
5. List the sequence of performing project work.
6. Location of rock sources - attach pit development plans.

Cable Landing, with numbers for sequence.

Tractor Landing with alphabetical sequence.

_ _ _ _ _ Approximate setting boundary.

- - - - - - - - Spur truck roads.

Tractor yarding roads.

X Temporary stream crossings.

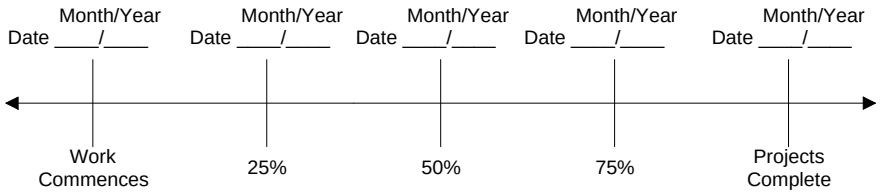
EXHIBIT B

OPERATIONS PLAN

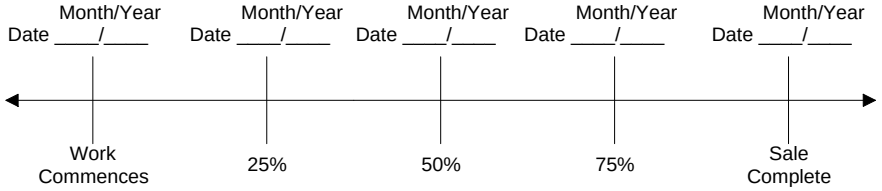
Completion Timeline

Indicate on the appropriate timeline below, the dates by which you plan to complete the work as required under this contract. The purpose of this section is to develop a plan that will ensure you complete the work as required, and meet the interim completion date(s) and contract expiration date. This plan is incorporated and made a part of the contract. When, in the opinion of STATE, operations are not commencing in a manner that meets the intent of this plan, you may be placed in violation of contract and your operations suspended until an amended plan is submitted and approved by STATE.

Projects



Harvest & Other Requirements



The Federal Endangered Species Act (ESA) prohibits a person from taking any federally listed threatened or endangered species. Taking under the federal ESA may include alteration of habitat. STATE's approval of this plan does not certify that PURCHASER's operation under the plan is lawful under the federal ESA. As provided in the timber sale contract, PURCHASERS must comply with all applicable state, federal, and local laws.

PURCHASER's compliance with this plan is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act.

APPROVED: Date: _____

STATE OF OREGON - DEPARTMENT OF FORESTRY

_____

Title _____

SUBMITTED BY:
PURCHASER

_____

Title _____

Original: Salem
cc: District File
Purchaser

EXHIBIT C – SAWMILL GRADE (WESTSIDE SCALE)

SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

(1) ORIGINAL REGISTRATION ☐ Date _____
REVISION NUMBER _____ ☐ Date _____
CANCELLATION ☐ Date _____

(2) TO: _____
(Third Party Scaling Organization)

(3) FROM: Forest Grove (05) Phone (503) 357-2191
(State Forestry District)
Address 801 Gales Creek Road
Forest Grove, OR, 97116

(4) PURCHASER: _____
Mailing Address: _____
Phone Number: _____

(5) **MINIMUM SCALING SPECIFICATIONS**	
SPECIES	MINIMUM NET VOLUME
Conifers	10
Hardwoods	10

* Apply minimum volume test to whole logs over 40' Westside

(6) WESTSIDE SCALE: YES ☒ NO ☐
Use Region 6 actual taper rule. Logs over 40'.

(7) Weight Scale Sample ☐ ☒

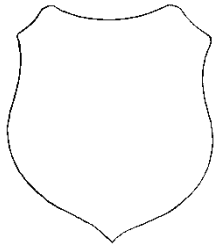
(8) **APPROVED SCALING LOCATIONS** (as shown on the ODF Approved Locations web-site)	**Species**	**Yard**	**Truck**	**Weight**

(9) SALE NAME: Sam Hill
COUNTY: Tillamook

(10) STATE CONTRACT NUMBER: 341-16-57

(11) STATE BRAND REGISTRATION NUMBER:
_____

(12) STATE BRAND INFORMATION (COMPLETE):



(13) PAINT REQUIRED: YES ☒
COLOR: Orange

(14) **SPECIAL REQUESTS** (Check applicable)	
PEELABLE CULL (all species)	☒
NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE	☒
ADD-BACK VOLUME - Deductions due to delay	☒
OTHER:	

(15) **REMARKS**_____

Operator's Name (Optional inclusion by District): _____

(16) SIGNATURES:

_____
Purchaser or Authorized Representative Date

_____
State Forester Representative Date

_____
State Forester Representative PRINT NAME

Notify the District within one hour when branding or painting is inadequate for quick identification, the receipts are missing, not correctly or completely filled out, and/or when logs presented for scaling are impossible to scale accurately.

Distribution (See specific instructions on pg. 2): ORIGINAL: Salem / COPIES: TPSO, Approved Scaling Location, Purchaser, District, Mgmt. Unit

EXHIBIT C – SAWMILL GRADE
INSTRUCTIONS FOR FORM 343-307a (rev. 11/11)

(1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires logging and hauling to be complete, recall branding hammers, date and sign where indicated, write diagonally across page "CANCEL", and send to TPSO.

(2) Designate Third Party Scaling Organization (TPSO).

Columbia River Log Scaling & Grading Bureau
P.O. Box 7002, Eugene, OR 97401
Phone: (541) 342-6007 Fax: (541) 342-2631
Email: services@crls.com

Pacific Rim Log Scaling Bureau, Inc.
8288 28th Court North East, Lacey, WA 98516
Phone: (360) 528-8710 Fax: (360) 528-8718
Email: office@prlsb.com

Mountain Western Log Scaling & Grading Bureau
P.O. Box 580, Roseburg, OR 97470
Phone: (541) 673-5571 Fax: (541) 672-6381
Email: info@mwlsgb.com

Yamhill Log Scaling & Grading Bureau
P.O. Box 709, Forest Grove, OR 97116
Phone: (503) 359-4474 Fax: (503) 359-4476
Email: yamhill@attglobal.net

Northwest Log Scalers, Inc .
5526 NE 122nd Ave, Portland, OR 97230
Phone: (503) 254-0600 Fax: (503) 408-0919
Email: info@nwlogscalers.com

Pacific Log Scaling & Grading Bureau, Inc.
P.O. Box 23939, Portland, OR 97281
Phone: (503) 684-5599 Fax: (503) 639-4880
Email: PacLogScale@aol.com

(3) State District office, address and phone.

(4) Enter Purchaser's business name, address, and phone number as it appears on the Contract.

(5) Minimum Scaling Specifications.

(6) Westside – Region 6 actual taper segment scale. Check Yes or No. Special Service Rules on file with TPSO. See: Segment Scaling and Grading of Long Logs -- All Species -- State Forestry Department Scaling Practices (Westside).

(7) Weight Scale Sample – Check box if sale is to be a Weight Scale Sample. All specifics for handling, scaling and processing will be attached or explained in the Remarks section Item (15).

(8) Show scaling locations only applicable to TPSO. Location name should appear as it does on the ODF Approved Scaling Location web site: http://www.odf.state.or.us/DIVISIONS/management/asset_management/ScalingLocation.asp Locations with scaling and processing directions specific to their location should be on a separate form. Species should be identified if not capable of receiving "all" species. Check appropriate box for either: yard, truck scale, or weight. Refer to the web site listed above for the locations approval status.

(9) Enter sale name and county.

(10) Enter sale Contract number.

(11) Enter Oregon's State Brand Registry Number **(REQUIRED)**.

(12) Show brand assigned to timber sale. One brand only. If more than one brand is assigned to the sale: (1) make a separate form for each brand and (2) on each form, explain and show other brand(s) in the Remarks section Item (15).

(13) Check yes for Paint Required and designate "Orange" for color. Non required removal volumes may sometimes require blue paint.

(14) Special Requests. These are requests that will be applied to ODF timber sales. All boxes applicable to the timber sales designated in the Exhibit C form must be "marked". If "Other" is indicated, it must contain a description and any necessary comments.

(15) Use this space to designate any weight conversion factors, per load volumes, weight scale sample instructions or any other explanations to clarify scaling, processing and/or mailing requirements. If additional scaling locations are approved, revise original or current form showing all (old and new) locations. Check REVISION box at top of form and explain under remarks. Route as indicated.

(16) Require purchaser to sign and date completed form in addition to State Forester Representative, sign and print name on the form.

Salem Distribution Instructions: Original will be mailed to Salem after it is electronically scanned and placed in the Salem transfer drive \\WPODFFILL01\Transfer\ScalingInstructions or e-mailed directly to scaling@odf.state.or.us. Scaling instructions for each brand should be scanned separately, for each approved TPSO.

Distribution (See specific instructions on pg. 2): ORIGINAL: Salem / COPIES: TPSO, Approved Scaling Location, Purchaser, District, Mgmt. Unit

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DRAINAGE
16 feet	12 feet	A to B	0+00 to 17+30	Ditch
Match Existing	Match Existing	C to D	0+00 to 254+10	Ditch
32	24		254+10 to 256+10	Ditch
Match Existing	Match Existing		256+10 to 457+00	Ditch
Match Existing	Match Existing	E to F	0+00 to 97+20	Ditch
16 feet	12 feet	Point G	Point G	Ditch
16 feet	12 feet	I to J	0+00 to 2+95	Ditch

CLEARING. This work shall consist of clearing, removing, and disposing of all trees, Snags, Down Timber, brush, surface objects, and protruding obstructions within the clearing limits. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections.

All danger trees, leaners, and Snags outside the clearing limits which could fall and hit the road shall be felled.

CLEARING CLASSIFICATION.

New Construction - Where clearing limits have not been marked, the clearing limits shall extend 5 feet back of the top of the cutslope and 5 feet out from the toe of the fill slope, or as directed by STATE.

GRUBBING. This work shall consist of the removal or digging out of stumps and protruding objects.

All stumps shall be completely removed within the limits of required grubbing. Stumps overhanging cutslopes shall be removed. Grubbing debris shall not be placed or permitted to remain in or under any road embankment sections. Grubbing debris shall not be left lodged against standing trees.

GRUBBING CLASSIFICATION.

New construction - from the top of the cutslope to the toe of the fill.

Improvements and reconstructions - 4 feet back from the shoulder of the subgrade or ditch, whichever is widest, or as marked in the field.

CLEARING AND GRUBBING DISPOSAL. Scatter in stable locations through openings in the timber outside of the cleared right-of-way, except areas where end-haul is required. In areas where end-haul is required, clearing and grubbing debris shall be fully contained and hauled to a designated waste area. Clearing and grubbing debris shall be left in a stable location, and not left lodged against standing trees.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

EXCAVATION. Excavation and grading shall not be done when weather and/or ground conditions are such that damage will result to existing subgrade or cause excessive erosion.

Excavation shall conform to STATE-specified lines, grades, dimensions, and plans when provided.

Unless road plans show otherwise, all roads shall be on a balanced cross section, except when the slope is over 50 percent, the road shall be on full bench for the width specified.

Suitable excavated material shall be used for the formation of fills, shoulders, and drainage structure backfills. Embankment materials shall be free of woody debris, brush, muck, sod, frozen material, and other deleterious materials.

Sidecast includes any road generated excess excavation material which is not essential as part of the road prism, is not compacted, and is below the roadway. Sidecast shall not be placed where it will enter a stream course. Leaving sidecast below the road is only permissible if specifically allowed in "Full Bench and End Haul Requirements" in this Exhibit.

All fills shall be machine compacted according to the "Compaction and Processing Requirements" in this Exhibit.

ROAD WIDTH LIMITATIONS. PURCHASER shall obtain advance written approval from STATE to construct the road to a greater width than specified. Extra subgrade width shall be required for:

Fill Widening. Add to each fill shoulder 1 foot for fills 3 feet to 6 feet high; 2 feet for fills over 6 feet high.

Curve Widening. Widen the inside shoulder of all curves as specified in the plans or as follows: 400 divided by the radius of the curve equals the amount of extra width.

DRAINAGE

Subgrade. Subgrade shall be crowned at 4 to 6 percent as shown on the "Forest Road Specifications" table in this Exhibit.

Ditch. Construct "V" shaped ditch 3 feet wide and to a depth of 1 foot below subgrade.

Ditchouts. Construct ditchouts to drain away from subgrade at locations marked in the field or as directed by STATE.

TURNOUTS. Increase roadbed width an additional 8 feet for both subgrade and surfacing. Length shall be at least 25 feet, or as staked on the ground, plus 25-foot approaches at each end.

Location: Intervisible but not greater than 750 feet apart.

SLOPES	Back Slopes	Fill Slopes
Solid Rock	Vertical to ¼ :1	
Fractured Rock	¼:1	
Soil - side slopes 50% and over	½ :1	1½:1
Soil - side slopes less than 50%	¾ :1	1½:1

Top of cutslope shall be rounded.

LANDINGS. Landings shall be constructed as posted in the field, no less than 50 feet wide and no more than 70 feet wide unless otherwise approved by STATE. Surface is to be crowned for drainage with general grade no more than 3 percent. Surface as shown in the "Road Surfacing" table in this Exhibit.

TURNAROUNDS. Increase subgrade width an additional 20 feet for a length of 20 feet at locations marked in the field.

SEASONAL WINTERIZATION. All unsurfaced roads or unfinished subgrades shall be waterbarred in accordance with the specifications in Exhibit G, and blocked from vehicular traffic prior to October 31, annually and as directed by STATE.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

1 Excavated Materials. Excavated materials shall be utilized for road construction and hauled in where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with this Exhibit.

2 Subgrade Preparation and Application of Surfacing Rock.

(a) Complete culvert installations, drainage ditches, ditchouts, fill construction and other specified work prior to the application of surfacing rock.

(b) Subgrade shall be crowned at 4 to 6 percent.

(c) Upon completion of above required work, apply, process, and compact surfacing rock in accordance with specifications in the "Compaction and Processing Requirements" in this Exhibit. Final road surface shall be crowned at 4 to 6 percent.

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

Segment	Station	Work Description
A to B	0+00	Point A. Begin road construction; crown road, begin ditch Begin full bench endhaul construction. Endhaul excess material to waste area.
	1+00	End full bench construction.
	7+00	Install Culvert No. 1.1 (18" x 30') as cross drain.
	15+60	Junction with I to J on right.
	17+30	Point B. End road construction. Construct landing.
I to J	0+00	Point I. Begin road construction; crown road, begin ditch.
	2+95	Point J. End road construction. Construct landing.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

1. Bank Slough Removal. Dig out all bank slough. Bank slough material shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Waste materials shall be seeded and mulched in accordance with specifications in Exhibit I.

2. Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include, skewing the culvert and/or installing the culvert at gradients equal to or exceeding the drainage (or ditch) gradient. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. All woody debris encountered during fill excavation shall be removed. All waste materials shall be hauled to nearby waste areas and shall be uniformly sloped and compacted for drainage. Waste materials shall be seeded and mulched in accordance with specifications in Exhibit I. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit. Crusher reject shall be used for culvert bedding and backfilling excavation trenches less than 3 feet deep. Removed culverts shall be hauled off of STATE land.

3. Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. Ditch debris including woody debris shall be loaded and hauled to designated waste areas, and shall be accomplished with the use of an excavator and dump truck. Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels. Install a culvert marker at each newly installed culvert and at each existing culvert that is missing a marker that could be reached by a grader blade.

4. Settling Ponds. Construct 2 settling ponds for erosion control in project areas and ditch lines where sedimentation or erosion is possible as directed by STATE. Excavated material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A. Waste materials shall be sloped and compacted for drainage. Settling pond dimensions shall be a finished length of 8 feet, width of 3 feet, and 3 feet in depth, or as directed by STATE.

5. EROSION CONTROL. Install up to 30 bio bags for erosion control in project areas and ditch lines where sedimentation or erosion is possible, as directed by STATE. Each Bio-bag shall be installed with a minimum of two wooden stakes.

6. Fill Armor and Energy Dissipator Construction. Where rock is specified for fill armor, rock shall be machine placed and tamped at a 1½:1 slope, beginning at the toe of the fill. Where rock is used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with Exhibit E.

7. Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic yard, track-mounted excavator.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

8. Subgrade Preparation and Application of Surfacing Rock.

(a) Complete culvert installations, drainage ditches, fill reconstruction, ditchouts, settling ponds and other specified work prior to the application of new surfacing rock.

(b) Cut out all potholes and/or washboard sections from the existing surfacing.

(c) Process (grade and mix) the existing surface and added base rock. Provide for a crown of 4 to 6 percent, and compact in accordance to the "Compaction and Processing Requirements" in this Exhibit.

(d) Upon completion of above required work, apply, process, and compact surfacing rock in accordance to this Exhibit.

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description:
C to D	0+00	Point C. Salmonberry Road. Begin Road Improvement; clean ditchline. Waste material locally in stable locations.
	55+85	Remove existing culvert and install Culvert No. 1 (18" x 30') as cross drain.
	106+75	Begin ditch on both sides.
	110+30	End ditch on left, continue ditch on right.
	119+50	Begin ditch on both sides.
	121+00	End ditch on left, continue ditch on right.
	129+00	Install Culvert No. 2 (18" x 40') as cross drain.
	130+05	Install Culvert No. 3 (18" x 60') as cross drain.
	131+50	End ditch.
	133+00	Begin ditch on right.
	146+00	Begin ditch on both sides.
	148+00	End ditch on left, continue ditch on right.
	152+10	Install Culvert No. 4 (18" x 30') as disconnect.
	152+90	Install Culvert No. 5 (18" x 30') as disconnect.
	154+30	Install Culvert No. 6 (18" x 30') as disconnect.
	154+90	Remove existing culvert and install Culvert No. 7 (18" x 30') as disconnect.
	155+30	Install Culvert No. 8 (18" x 30') as disconnect.
	159+00	Install Culvert No. 9 (18" x 30') as disconnect.
	162+50	Begin ditch on both sides.
	163+50	End ditch on left, continue ditch on right.
	165+50	Begin ditch on both sides.
	167+40	End ditch on left, continue ditch on right.
	168+75	Begin ditch on both sides.
	170+00	End ditch on left, continue ditch on right.
	179+30	Install Culvert No. 10 (18" x 40') as disconnect.
	179+70	Remove existing culvert and backfill with crusher reject rock.
	180+40	Live Stream. Install Culvert No. 11 (18" x 30').
	192+75	Remove existing culvert across spur road and reinstall across Salmonberry Rd.
	217+55	Install Culvert No. 12 (18" x 30') as cross drain.
	230+75	Install Culvert No. 13 (18" x 40') as disconnect.
	231+60	Live Stream. Remove existing culvert and install Culvert No. 14 (30" x 46').

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description:
	238+40	Live Stream. Remove existing culvert and install Culvert No. 15 (36" x 46'). Install 10 cy of riprap as energy dissipator.
	242+20	Install Culvert No. 16 (18" x 30') as cross drain.
	245+35	Install Culvert No. 17 (18" x 30') as cross drain.
	247+60	Install Culvert No. 18 (18" x 30') as disconnect.
	248+90	Live Stream. Remove existing culvert and install Culvert No. 19 (30" x 40'). Install 10 cy of riprap as energy dissipator.
	249+85	Install Culvert No. 20 (18" x 30') as disconnect.
	253+90	Remove existing culvert and backfill with crusher reject rock. Reinstall culvert at 253+00.
	255+10	Point H. Install an open bottom arch culvert according to the specifications in Exhibit H.
	256+25	Install Culvert No. 22 (18" x 30') as disconnect.
	265+20	Live Stream. Existing culvert. Install 2 settling ponds back to back. Install 20 cy of riprap as energy dissipator.
	265+30	Remove existing culvert and backfill with crusher reject rock.
	267+70	Begin ditch on both sides.
	269+00	End ditch on left, continue ditch on right.
	269+50	Install Culvert No. 23 (18" x 50') as cross drain. Construct ditchout before thru-cut.
	280+35	Live Stream. Remove existing culvert and install Culvert No. 24 (42" x 44'). Install 10 cy of riprap as energy dissipator.
	280+70	Remove existing culvert and backfill with crusher reject rock. Reinstall culvert at 280+05.
	284+00	Begin ditch on both sides.
	286+50	End ditch on left, continue ditch on right.
	304+00	Begin ditch on both sides.
	308+10	End ditch on left, continue ditch on right.
	318+20	End ditch, begin outslope.
	323+75	End outslope, begin ditch on right.
	330+55	Install Culvert No. 25 (18" x 30') as cross drain.
	333+80	Install Culvert No. 26 (18" x 30') as disconnect.
	337+40	Begin ditch on both sides.
	338+50	End ditch on left, continue ditch on right.
	339+45	Install Culvert No. 27 (18" x 40') as cross drain.
	350+00	Install Culvert No. 28 (18" x 30') as disconnect.
	357+00	Live Stream. Install Culvert No. 29 (24" x 36').
	359+30	Begin ditch on both sides.
	359+60	Install Culvert No. 30 (18" x 30') as disconnect.
	361+20	End ditch on left, continue ditch on right.
	362+70	Begin ditch on both sides.
	364+50	End ditch on left, continue ditch on right.
	371+00	Begin ditch on both sides.
	371+75	Live Stream. Remove existing culvert and install Culvert No. 31 (30" x 40').
	373+70	End ditch on left, continue ditch on right.
	375+95	Live Stream. Remove existing culvert and install Culvert No. 32 (30" x 30').

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description:
	376+80	Install Culvert No. 33 (18” x 30’) as disconnect.
	382+70	Begin ditch on both sides.
	384+50	End ditch on left, continue ditch on right.
	404+00	Begin ditch on both sides.
	404+20	Install Culvert No. 34 (18" x 30’) as disconnect.
	405+10	End ditch on left, continue ditch on right.
	417+65	Live Stream. Remove existing culvert and install Culvert No. 35 (30” x 30’).
	418+55	Install Culvert No. 36 (18” x 30’) as disconnect.
	441+50	Install Culvert No. 37 (18” x 30’) as disconnect.
	457+00	Point D. End road improvement.
E to F	0+00	Point E. Begin road improvement; clean ditchline.
	4+30	Place spot rock as directed by STATE.
	52+80	Begin cutbank widening/slough removal. Endhaul excavated material to waste area.
	55+00	End slough removal.
	92+35	Install Culvert No. 38 (18” x 30’) as cross drain.
	93+25	Install Culvert No. 39 (18” x 30’) as cross drain.
	97+20	Point F. End road improvement.
Point G		Live Stream. Install Culvert No. 40 (48” x 85’). Drawing available at the Forest Grove District Office of the Oregon Department of Forestry.

EXHIBIT D

FULL BENCH AND END-HAUL REQUIREMENTS

POINT TO POINT	STA. TO STA.	CONTAINMENT - SIDECAST	WASTE AREA LOCATION	WASTE AREA TREATMENT
A to B	0+00 to 1+00	1	1	1, 2 and 3
C to D	0+00 to 457+00	1	1	1, 2 and 3
E to F	52+80 to 55+00	1	1	1, 2 and 3
Point G	-	1	1	1, 2 and 3
Point H	-	1	1	1, 2 and 3

Full Bench and End-Haul Areas General Requirements

Sidecast includes any road generated excess excavation material which is not essential as part of the road prism, is not compacted, and is below the roadway. Material shall not be sidecast unless specified above.

Clearing and grubbing debris shall be end-hauled.

When controlled blasting is required, it shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain material within the road prism.

Containment/Sidecast

Full: No excavated material remains below the road.

Any amount of material exceeding the containment requirements shall be removed by whatever means necessary and end-hauled to a designated waste area.

Waste Area Location

As shown on Exhibit A.

Waste Area Treatment

(1) Deposit at waste area, spread evenly, compact, and provide adequate drainage.

(2) Pile woody debris separate from other waste material.

(3) Mulch and seed all waste areas in accordance with Exhibit I.

EXHIBIT D

ROAD SURFACING

[VOLUME MEASUREMENT]

ROAD SEGMENT: A to B				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	A to B		0+00 to 17+30		
				Volume (CY) Per		**Number Of**		
Base Rock	Pit-Run	A to B	12	Station	65	Stations	17.30	1,125
Junction	Pit-Run	Point A	12	Junction	20	Junction	1	20
Turnouts	Pit-Run		12	Turnout	22	Turnouts	2	44
Landings	Pit-Run	Point B	12	Landing	180	Landings	1	180
Total Rock for Road Segment:			A to B					1,369
ROAD SEGMENT: C to D				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	C to D		0+00 to 457+00		
				Volume (CY) Per		**Number of**		
Culvert Bedding/Backfill	Crusher reject	Culverts: 1-2, 4-13, 16-18, 20, 22, 25-28, 30, 33-34 & 36-37	Varies	Culvert	12	Culvert	26	312
Culvert Bedding/Backfill	Crusher reject	Culverts: 3, 14-15, 19, 23-24, 29, 31-32 & 35.	Varies	Culvert	24	Culvert	10	240
Trench Backfill	Crusher reject	179+70, 192+75, 253+90, 265+30, 280+70	Varies	Trench	24	Trenches	5	120
Surfacing	1 ½" – 0" Crushed	Culverts: 1-20 & 22-37	8	Culvert	12	Culvert	36	432
Energy Dissipator	24" – 12" Riprap	Culverts: 15, 19, & 24		Culvert	10	Culverts	3	30
Energy Dissipator	24" – 12" Riprap	265+20		Culvert	20	Culverts	1	20
Total Rock for Road Segment:			C to D					1,154
ROAD SEGMENT: E to F				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	E to F		0+00 to 97+20		
				Volume (CY) Per		**Number of**		
Culvert Bedding/Backfill	Crusher reject	Culverts 38 and 39	Varies	Culvert	12	Culvert	2	24
Surfacing	1 ½" – 0" Crushed	Culverts 38 and 39	8	Culvert	12	Culvert	2	24
Spot Rock	Pit-Run	Varies						20
Total Rock for Road Segment:			E to F					68

EXHIBIT D

ROAD SURFACING

[VOLUME MEASUREMENT]

ROAD SEGMENT: Point G				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	Point G **Volume (CY) Per**		- **Number of**		
Surfacing	1 ½" – 0" Crushed		12	Station	65	Stations	2	130
Fill Armor	24" – 12" Riprap							36
Energy Dissipator	24" – 12" Riprap							24
Culvert Bedding	Crusher Reject		8	Culvert	48	Culvert	1	48
Total Rock for Road Segment:			Point G					238
ROAD SEGMENT: Point H				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	Point H **Volume (CY) Per**		- **Number of**		
Surfacing	1 ½" – 0" Crushed		12					227
Bedding for Footings	1 ½" – 0" Crushed							84
Bedding for Footings	24" – 12" Riprap							108
Backfill Rock	3" – 0							144
Streambed Retention Material	24" – 12" Riprap							36
Fill Armor	24" – 12" Riprap							72
Total Rock for Road Segment:			Point H					671
ROAD SEGMENT: I to J				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I to J **Volume (CY) Per**		0+00 to 2+95 **Number of**		
Base Rock	Pit-Run	I to J	12	Station	65	Stations	2.95	192
Junction	Pit-Run	Point I	12	Junction	20	Junction	1	20
Landings	Pit-Run	Point J	12	Landing	180	Landings	1	180
Total Rock for Road Segment:			A to B					392

ROCK TOTALS (CY)	**Crusher Reject**	**1 ½" – 0"**	**3" – 0**	**Pit-run**	**24" – 12" Riprap**
	744	897	144	1,781	326

Roads shall be uniformly graded, shaped and approved by STATE prior to rocking.

EXHIBIT D

ROCK ACCOUNTABILITY

PURCHASER shall obtain subgrade approval from STATE prior to rocking. Rocking shall be limited to periods when weather conditions are acceptable to STATE and when sediment will not enter streams. Additional surfacing needed because of construction season or construction practice is not included in the preceding ROAD SURFACING table, and shall be furnished at PURCHASER expense.

Rock accountability shall be determined by the following methods, as directed by STATE. STATE shall be given 24 hours' notice prior to rocking.

Depth Measurement. Rock shall be spread and compacted according to the depths specified in Exhibit D. Truck measure volumes are given, but shall not limit the amount of rock spread.

Depth shall be determined in the most compacted area of the surface cross section. The depth of compacted aggregates shall not vary more than 1 inch from the depth specified in the “Road Surfacing” table in Exhibit D. The average depth for each road segment shall be the specified depth or greater. If additional rock is required because of insufficient depth, the locations and volumes to be added shall be determined by STATE.

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

Moisture Content: Compaction must take place when moisture content of the materials being compacted is favorable for effective compaction as determined by STATE.

Compaction Pass: A pass is defined as traveling a road section forward and then backward over that same section.

Subgrade. Subgrade surfaces of the road segments listed below shall be graded and compacted prior to rocking. Compaction shall be accomplished by traveling all surfaces from shoulder to shoulder until the surface is smooth and hard and visible deformation ceases. At least 3 passes shall be made over the entire width and length of the road. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

Subgrade shall be crowned at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All road segments	1

Fills. Embankments and fills shall be placed in (approximately) horizontal layers not more than 8 inches in depth. Each layer shall be separately, and thoroughly, compacted. Compaction equipment shall be operated over the entire width of each layer until visible deformation of the layers ceases. At least 3 passes shall be made over the entire width and length of each layer.

Placing individual rocks or boulders with more depth than the allowed layer thickness shall be permitted, provided the embankment will accommodate them. Such rocks and boulders shall be at least 6 inches below the subgrade. They shall be carefully distributed and the voids filled with finer material, forming a dense and compacted mass. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All Fills	1, 2, and 4

Crushed Rock. The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of crushed rock shall be moistened or dried to uniform moisture content suitable for maximum compaction and compacted in layers not to exceed 6 inches in depth. When more than 1 layer is required, each shall be shaped and compacted before the succeeding layer is placed. Any irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform. Each layer shall be compacted with a minimum of 3 passes over the entire width and length of the road until the surface is smooth and hard and visible deformation ceases. Compaction shall be accomplished by using one or more of the approved equipment options listed below: Rock shall be compacted and processed during the same project period it is spread, unless otherwise approved in writing by STATE.

Rock shall be crowned at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All road segments	1

Pit-Run Rock. The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of pit-run rock shall be moistened or dried to uniform moisture content suitable for maximum compaction and compacted in layers not to exceed 8 inches in depth. When more than 1 layer is required, each shall be shaped and compacted before the succeeding layer is placed. Any irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform. Each layer shall be compacted with a minimum of 3 passes over the entire width and length of the road. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

Rock shall be crowned at 4 to 6 percent as specified in the “Forest Roads Specifications” table in Exhibit D.

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
A to B and E to F	3 or a combination of 1 and 4

COMPACTION EQUIPMENT OPTIONS

1. Vibratory Rollers. The drum shall have a smooth surface, a diameter not less than 48 inches, a width not less than 58 inches, and a turning radius of 15 feet or less. (*Vibration frequency shall be regulated in steps to 1400, 1500, and 1600 VPM, corresponding to engine speeds of 1575, 1690, and 1800 RPM. The centrifugal force developed shall be 7 tons at 1600 VPM. It shall be activated by a power unit of not less than 25 horsepower.) The vibratory roller shall be self-propelled and operated at speeds ranging from 0.9 miles to 1.8 miles per hour, as directed by STATE.

2. Vibratory Hand-Operated or Backhoe-Mounted Tamper. Vibratory hand-held or hydraulic tampers shall be used for compaction of backfill materials around culverts. The tamper shoe dimensions shall be a minimum of 10" X 13" and capable of a centrifugal force of 2,250 pounds.

3. Vibratory Grid Compactors. The roller shall have a grid surface and have an operating weight of 32,000 pounds or more. The rock shall be worked with a grader weighing at least 20,000 pounds during the grid rolling process. All rock shall come in contact with the vibratory grid compactor.

4. Dozer. A dozer/track-type tractor weighing a minimum of 82,000 pounds shall be operated over the pit-run or jaw-run rock so that the entire surface comes in contact with the tracks.

EXHIBIT E

CULVERT SPECIFICATIONS

All culvert materials shall be furnished and installed by PURCHASER, unless otherwise specified in the Contract.

Culverts shall be constructed of corrugated double-walled polyethylene or corrugated aluminized (Type 2) steel. Polyethylene culverts shall be double-walled and meet the requirements of AASHTO M-294-06, Type S Culvert.

Aluminized (Type 2) steel culverts shall meet the requirements of AASHTO M-36-03[1].

Polyethylene culverts shall not be used where required culvert diameter is over 36 inches.

Polyethylene joints shall be made with split couplings, corrugated to engage the culvert corrugations, and shall engage a minimum of 4 corrugations, 2 on each side of the culvert joint.

Culverts shall be located according to the alignment and grade as shown on the Plan and Profile, and/or as staked in the field, or as specified in special instructions.

The STATE Representative shall determine final culvert locations and stake the locations in the field prior to installation.

Cross Drain Culverts

Cross drain culverts on road grades in excess of 3 percent shall be skewed at least 30 degrees from perpendicular to the road centerline, except that cross drain culverts at the low point of dips in roads shall not be skewed. Cross drains shall be skewed to fit the required culvert length to the road prism.

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3 percent or greater than 10 percent.

Disconnect Culverts

The culvert inlet shall be located as close to the channel that it is disconnecting, while the culvert outlet shall be located as far from the channel as possible; discharge culvert outflow on the forest floor, allowing for filtration before the water enters the disconnected channel.

The foundation and trench walls for all culverts shall be free from logs, stumps, limbs, stones, and other objects which would dent or damage the culvert. The culvert trench shall be excavated 3 culvert diameters wide to permit compaction and working on each side of the culvert. Tamping shall be done in 6-inch lifts, 1 culvert diameter each side of the culvert. Bedrock shall be excavated as required to provide a uniform foundation for the full length of the culvert.

A bedding of rock crusher reject as specified shall be placed to provide a wide band of support and to transmit the load from above evenly over the entire length of the culvert for all culverts on improvement segments.
Backfill shall consist of rock crusher reject for all culverts on improvement segments and job-excavated soil for the culverts on new construction. Backfill shall be free of stumps and limbs.

Transporting of the culvert shall be done carefully. Dragging or allowing free fall from trucks or into trenches shall not be permitted.

EXHIBIT E

CULVERT SPECIFICATIONS

Minimum height of cover over top of culvert to subgrade when road is to be rocked shall be as follows: 12" for culverts 18” to 36” and 18” for culverts 42” to 96”. Minimum vertical cover for other designs shall be as specified by STATE.

Lengths of individual culvert sections shall be not less than 10 feet, unless otherwise provided for in special instructions.

The ends of each culvert shall be free of logs and debris which would restrict the free flow of water.

The intake end of relief culverts shall be provided with a sediment catching basin 3 feet in diameter at the bottom. The outlet end of any culvert which would allow water to erode embankment soil shall be provided with an energy dissipator, half round, or other approved slope protection device. Construct lead-off ditches away from culvert outlets where the slope gradients restrict the free flow of water.

Culverts 36 inches in diameter or larger shall have 1:1 step beveled inlets.

Compaction by tamping utilizing a Vibratory Hand-Operated or Backhoe-Mounted Tamper is required for all culverts.

All culverts scheduled for replacement shall become property of the PURCHASER and be removed from STATE land in the same project period in which replacement occurred.

The intake ends of culverts in fills less than 3 feet to the top of the culvert shall be marked by driving steel posts within 6 inches of the downgrade side. Posts shall be painted with a rust-resistant paint and be a minimum of 5 feet long, with the spade driven 2 feet into the ground.

Energy Dissipators and Bio Bags shall be installed within 72 hours of culvert installation, unless otherwise approved in writing by STATE.

A manufacturer's certification that the product was manufactured, tested, and supplied in accordance with this specification shall be furnished to STATE upon request.

Following are the minimum standard gauges for steel culvert and coupling bands. Some culverts may require different gauges and may be found in the culvert listing.

	Steel Culvert	Thickness			Band Widths (")	
Dia.	Gauge	Uncoated	Coated	Band Gauges	Annular	Helical
42	14	0.0747"	0.079”	16	12	12
48	14	0.0747"	0.079”	16	24	24

EXHIBIT E

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
1.1	18	30	CPP	A to B	7+00
1	18	30	CPP	C to D	55+85
2	18	40	CPP	C to D	129+00
3	18	60	CPP	C to D	130+05
4	18	30	CPP	C to D	152+10
5	18	30	CPP	C to D	152+90
6	18	30	CPP	C to D	154+30
7	18	30	CPP	C to D	154+90
8	18	30	CPP	C to D	155+30
9	18	30	CPP	C to D	159+00
10	18	40	CPP	C to D	179+30
11	18	30	CPP	C to D	180+40
12	18	30	CPP	C to D	217+55
13	18	40	CPP	C to D	230+75
14	30	46	CPP	C to D	231+60
15	36	46	CPP	C to D	238+40
16	18	30	CPP	C to D	242+20
17	18	30	CPP	C to D	245+35
18	18	30	CPP	C to D	247+60
19	30	40	CPP	C to D	248+90
20	18	30	CPP	C to D	249+85
21	132 x 69	78	ACSP	Point H	-
22	18	30	CPP	C to D	256+25
23	18	50	CPP	C to D	269+50
24	42	44	ACSP	C to D	280+35
25	18	30	CPP	C to D	330+55
26	18	30	CPP	C to D	333+80

EXHIBIT E

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
27	18	40	CPP	C to D	339+45
28	18	30	CPP	C to D	350+00
29	24	36	CPP	C to D	357+00
30	18	30	CPP	C to D	359+60
31	30	40	CPP	C to D	371+75
32	30	30	CPP	C to D	375+95
33	18	30	CPP	C to D	376+80
34	18	30	CPP	C to D	404+20
35	30	30	CPP	C to D	417+65
36	18	30	CPP	C to D	418+55
37	18	30	CPP	C to D	441+50
38	18	30	CPP	E to F	92+35
39	18	30	CPP	E to F	93+25
40	48	85	ACSP	Point G	-

ACSP = Aluminized, CPP = Polyethylene

EXHIBIT E

TYPICAL EMBEDDED ENERGY DISSIPATOR

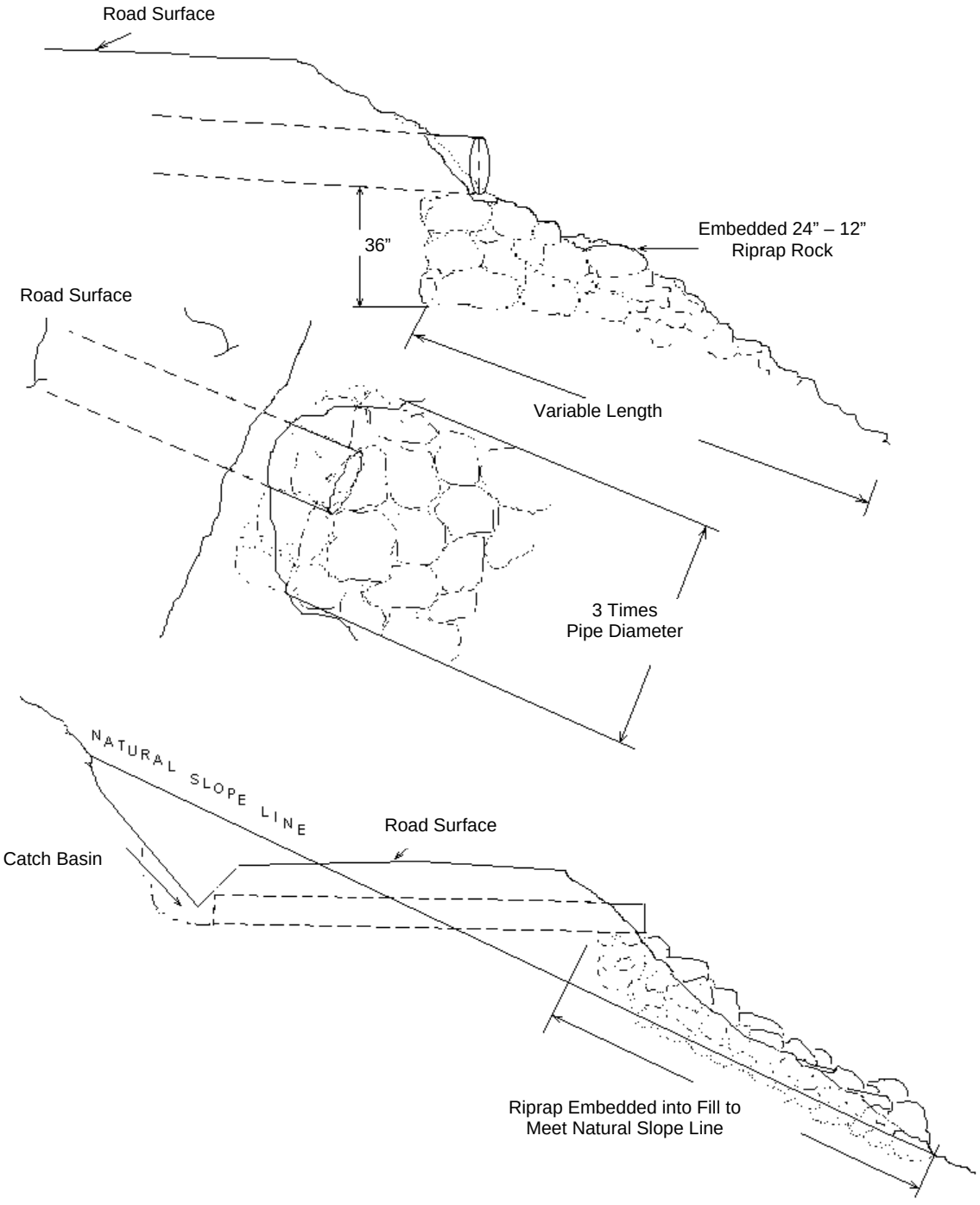


EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

1. PURCHASER shall prepare a written development plan for the quarry area. The plan shall be submitted to STATE for approval prior to conducting any operation in quarry area. The plan shall include, but not be limited to:

   (a) Location of benches and roads to benches.
   (b) Disposal site for woody debris, overburden and reject material.
   (c) Time lines for rock quarry use.
   (d) Erosion Control measures.

2. PURCHASER shall schedule and coordinate quarry and stockpile usage with other existing or planned activity requiring quarry or stockpile usage. PURCHASER shall notify STATE 5 days prior to the start of quarry development activities.

3. The quarry site shall be left in a condition free from overburden and debris. Access roads to the quarry, and the quarry floor, shall be cleared at the termination of use. Overburden shall be removed for a distance of 20 feet beyond the developed rock source.

4. PURCHASER shall conduct the operations relative to the disposal of waste material in such manner that sediment, rock, or debris shall not be washed, conveyed, or otherwise deposited in any stream.

5. At the Salmonback Pit, all woody debris, including stumps and Slash shall be hauled to the designated waste area and piled, as directed by STATE.

6. Benches shall be maintained/constructed at intervals of 40 feet or less in height and shall be a minimum of 20 feet in width. Any gravel or talus slopes shall be left with a working face at an angle of 60 percent or less. There shall be a minimum of one bench with an access road to it. Said bench shall be easily accessible with tractors.

7. Quarry face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.

8. Oversized material that is produced shall be piled in a designated area adjacent to the pit. It shall not be wasted.

9. The quarry floor shall be developed to provide for drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained. Quarry access roads shall be cleared and blocked upon completion of quarry use as directed by STATE.

10. Proper winterization and storm-water control measures such as waterbarring, drainage, utilization of filter bales, mulching and/or blocking access shall be constructed and maintained to protect the watershed and Project Work, as directed by STATE.

11. Apply seed and mulch to the waste area, as specified in Exhibit I.

EXHIBIT F

PIT-RUN

For 6"-0" Pit-Run	Passing	10" sieve	100%
	Passing	6" sieve	60-85%
	Passing	3" sieve	30-50%
	Passing	1/4" sieve	0-20%

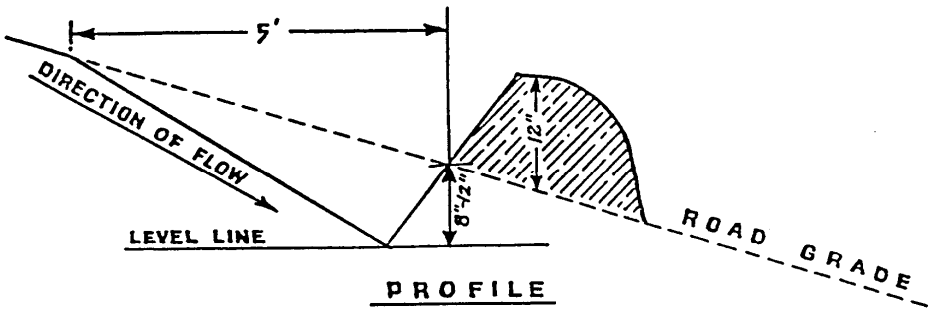
Material shall be well graded, free of organic material and shall not have excessive fine materials.

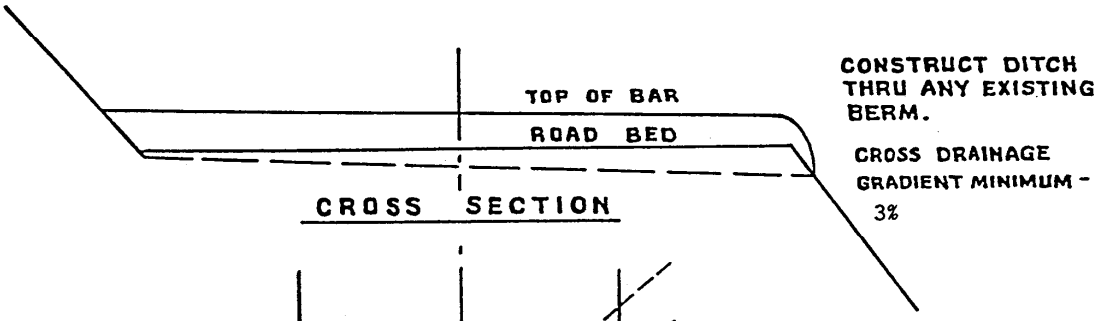
For 24"-12" Riprap A minimum of 50 percent of the material shall measure a minimum of 24 inches, measured in one dimension. Material shall be clean, well graded, and free of 2"-0" fines.

Control of gradation shall be by visual inspection by STATE.

EXHIBIT G

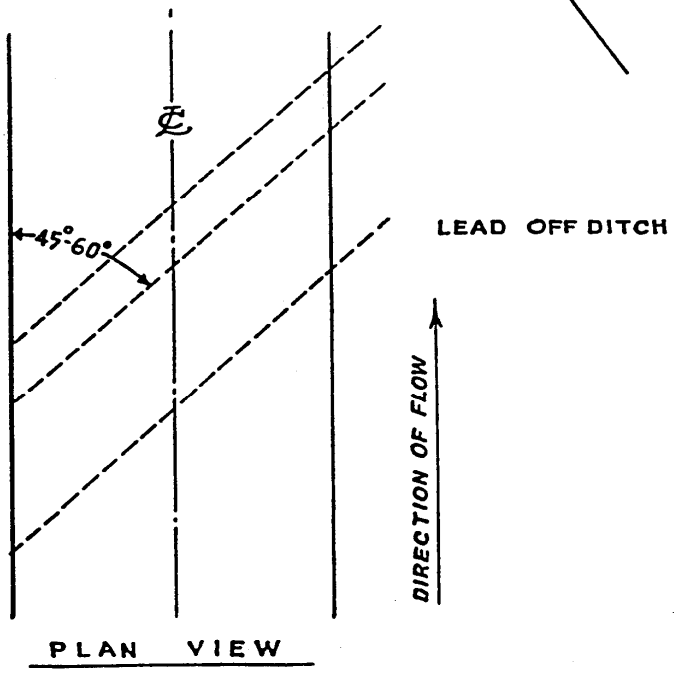
WATERBAR SPECIFICATIONS





SPACING OF WATERBARS

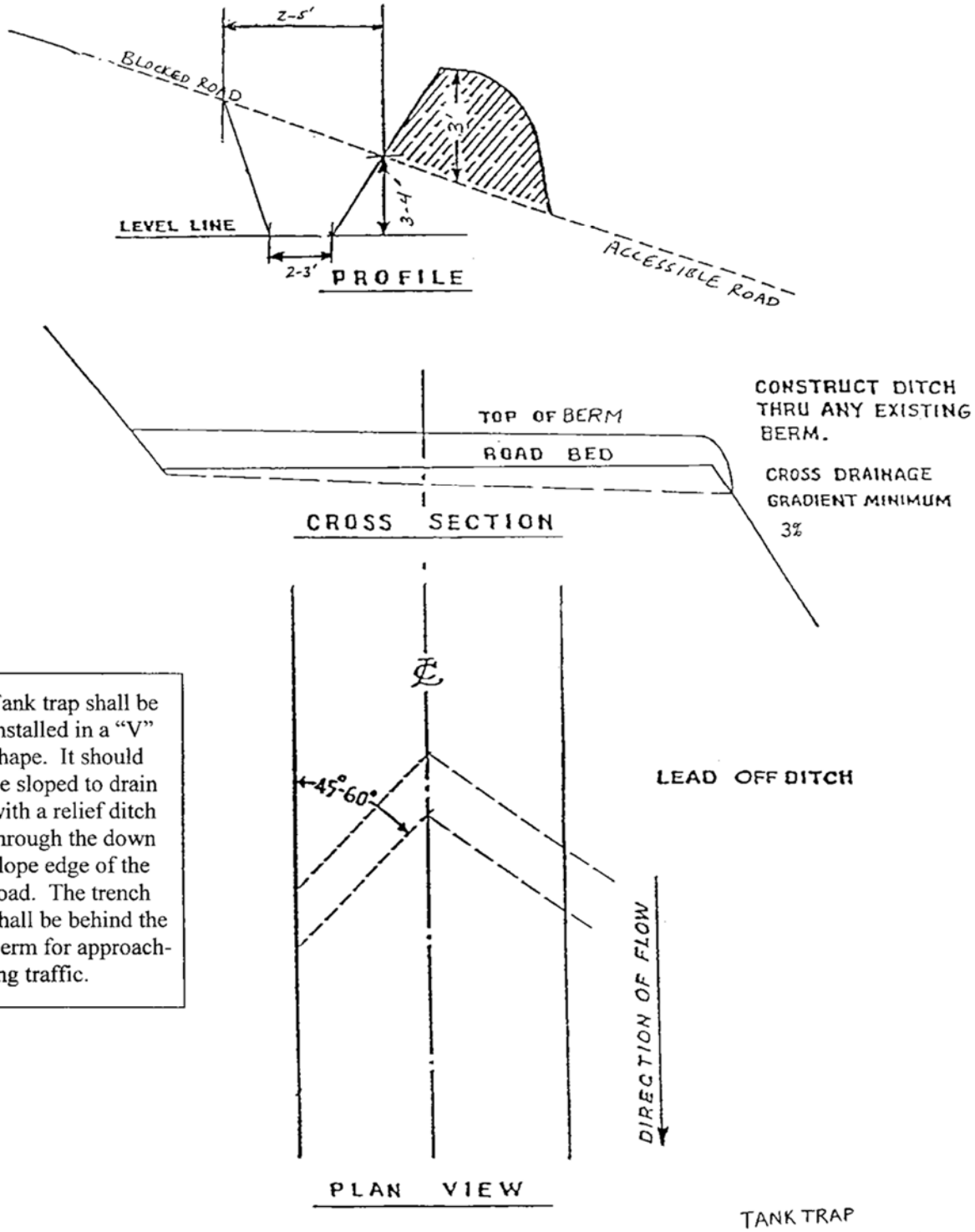
ROAD GRADE	DISTANCE
≤ 5%	400'
6-10%	200'
11-15%	150'
16-20% or greater	100'



WATERBAR SPECIFICATIONS
FOR CROSS DITCHING #298

EXHIBIT G

TANK TRAP SPECIFICATIONS



Tank trap shall be installed in a "V" shape. It should be sloped to drain with a relief ditch through the down slope edge of the road. The trench shall be behind the berm for approaching traffic.

EXHIBIT H

TYPE F STREAM CROSSING STRUCTURE SPECIFICATIONS

PURCHASER shall design and install a Type F stream crossing structure. Structure will be a PURCHASER designed open bottom culvert.

GENERAL TYPE F CONSTRUCTION SPECIFICATIONS

(a) Must allow free passage of fish as provided in the Oregon Forest Practices Rules.

(b) In-stream work shall be conducted only during periods of low water flows and between August 15th and September 15th. STATE shall be notified a minimum of 48 hours prior to beginning the work. STATE has prepared FPA "Written Plan" for this work.

(c) Cleared debris and excavated materials unsuitable for structure backfill shall be hauled to the designated waste areas as direct by STATE.

(d) Waste materials shall be sloped for drainage and stability, as directed by STATE. Prior to hauling waste materials, the waste area shall be cleared of large woody debris. The debris shall be piled adjacent to the waste area. All exposed excavation areas and waste materials shall be grass seeded, fertilized, and mulched according to the specifications in Exhibit I. Large woody debris shall be redistributed over the waste area after all the waste materials have been hauled.

(e) Oil spill response materials shall be on site before the work begins.

(f) A minimum 2 cubic-yard, track-mounted excavator shall be used for all excavation, stream channel development, and riprap placement. Use of an on-site hydraulic rock hammer may be required for the breaking of rock strata +encountered during the development of footing foundations.

(g) Grass seed and straw mulch shall be applied to all exposed areas, bare soils and waste materials in accordance with Exhibit I.

(h) De-watering of the work site shall be accomplished according to PURCHASER'S STATE approved plan and prior to the removal of any excavated material for the development of the footing pad, and stream channel. Salvage of existing riprap may be accomplished prior to de-watering. The work site shall be dewatered by the use of cofferdams, pumps, temporary diversion ditches and/or drainage structures.

(i) Remove any logs or woody debris encountered during footing excavation.

(j) Stream crossing structure excavation, installation, structure backfilling, fill armoring, and structure surfacing shall be consistent with Exhibits D, E, F, G, and I.

EXHIBIT H

TYPE F STREAM CROSSING STRUCTURE SPECIFICATIONS

PURCHASER shall design and construct an open bottom arch culvert that is sufficient to provide a clear span of 11 feet at Point H and maintains the present waterway width on centerline of 7.5 feet.

These specifications require a fully engineered multi-plate arch culvert. The structure shall be designed for HS25 vehicle loads with occasional U80 vehicle overload allowance. The design shall be prepared by a Professional Engineer licensed in Oregon and approved by STATE.

The stream crossing structure shall accommodate the alignment of road improvement segment C to D. STATE has performed a site survey for the purposes of displaying the road and stream location and elevations.

GENERAL INSTRUCTIONS

(a) PURCHASER'S engineer to provide STATE with bottom of footing coordinates for each footing corner. Engineer will pin each corner prior to footing placement.

(b) PURCHASER'S engineer shall use EDM type survey instrument to establish the location and elevations of footings. Engineer shall verify that placed footing elevations are consistent with approved plans prior to structure placement.

(c) PURCHASER shall submit a site specific de-watering plan which provides for 24 hour de-watering from the time of excavating the existing culvert to the placement of the footings.

(d) PURCHASER shall develop and submit for STATE approval an Erosion Control Plan that addresses the prevention of sediment entering the tributary to the Salmonberry River and the Salmonberry River during construction.

EXHIBIT H

TYPE F STREAM CROSSING STRUCTURE SPECIFICATIONS

PROJECT PLANS. PURCHASER shall submit plans to STATE for approval, prior to commencement of any work on the project. The plans shall include design calculations, scaled drawings, elevations and section drawings for the structure, including sizes and dimensions of components. The plans shall also include a description of special tools, equipment, the required lifting capacity and the general process to install and connect the components. Plans must contain erosion control measures, site de-watering measures and all information necessary for the administration and inspection of the project by STATE. The plans shall be stamped and signed by a professional engineer licensed in Oregon.

SITE SPECIFIC CONSTRUCTION INSTRUCTIONS

(a) Salvage a minimum of 6 inches of the existing road surfacing rock for the length and width of the construction site. Material shall be stockpiled to be used as bedding material for the footings.

(b) Develop the stream channel for a minimum distance of 20 feet upstream of the inlet and 10 feet downstream of the outlet, as directed by STATE. The stream channel width will be 7.5 feet and the stream banks shall be sloped at 1½:1.

(c) The new streambed elevation at the inlet shall be installed 4.7 feet lower than the bottom of the inlet of the existing culvert. The new streambed elevation at the outlet shall be installed 10 feet lower in elevation than bottom of the outlet of the existing culvert. The culvert shall not be installed at a gradient steeper than 10.5%.

(d) The top of the new road fill shall be 2 feet lower in elevation than the existing road surface. Drawings available at the Forest Grove District Office of the Oregon Department of Forestry.

(e) Place 24”-12” riprap rock as stream bed retention material inside the culvert. Retention material shall be machine placed as directed by STATE.

(f) Construct stable foundation bases for precast footings by utilizing 24”-12” riprap capped with salvaged 1½”-0 crushed rock. The 1½”-0 crushed rock shall be enclosed in 6½ ounce woven geotextile fabric. Both the riprap and crushed rock shall be compacted in accordance with Exhibit D.

(g) Utilize 24”-12" riprap rock for fill armor. Riprap used for fill armor shall be placed and tamped at a 1 1/3:1 slope for a minimum thickness of 2 feet, beginning at the toe of the fill.

(h) Construct an open bottom, galvanized steel, arch pipe which spans 11 feet. Structure backfill shall consist of 3” - 0 crushed rock around the footings with a minimum cover above the footings of 1 foot. The remainder of the backfill shall consist of suitable excavated fill material. Backfill shall be compacted as specified in Exhibit D.

(i) Finished subgrade width shall be 32 feet, including curve and fill widening. Finished fill surfaced width shall be 24 feet, including curve widening. Utilize 1½”-0 crushed rock to a compacted depth of 12” as specified in Exhibit E to provide for a smooth and uniform transition from the existing roadway across the fill. Applied crushed rock shall be processed and compacted as specified in Exhibit E.

The Engineer shall supervise and inspect the construction work and issue STATE written certification upon completion of the project.

EXHIBIT H

TYPE F STREAM CROSSING STRUCTURE SPECIFICATIONS

GEOTEXTILE SPECIFICATIONS - shall be woven geotextile fabric designed for forest road subgrade surfacing purposes and shall meet or exceed the following requirements, unless otherwise approved in writing by STATE:

1.	Grab Tensile	300 lbs.	ASTM D4623;
2.	Puncture strength	110 lbs.	ASTM D4833;
3.	Mullen Burst	600 lbs.	ASTM D3786; and
4.	Width – 16 feet.		

INSTALLATION REQUIREMENTS - fabric shall be installed according to the following requirements:

1. Fabric shall be installed directly on the prepared surface. Longitudinal and traverse joints shall be overlapped at least 3 feet.

2. Torn, punctured, or separated sections of the fabric shall be repaired by installing a fabric patch over the break prior to placing the surfacing course material. The patch shall be at least 4 feet larger in horizontal dimensions than the break to be repaired.

3. Fabric locations: Point H.

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EXHIBIT I

SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required seed, fertilizer, and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed and fertilizer to all waste areas, and bare soils resulting from Project No. 1. Apply straw mulch to all bare soils within 100' of streams resulting from Project No. 1 and to all waste areas.

Seeding Seasons. Seeding shall be performed only from March 1 through June 15 and August 15 through October 31. Seeding materials shall not be applied during windy weather or when the ground is excessively wet or frozen. Areas of disturbed soil shall be seeded by the end of the project period in which work was started.

APPLICATION METHODS FOR SEED AND FERTILIZER

Dry Method. Mechanical seeders, seed drills, landscape seeders, cultipacker seeders, fertilizer spreaders, or other approved mechanical seeding equipment shall be used to apply the seed and fertilizer in the amounts and mixtures specified. Hand-operated seeding devices may be used when seed and fertilizer are applied in dry form.

APPLICATION RATES FOR SEED AND FERTILIZER

The seed mixture listed below shall be applied at 100 lbs. per acre. The seed mixture shall be comprised of the following:

SPECIES	MIXTURE	PURE LIVE SEED	GERMINATION
Annual Rye	33%	95%	>90%
Orchard Grass	33%	95%	>90%
Perennial Rye	34%	95%	>90%

Fertilizer: Chemical analysis shall be 16-20-0 and shall be applied at the rate of 200 pounds per acre. Fertilizer shall not be applied within 100 feet of streams.

Mulching Period. Straw mulch shall be applied within 24 hours of spreading grass seed and fertilizer.

APPLICATION RATES FOR MULCH

Place straw mulch to a reasonably uniform thickness of 1½ to 2½ inches. This rate requires between 2 and 3 tons of dry mulch per acre.

Application Locations

Road Segment	Location
C to D	Culvert No. 3, 11, 14, 15, 19, 21, 24, 29, 31, & 32
C to D	192+75
C to D	265+20
Point G	-
Point H	-

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EXHIBIT J

SPECIFICATIONS FOR BRUSH AND SLASH TREATMENT

Operation Area: The Timber Sale Area shown on Exhibit A

Equipment Type, Equipment Operation, and Conduct of Work

Equipment- shall be a track-mounted machine with a ground-pressure rating of not more than 6.8 PSI and a net horsepower of 85 or more. The machine shall be capable of a minimum horizontal reach of 26 feet and a minimum vertical reach of 16 feet.

The bucket shall be of a hydraulically controlled "clamshell" style equipped with rake teeth and capable of 360-degree continuous rotation. The tooth length on the rake teeth shall be at least 14 inches unless otherwise approved in writing by STATE.

Operator - must be experienced in operating similar equipment on land clearing operations, be able to operate the equipment proficiently, and pile the debris on the area as directed by STATE.

Support - including transport, other equipment, replacements, supplies, maintenance, and repairs shall be furnished as required to complete work; and shall be furnished without cost to STATE, other than as agreed under the contract terms.

Work Scheduling

Work shall not begin until PURCHASER has arranged to have the equipment operators meet with STATE to review the requirements specified in Section 2365, "Progressive Operations", Section 2560, "Slash Disposal", and this Exhibit. Once begun, operations shall be continuous until contract work is completed, unless interrupted by poor weather, fire closures, or other uncontrollable circumstances. Equipment breakdowns shall be repaired without undue delay, and provision shall be made for replacement of equipment to prevent prolonged delays. Brush and slash treatment operation shall be accomplished only during dry weather conditions and shall not be allowed when operations might damage sites or affect stream flows. Any exception to these instructions must be authorized in writing by STATE.

Description of Work to be Done

Move brush and/or woody slash to create openings as planting spots in the slash and brush. Planting spots shall be a minimum of 1 foot by 1 foot in size and shall be on a 10-foot spacing. Care shall be taken to avoid creating a depression in the soil of the planting spot. Spacing may be varied to accommodate stumps, large woody material, rocky areas, etc., but 435 planting spots per acre are still required.

Piling should be avoided but may be done only as needed to create the required planting spots. If piling is necessary, piles should not exceed 10 feet in width or length. Each pile whose length and width dimensions exceed 10 feet shall be covered with 100 square feet of polyethylene plastic sheeting. The plastic sheeting shall be no more than 4 mil gauge. Additional woody debris shall be piled on top of the plastic sheeting to complete the piling, as directed by STATE. PURCHASER shall supply the materials used for covering the piles. Work specifications may be modified or waived only upon written notice from STATE.

PART IV: OTHER INFORMATION

State Timber Sale Contract
No. 341-16-57
Sam Hill

WRITTEN PLAN FOR STREAM CROSSING STRUCTURES – SAM HILL TIMBER SALE

SALE NO. 341-16-57

PROJECT DESCRIPTION:

Replacement of an undersized nonfish culvert and a fill over 15 feet:

Project Point G – NE1/4, SE1/4, Section 17, T3N, R6W, W.M.

The Oregon Forest Practices Act requires a written plan for the construction of any fill over 15 feet. This Written Plan addresses the fill and drainage structure design, and the protection measures that will be applied to minimize the risk to downstream beneficial uses.

PROTECTED RESOURCES:

The culvert to be installed under this Written Plan will replace an undersized nonfish culvert within a 20 foot fill. This will provide adequate drainage of a small Type N stream, which is a tributary to the Salmonberry River, a large Type F stream. This project site is within the Forest Practices Coast Range Region.

DESCRIPTION OF THE AREAS:

The stream's drainage area is 46.72 acres, or 0.073 square miles, with a mean elevation of 2060 feet. The predicted 100-year peak flow, based on Campbell's equations, is 27.8 cubic feet per second. A waterway area of 7.1 square feet is required to pass this flow.

FILL/CULVERT DESIGN STRATEGIES:

The current culvert diameter is 24". To pass the 50 year flow, a 33" culvert is required. To pass the 100 year flow, a 36" culvert is required. In order to minimize the risk to downstream beneficial uses, 48" culvert will be installed to ensure adequate water passage and debris flow. A dip in the road above the culvert will allow water passage over the road should the culvert ever get plugged, inhibiting water to channelize and damage the road.

PROTECTION MEASURES:

All in-stream work associated with this plan will be accomplished from August 15 to September 15, annually. In water work will be limited to the minimum necessary to adequately prepare the site for installation of the structure. To minimize impact to the resource during all in water work, the stream will be pumped or diverted around the project site. The exposed fill slopes around the structure will be armored with riprap to protect the fill from erosion and embankment failure. Riprap will also be placed below the culvert outlet to minimize stream channel scour. Upon project completion, all areas of disturbed soil will be seeded and mulched to minimize surface erosion.

State Timber Sale Contract
No. 341-16-57
Sam Hill

WRITTEN PLAN FOR INSTREAM ACTIVITIES – SAM HILL TIMBER SALE

SALE NO. 341-16-57

PROJECT DESCRIPTION:

Installation of a fish passage culvert at the following location:

Project Point H – SE1/4, SW1/4, Section 17, T3N, R6W, W.M.

The Oregon Forest Practices Act requires a written plan for operations within 100 feet of a Type F stream. This Written Plan addresses the installation of a culvert that meets current fish passage guidelines and the protection measures that will be applied to minimize impact to the streams and associated riparian areas.

PROTECTED RESOURCES:

The culvert to be installed under this Written Plan will replace a nonfish passable culvert. This will provide fish passage for an unnamed, small type F stream, which is a tributary to the Salmonberry River, a large type F stream. This project site is within the Forest Practices Coast Range Region.

DESCRIPTION OF THE AREAS:

The stream's drainage area is 148 acres, or 0.23 square miles, with a mean elevation of 2260 feet. The predicted 100-year peak flow, based on Campbell's equations, is 91.8 cubic feet per second. A waterway area of 18.1 square feet is required to pass this flow. Average active channel width at normal high water is estimated to be approximately 7.5 feet.

CULVERT DESIGN STRATEGIES:

In order to provide upstream passage of juvenile fish, an open bottom arch culvert sized to 150% of the active channel width will be designed by a Professional Engineer licensed in Oregon.

The design will provide a waterway area sufficient to pass the 100-year peak flow.

PROTECTION MEASURES:

All in stream work associated with this plan will be accomplished from August 15 to September 15, annually. In water work will be limited to the minimum necessary to adequately prepare the site for installation of the structure. To minimize impact to the resource during all in water work, the stream will be pumped or diverted around the project site. The exposed fill slopes around the structure will be armored with riprap to protect the fill from erosion and embankment failure. Upon completion of installation of the structure all areas of disturbed soil will be seeded and mulched to minimize surface erosion.