



Oregon Department of Forestry

2600 State St Salem OR 97310

PART III: EXHIBITS

EXHIBIT B

TIMBER SALE OPERATIONS PLAN

(See page 2 for instructions)

Date Received by State: _____

(5) State Brand Information (Complete)

(1) Contract Number: WO-341-2023-W00901-01

(2) Sale Name: Grouse Bully Thin

(3) Contract Expiration Date: 12/31/2025

(4) Purchaser Name: _____

(6) State Representatives:

<u>Name</u>	<u>Circle One</u>	<u>Phone No.</u>	<u>Cell No.</u>	<u>Alt Phone</u>
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			

(7) Purchaser Representatives:

<u>Name</u>	<u>Circle One</u>	<u>Phone No.</u>	<u>Cell No.</u>	<u>Alt Phone</u>
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			

(8) Name of Subcontractors and Start Dates:

<u>Project No.</u>	<u>Subcontractor Name.</u>	<u>Start Date</u>	<u>Completion Date</u>	<u>Cell No.</u>	<u>Alt Phone</u>

Subcontractor Name.

Start Date

Cell No.

Alt 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.



Oregon Department of Forestry

2600 State St Salem OR 97310

PART III: EXHIBITS

EXHIBIT B

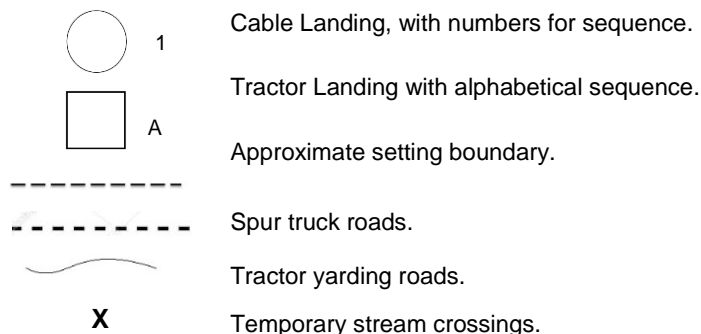
INSTRUCTION SHEET FOR OPERATIONS PLAN

SUBMIT ONE COPY OF PLAN 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.
- (9) 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 required by the timber sale contract. Provide spur road specifications
 3. Locations of proposed tractor yarding roads. Show if and how marked on the ground.
 4. Locations of temporary stream crossings.
 5. List the sequence of performing project work.
 6. Location of rock sources - attach pit development plans.




Oregon Department of Forestry

2600 State St Salem OR 97310

PART III: EXHIBITS

**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

Month/Year Date ____/____	Month/Year Date ____/____	Month/Year Date ____/____	Month/Year Date ____/____	Month/Year Date ____/____
Work Commences	25%	50%	75%	Projects Complete

Harvest & Other Requirements

Month/Year Date ____/____	Month/Year Date ____/____	Month/Year Date ____/____	Month/Year Date ____/____	Month/Year Date ____/____
Work Commences	25%	50%	75%	Sale Complete

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, PURCHASER's 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: _____

 SUBMITTED BY:
PURCHASER

 STATE OF OREGON - DEPARTMENT OF
FORESTRY

Title _____

Title _____



Oregon Department of Forestry
EXHIBIT C - SAWMILL GRADE (WESTSIDE SCALE)
SCALING INSTRUCTIONS - LOCATION APPROVAL - BRAND INFORMATION
West Oregon - NWOA

(1) ORIGINAL REGISTRATION ☐ Date _____
REVISION NUMBER 000 ☐ Date _____
CANCELLATION ☐ Date _____

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

(3) FROM: West Oregon Phone (541) 929-3266
(State Forestry District)
Address: 24533 ALSEA HWY
PHILOMATH, OR 97370

(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:
Use Region 6 actual taper rule. Logs over 40'.

(7) Weight Scale Sample ☐ YES ☒ NO

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

(9) SALE NAME: Grouse Bully Thin
COUNTY: Lincoln

(10) STATE CONTRACT NUMBER:
WO-341-2023-W00901-01

(11) STATE BRAND REGISTRATION NUMBER:

(12) STATE BRAND INFORMATION:



(13) PAINT REQUIRED: YES ☒
COLOR: Orange

(14) SPECIAL REQUESTS	(Check applicable)
PEELABLE CULL (all species).....	<input checked="" type="checkbox"/>
NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE	<input checked="" type="checkbox"/>
ADD-BACK VOLUME - Deductions due to delay...	<input checked="" type="checkbox"/>
OTHER :	

(15) REMARKS: "Mule Train" loads require a ticket for each set of bunks.

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

(16)

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.
General Distribution: TPSO, Approved Scaling Locations and Purchaser.



Oregon Department of Forestry
EXHIBIT C - SAWMILL GRADE
INSTRUCTIONS FOR EXHIBIT C
West Oregon - NWOA

- (1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires logging and hauling to be complete, recall branding hammers.

(2)

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

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

Northwest Log Scalpers Inc.
6137 NE 63rd St, Vancouver, WA, 98661
Phone: (360) 553-7212 ext. 4 Fax: (360) 553-7213
Email: info@nwlogscalpers.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

Yamhill Log Scaling & Grading Bureau
P.O.Box 709, Forest Grove, OR 97116
Phone: (503) 359-4474 Fax: (503) 359-4476
Email: yamhilllog@frontier.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: https://apps.odf.oregon.gov/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 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. Signatures not required on revisions.



Oregon Department of Forestry
EXHIBIT C - PULP SORT
PROCESSING INSTRUCTIONS - LOCATION APPROVAL
BRAND INFORMATION

West Oregon, NWOA

(1) ORIGINAL REGISTRATION ☐ Date _____
REVISION NUMBER 000 ☐ Date _____
CANCELLATION _____

(9) **SALE NAME:** Grouse Bully Thin

COUNTY: Lincoln

STATE CONTRACT NUMBER:

WO-341-2023-W00901-01

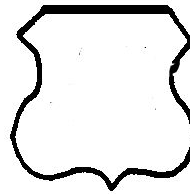
(2)

(Approved Pulp Processing Facility)

(11) STATE BRAND REGISTRATION NUMBER: _____

(3) FROM: West Oregon Phone (541) 929-3266
(State Forestry District)
Address: 24533 ALSEA HWY
PHILOMATH, OR 97370

(12) STATE BRAND INFORMATION:



(4) PURCHASER: _____

(5) Scaling Bureau (TPSO) Processing Weight receipts:

Mailing Address: _____

Phone Number: _____

(13) **REMARKS:** "Mule Train" loads require a ticket for each set of bunks.

(6) **STATE Definition of Approved Pulp Sort:**

- Top portion of the tree (tops).
- All logs with a diameter (Big End) greater than 8 inches marked with blue paint.

Operator's Name (Optional inclusion by District):

(14) SIGNATURES:

(7) PULP FACILITY PROCESSING INSTRUCTIONS:

- Pulp loads shall be weighed in lieu of scaling.
- One Ton = 2000 lbs (Short Ton).
- Pulp loads shall have a yellow Log Load Receipt attached.
- Gross weight and truck tare weight for each load shall be machine printed on the weight receipt.
- Weigher shall sign the weight receipt.
- Weigher shall record the Log Load Receipt number on the weight receipt.
- Weigher shall attach the Weight receipt to the Log Load Receipt and mail them weekly to the TPSO processing the Weight receipt.

Purchaser or Authorized Representative _____ Date _____

State Forester Representative _____ Date _____

State Forester Representative PRINT NAME _____

(8) TPSO PROCESSING INSTRUCTIONS

- Submit data files daily (or each day of activity).
- Mail or deliver scale tickets weekly to ODF Headquarters in Salem.

Notify the District within one hour when branding is inadequate for quick identification, the logs are marked with orange paint, the receipts are missing, not correctly or completely filled out, and/or logs do not meet the specifications of the STATE definition of Approved Pulp Sort.

General Distribution: TPSO, Approved Scaling Locations and Purchaser.



**Oregon Department of Forestry
EXHIBIT C - PULP SORT
INSTRUCTIONS FOR EXHIBIT C**

West Oregon, NWOA

- (1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires logging and hauling to be complete, recall branding hammers.
- (2) Approved Pulp Processing Facility. Write in as written in the Approved Log Delivery Location https://apps.odf.oregon.gov/Divisions/management/asset_management/scalinglocation.asp
- (3) State District office, address and phone.
- (4) Enter Purchaser's business name, address, and phone number as it appears on the Contract.
- (5) Third Party Scaling Organization that will be processing the weight tickets, mailing address, and phone number.

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: yamhilllog@frontier.com

Northwest Log Scalpers Inc.
6137 NE 63rd St, Vancouver, WA, 98661
Phone: (360) 553-7212 ext. 4 Fax: (360) 553-7213
Email: info@nwlogscalpers.com

Big end of log is not to exceed 2 inches greater than the minimum removal specifications in the contract. Example: Minimum removal specifications 6 inches and 20 board feet, then the Big end of log not to exceed 8 inches. When conifer and hardwood removal specifications are different, use the smaller removal diameter to determine this specification.

- (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 (13).
- (13) Use this section to list any special instructions or the reason for any revisions in section item (1).
- (14) Require purchaser to sign and date completed form in addition to State Forester Representative, sign and print name on the form. Signatures not required on revisions.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DRAINAGE
14 feet	None	A to B	0+00 to 2+00	Outsloped
14 feet	None	C to D	0+00 to 1+60	Outsloped
14 feet	None	E to F	0+00 to 1+20	Outsloped
14 feet	None	G to H	0+00 to 2+00	Outsloped
14 feet	12 feet	I to J	0+00 to 1+60	Outsloped
16 feet	14 feet	1 to 2	0+00 to 280+50	Crowned
14 feet	12 feet	3 to 4	0+00 to 18+00	Crowned
14 feet	12 feet	5 to 6	0+00 to 5+20	Crowned
14 feet	12 feet	3 to 7	0+00 to 2+10	Crowned
14 feet	None	8 to 9	0+00 to 6+60	Outsloped
14 feet	12 feet	10 to 11	0+00 to 46+80	Crowned
14 feet	None	12 to 13	0+00 to 11+70	Outsloped
14 feet	None	14 to 15	0+00 to 5+00	Outsloped
14 feet	None	16 to 17	0+00 to 18+90	Outsloped
14 feet	12 feet	2 to 18	0+00 to 9+20	Crowned
14 feet	12 feet	19 to 20	0+00 to 57+00	Crowned
14 feet	None	21 to 22	0+00 to 17+60	Crowned
14 feet	None	23 to 24	0+00 to 2+50	Crowned
14 feet	12 feet	25 to 26	0+00 to 89+70	Crowned
	None		89+70 to 110+60	Outsloped
16 feet	14 feet	3 to 27	0+00 to 92+00	Crowned

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.

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.

Improvement - Where clearing limits have not been marked, the clearing limits shall extend 5 feet back of the top of the cutslope and 10 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 cut slopes shall be removed. Grubbing debris shall not be placed or permitted to remain in or under any road embankment sections.

GRUBBING CLASSIFICATION.

New construction - from the top of the cut slope 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. Clearing and grubbing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing and grubbing debris shall be left in a stable location, and not left lodged against standing trees. Clearing and grubbing debris may be scattered through openings in the timber outside of the cleared right-of-way.

Clearing, grubbing, and associated disposal shall be completed prior to subgrade approval.

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, 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 or outsloped at 3 to 4 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 50 feet, or as staked on the ground, plus 25-foot approaches at each end.

Location: Intervisible but not greater than 750 feet apart and as marked in the field.

SLOPES

	<u>Cut Slopes</u>	<u>Fill Slopes</u>
Solid Rock	Vertical to $\frac{1}{4}$:1	
Fractured Rock	$\frac{1}{2}$:1	
Soil - side slopes 50% and over	$\frac{3}{4}$:1	$1\frac{1}{2}$:1
Soil - side slopes less than 50%	1:1	$1\frac{1}{2}$:1

Top of cut slope 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 these Exhibits, and blocked from vehicular traffic prior to October 1, annually and as directed by STATE.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS: (Project No. 1)

- (1) Timber Removal. Remove all trees within posted right-of-way boundary as specified in Section 2210, "Designated Timber."
- (2) 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.
- (3) 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 or outsloped at 3 to 4 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 or outsloped at 3 to 4 percent.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS (Project No.1)

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
A to B	0+00 to 2+00	Construct new outsloped unsurfaced road from Point A to Point B. Subgrade width = 14 feet. Outslope at 3 to 4 percent. Shape subgrade with road grader. Construct Landing at Point B. Compact road subgrade and Landing with vibratory roller.
C to D	0+00 to 1+60	Construct new outsloped unsurfaced road from Point C to Point D. Subgrade width = 14 feet. Outslope at 3 to 4 percent. Shape subgrade with road grader. Construct Landing at Point D. Compact road subgrade and Landing with vibratory roller.
E to F	0+00 to 1+20	Construct new outsloped unsurfaced road from Point E to Point F. Subgrade width = 14 feet. Outslope at 3 to 4 percent. Shape subgrade with road grader. Construct Landing at Point F. Compact road subgrade and Landing with vibratory roller.
G to H	0+00 to 2+00	Construct new outsloped unsurfaced road from Point G to Point H. Subgrade width = 14 feet. Outslope at 3 to 4 percent. Shape subgrade with road grader. Construct Landing at Point H. Compact road subgrade and Landing with vibratory roller.
I to J	0+00 to 1+60	Construct new outsloped surfaced road from Point I to Point J. Subgrade width = 14 feet. Surfaced width = 12 feet. Outslope at 3 to 4 percent. Shape subgrade with road grader. Construct Landing at Point J. Compact road subgrade and Landing with vibratory roller. Apply a 6 inch lift of Jaw-Run rock (70 CY). Apply 30 CY of Jaw-Run to the Landing and 10 CY of 1½"-0" rock to the junction. Spread and compact Jaw-Run rock with dozer or grader, and a vibratory roller.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS: (Project No.2)

- (1) Timber Removal. Remove all trees within posted Right-of-Way Boundary or individually marked with an orange "C", as specified in Section 2210, Designated Timber.
- (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. Excess waste materials shall be hauled to nearby waste areas and shall be uniformly sloped and compacted for drainage. 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. Crushed rock shall be used for backfilling excavation trenches less than 3 feet deep. STATE may require the use of crushed rock for culvert bedding. Removed culverts shall be hauled to an approved refuse site off of STATE land. Install a culvert marker at each newly installed culvert.
- (3) Culvert Cleaning and Repairs. Remove all debris from inside all existing culverts on the road improvement segment, 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.
- (4) 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 this Exhibit.
- (5) Sod Removal. Remove/separate sod from crushed rock surfacing as directed by STATE. Sod material shall be scattered in stable locations through openings in the timber outside of the cleared right-of-way. In areas where sod cannot be scattered in a stable location, material shall be end hauled to designated waste areas as shown on Exhibit A, or other stable locations as directed by STATE.
- (6) Subgrade Preparation and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, fill reconstruction, ditchouts, 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) Apply required patching and leveling rock, as directed by STATE.
 - (d) Process (grade and mix) the existing surface and added base rock. Provide for a crown of 4 to 6 percent or outsloped at 3 to 4 percent, and compact in accordance to the "Compaction and Processing Requirements" in this Exhibit.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS (Project 2)

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
1 to 2	0+00 to 160+00	Apply 30 CY of 1½"-0" for spot rock as directed by STATE. Spot grade with grader and compact with vibratory roller for 20 Stations as directed by STATE (Salmon Creek and Wolf Creek Roads).
	160+00 to 280+50	Clean out culverts (2) along Deer Creek Ridge Road. Apply 250 CY of 1½"-0" spot rock from the start of Baber Ridge Road to Point 2. Apply 10 CY of 3"-0" rock to each marked turnout (5). Apply 20 CY of 3"-0" rock to each of the marked Landings (2) near Point 2 and Point 10, and 10 CY of 3"-0" rock to each of the 4 other roadside Landings between Point 2 and Point 10. Shape and compact surfacing, turnouts, and Landing rock with grader and vibratory roller.
3 to 4	0+00 to 18+00	Construct Landing at Station 4+94 using dozer. Remove sod from road surface. Shape with grader and compact subgrade with vibratory roller from Station 8+17 to Point 4. Apply 220 CY of 3"-0" rock from Station 8+17 to Point 4. Apply 30 CY of jaw-run rock to each of the Landings (2) at Station 4+94 and Point 4. Shape and compact surfacing and Landing rock with grader and vibratory roller from Point 3 to Point 4.
5 to 6	0+00 to 5+20	Remove sod from road surface. Shape with grader and compact subgrade with vibratory roller. Apply 110 CY of 3"-0" rock from Point 5 to Point 6. Apply 40 CY of jaw-run rock to the Landing at Point 6. Shape and compact surfacing and Landing rock with grader and vibratory roller.
3 to 7	0+00 to 2+10	Remove sod from road surface and re-open Landing at Point 7. Shape and compact subgrade with grader and vibratory roller. Apply 30 CY of jaw-run rock to the Landing at Point 7. Shape jaw-run rock with dozer or grader, and compact with vibratory roller.
8 to 9	0+00 to 6+60	Re-open road and Landing with a dozer. Apply 10 CY of 3"-0" junction rock at Point 8. Shape road and Landing surface with grader, and compact with vibratory roller.
10 to 11	0+00 to 46+80	Construct ditchouts (3) as marked by State. Shape road subgrade with grader and compact with vibratory roller. Apply 6" lift of jaw-run base rock (1,540 CY) from Point 10 to Point 11. Apply 20-30 CY of jaw-run rock to each marked Landing (6) (150 CY total). Apply a 2" lift of 1½"-0" surfacing rock from Point 10 to Point 11. Shape and compact surfacing, turnouts, and Landing rock with grader and vibratory roller.
	7+52	Install an 18" X 24' CPP Cross Drain Culvert at Station 7+52, utilize 10 CY of 1½"-0" rock for bedding and backfill, and compact. Remove old culvert and dispose of off State lands.
	11+60	Install an 18" X 70' CPP Cross Drain Culvert at Station 11+60, utilize 30 CY of 1½"-0" rock for bedding and backfill, and compact. Utilize 5 CY of 3"-0" rock for dissipator rock. Remove old culvert and dispose of off State lands.
	14+09	Install a 12" X 32' CPP Cross Drain Culvert at Station 14+09, utilize 10 CY of 1½"-0" rock for bedding and backfill, and compact. Remove old culvert and dispose of off State lands.
	16+35	Install a 24" X 36' CPP Cross Drain Culvert at Station 16+35, utilize 20 CY of 1½"-0" rock for bedding and backfill, and compact. Utilize 5 CY of 3"-0" rock for dissipator rock. Remove old culvert and dispose of off State lands.
12 to 13	0+00 to 11+70	Re-open road and Landings (2) at Station 5+83 and Point 13 with grader. Apply 10 CY of 3"-0" junction rock at Point 12. Shape and compact surface with grader and vibratory roller.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS CONT. (Project 2)

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
14 to 15	0+00 to 5+00	Re-open road and Landing with grader. Apply 10 CY of 3"-0" junction rock at Point 14. Shape and compact surface with grader and vibratory roller from Point 14 to Point 15.
16 to 17	0+00 to 18+90	Re-open road and Landing with dozer. Apply 10 CY of 3"-0" junction rock at Point 16. Shape and compact surface with grader and vibratory roller from Point 16 to Point 17.
2 to 18	0+00 to 9+20	Remove sod from road surface and Landing with grader. Apply 50 CY of 1½"-0" spot rock to road surface. Apply 40 CY of jaw-run rock to Landing at Point 18. Apply 10 CY of 3"-0" rock to marked turnaround. Shape and compact surfacing, turnouts, and Landing rock with grader and vibratory roller.
19 to 20	0+00 to 57+00	Clean out culverts (3). Remove sod from road surface. Apply 200 CY of 1½"-0" spot rock to road surface. Apply 10 CY of 1½"-0" rock to each marked turnout (3). Shape and compact surfacing and turnouts with grader and vibratory roller.
	8+57	Place 5 CY of pit-run rock for use as dissipator rock. Place dissipator rock beneath outlet of undermined culvert.
	34+22	Construct Landing at Station 34+22 using dozer. Shape and compact Landing subgrade using grader and vibratory roller. Apply 20 CY of jaw-run rock to Landing.
21 to 22	0+00 to 17+60	Clean out culverts (3) at Station 13+52 and near Point 23. Remove sod from road surface. Apply 10 CY of 1½"-0" junction rock at Point 21. Shape and compact subgrade with grader and vibratory roller.
	13+52	Utilize 2.5 CY of pit-run rock for use as a dissipator for each culvert (2).
23 to 24	0+00 to 2+50	Remove sod from road surface and re-open Landing at Point 24. Shape road and Landing with grader. Compact subgrade using vibratory roller.
25 to 26	0+00 to 89+70	Clean out culverts (3) between Point 25 to Station 89+70.
	89+70 to 102+60	Re-open road with dozer. Shape and compact subgrade with grader and vibratory roller.
	102+60 to 110+60	Re-construct outsloped road using dozer. Construct Landing at Point 26. Shape and compact road and Landing subgrade with grader and vibratory roller.
3 to 27	0+00 to 92+00	Apply 10 CY of 1½"-0" spot rock at Station 4+94 and 20 CY of 1½"-0" spot rock at Station 80+35. Shape and compact road surface with grader and vibratory roller from Station 8+17 to Point 27.

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	I to J			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I to J		0+00 to 1+60			
				Volume (CY) per		Number of			
Base rock	Jaw-Run	0+00 to 1+60	6	35	Station	2	Stations	70	95
Landing rock	Jaw-Run	1+60	N/A	30	Landing	1	Landings	30	41
Junction Rock (S1)	1 1/2"-0"	0+00 to 0+50	N/A	10	Junction	1	Junctions	10	14
Total Rock for Road Segment		I to J						110	149

ROAD SEGMENT	1 to 2			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1 to 2		0+00 to 280+50			
				Volume (CY) per		Number of			
Spot rock (S1)	1 1/2"-0"	0+00 to 280+50	N/A	1	Station	280.5	Stations	280	378
Turnout rock (S2)	3"-0"	As Marked	N/A	10	Turnout	5	Turnouts	50	68
Landing rock (S2)	3"-0"	As Marked	N/A	13	Landing	6	Landings	80	108
Total Rock for Road Segment		1 to 2						410	554

ROAD SEGMENT	3 to 4			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	3 to 4		0+00 to 18+00			
				Volume (CY) per		Number of			
Surface rock (S2)	3"-0"	8+17 to 18+00	4	22	Station	10	Stations	220	297
Landing rock	Jaw-Run	Sta. 4+94 & Pt. 4	N/A	30	Landing	2	Landings	60	81
Total Rock for Road Segment		3 to 4						280	378

ROAD SEGMENT	5 to 6			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	5 to 6		0+00 to 5+20			
				Volume (CY) per		Number of			
Surface rock (S2)	3"-0"	0+00 to 5+20	4	21	Station	5.2	Stations	110	149
Landing rock	Jaw-Run	Pt. 6	N/A	40	Landing	1	Landings	40	54
Total Rock for Road Segment		5 to 6						150	203

ROAD SEGMENT	3 to 7			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	3 to 7		0+00 to 2+10			
				Volume (CY) per		Number of			
Landing rock	Jaw-Run	Pt. 7	N/A	30	Landing	1	Landings	30	41
Total Rock for Road Segment		3 to 7						30	41

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	8 to 9			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	8 to 9		0+00 to 6+60			
				Volume (CY) per		Number of			
Junction Rock (S2)	3"-0"	0+00 to 0+50	N/A	10	Junction	1	Junctions	10	14
Total Rock for Road Segment		8 to 9						10	14

ROAD SEGMENT	10 to 11			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	10 to 11		0+00 to 46+80			
				Volume (CY) per		Number of			
Base rock	Jaw-Run	0+00 to 46+80	6	33	Station	46.8	Stations	1540	2079
Surface rock (S1)	1 1/2"-0"	0+00 to 46+80	2	11	Station	46.8	Stations	510	689
Landing rock	Jaw-Run	As Marked	N/A	25	Landing	6	Landings	150	203
Dissipator rock (S2)	3"-0"	As Marked	N/A	10	Dissipator	1	Dissipators	10	14
Culvert bedding rock (S1)	1 1/2"-0"	(Sta.7+52), (Sta.11+60), (Sta.14+09), (Sta.16+35)	N/A	17.5	Culvert	4	Culverts	70	95
Total Rock for Road Segment		10 to 11						2280	3078

ROAD SEGMENT	12 to 13			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	12 to 13		0+00 to 11+70			
				Volume (CY) per		Number of			
Junction Rock (S2)	3"-0"	0+00 to 0+50	N/A	10	Junction	1	Junctions	10	14
Total Rock for Road Segment		12 to 13						10	14

ROAD SEGMENT	14 to 15			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	14 to 15		0+00 to 5+00			
				Volume (CY) per		Number of			
Junction Rock (S2)	3"-0"	0+00 to 0+50	N/A	10	Junction	1	Junctions	10	14
Total Rock for Road Segment		14 to 15						10	14

EXHIBIT D
ROAD SURFACING

ROAD SEGMENT	16 to 17			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	16 to 17		0+00 to 18+90			
				Volume (CY) per		Number of			
Junction Rock (S2)	3"-0"	0+00 to 0+50	N/A	10	Junction	1	Junctions	10	14
Total Rock for Road Segment		16 to 17						10	14

ROAD SEGMENT	2 to 18			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2 to 18		0+00 to 9+20			
				Volume (CY) per		Number of			
Spot rock (S1)	1 1/2"-0"	0+00 to 9+20	N/A	10	Load	5	Loads	50	68
Landing rock	Jaw-Run	9+20	N/A	40	Landing	1	Landings	40	54
Turnaround rock (S2)	3"-0"	As Marked	N/A	10	Turnout	1	Turnouts	10	14
Total Rock for Road Segment		2 to 18						100	135

ROAD SEGMENT	19 to 20			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	19 to 20		0+00 to 57+00			
				Volume (CY) per		Number of			
Spot rock (S3)	1 1/2"-0"	0+00 to 57+00	N/A	10	Load	20	Loads	200	270
Landing rock	Jaw-Run	As Marked	N/A	20	Landing	1	Landings	20	27
Turnout rock (S3)	1 1/2"-0"	As Marked	N/A	10	Turnout	3	Turnouts	30	41
Dissipator rock	Pit-Run	Sta.8+57	N/A	5	Dissipator	1	Dissipators	5	7
Total Rock for Road Segment		19 to 20						255	344

ROAD SEGMENT	21 to 22			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	21 to 22		0+00 to 17+60			
				Volume (CY) per		Number of			
Junction Rock (S3)	1 1/2"-0"	0+00 to 0+30	N/A	10	Junction	1	Junctions	10	14
Dissipator rock	Pit-Run	Sta.13+52	N/A	2.5	Dissipator	2	Dissipators	5	7
Total Rock for Road Segment		21 to 22						15	20

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	3 to 27			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	3 to 27		0+00 to 92+00			
				Volume (CY) per		Number of			
Spot rock (S1)	1 1/2"-0"	Sta. 4+94, Sta.80+35	N/A	10	Load	3	Loads	30	41
Total Rock for Road Segment		3 to 27						30	41

ROCK CONVERSION FACTORS

Size	1 1/2"-0"	3"-0"	Jaw-Run	Pit-Run
Tons/CY	1.35	1.35	1.35	1.35

(Conversion factors from Hardrock Quarry)

Maintenance Rock Volumes in CY				
Rock Size	1 1/2"-0"	3"-0"	Jaw-Run	Pit-Run
Rock Totals	300	50	-	-

Total Rock Volumes For Projects				
Rock Size	1 1/2"-0"	3"-0"	Jaw-Run	Pit-Run
Rock Totals CY	1190	520	1980	10
Rock Totals TONS	1607	702	2673	14

Stockpile	(S1)	(S2)	(S3)
Rock Size	1 1/2"-0"	3"-0"	1 1/2"-0"
Rock Totals Used CY	950	520	240
Rock Totals Used TONS	1283	702	324

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.

Load Records. Notify STATE before spreading the rock and maintain a record of all rock delivered for spreading. Make the record available for STATE inspection. A report listing the amount of rock delivered the prior month must be submitted no later than the 15th of each month.

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 or outsloped at 3 to 4 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	SUBGRADE COMPACTION OPTIONS
All subgrade construction	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	FILLS COMPACTION OPTIONS
Points 10 to 11	1 or 2

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, compacted, and approved by STATE 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 crowned at 4 to 6 percent or outsloped at 3 to 4 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

ROAD SEGMENT	CRUSHED COMPACTION OPTIONS
All road segments requiring 1½"-0" and 3"-0" crushed rock.	1
All road segments requiring Jaw-run crushed rock.	1 or 3

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 (and/or bridge approach embankment materials around abutments). The tamper shoe dimensions shall be a minimum of 10" X 13" and capable of a centrifugal force of 2,250 pounds.
- (3) Dozer. A dozer/track-type tractor weighing a minimum of 45,000 pounds as directed by STATE shall be operated over the jaw-run rock so that the entire surface comes in contact with the tracks.

EXHIBIT D

DURABLE CRUSHED ROCK SPECIFICATIONS

Grading Requirements

<u>For 1½"-0"</u>	Passing	2" sieve	100%
	Passing	1½" sieve	90-100%
	Passing	¾" sieve	60-90%
	Passing	¼" sieve	30-50%
	Passing	No. 10 sieve	15-30%
	Passing	No. 40 sieve	7-15%
<u>For 3"-0"</u>	Passing	4" sieve	100%
	Passing	3" sieve	90-100%
	Passing	1½" sieve	60-90%
	Passing	¾" sieve	40-60%
	Passing	¼" sieve	20-40%
	Passing	No. 10 sieve	5-20%
<u>For 6"-0 Jaw-Run</u>	Passing	6" sieve	100%
	Passing	3" sieve	45-65%
	Passing	¼" sieve	0-10%
<u>For Pit-Run</u>	Passing	10" sieve	100%
	Passing	6" sieve	60-85%
	Passing	3" sieve	30-50%
	Passing	¼" sieve	0-10%

Control of gradation shall be by visual inspection by STATE.

EXHIBIT D
CULVERT SPECIFICATIONS

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

Polyethylene culverts shall be double-walled and meet the requirements of AASHTO M-294-11, Type S, or ASTM F2648. Aluminized (Type 2) steel culverts shall meet the requirements of AASHTO M-36-03¹."

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.

Culverts in live streams shall be installed with the inlet and outlet on grade with the stream bottom, unless otherwise specified in writing.

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.

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 crushed rock 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.

Backfill shall consist of excavated material free of stumps, limbs, rocks, or other objects which would damage the culvert on new construction segments.

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

EXHIBIT D

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. The finished subgrade shall match the subgrade of the road before construction.

Lengths of individual culvert sections shall be not less than 10 feet, unless otherwise provided for in special instructions. The shortest culvert section length shall be placed at the inlet end.

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

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.

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 and hauled to an approved refuse site in the same project period in which replacement occurred. 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.

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

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
1	18	24	CPP	10 to 11	7+52
2	18	70	CPP	10 to 11	11+60
3	12	32	CPP	10 to 11	14+09
4	24	36	CPP	10 to 11	16+35

TOTAL LENGTHS BY DIAMETER		
12 INCH	18 INCH	24 INCH
32	94	36

CPP = Polyethylene

EXHIBIT D
TYPICAL EMBEDDED ENERGY DISSIPATOR

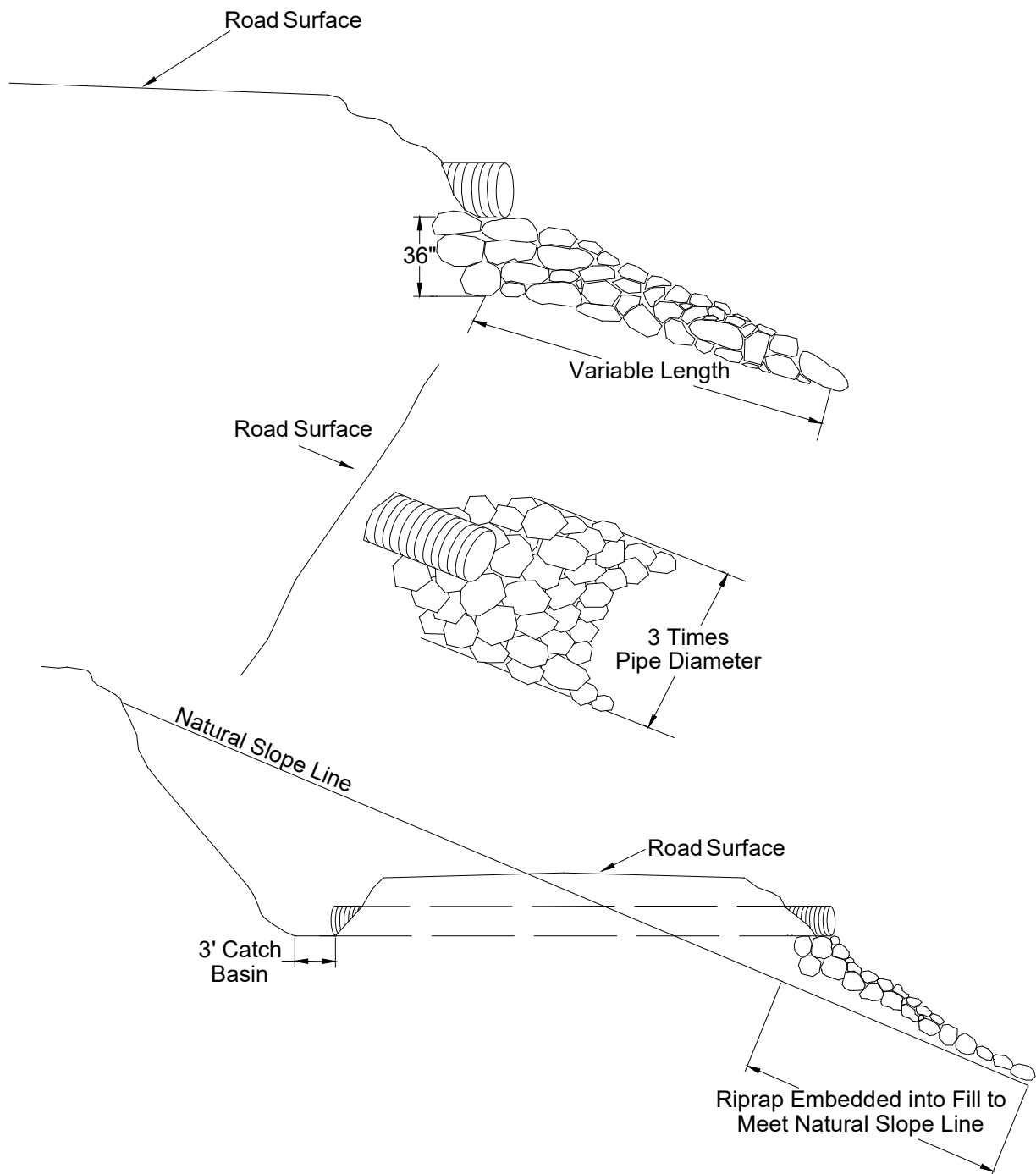
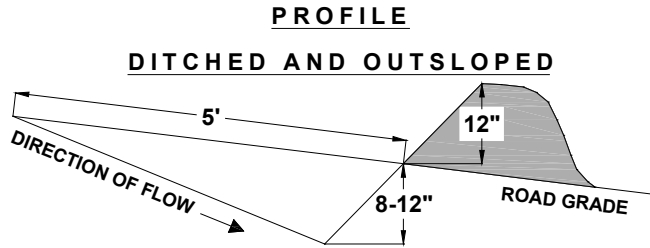
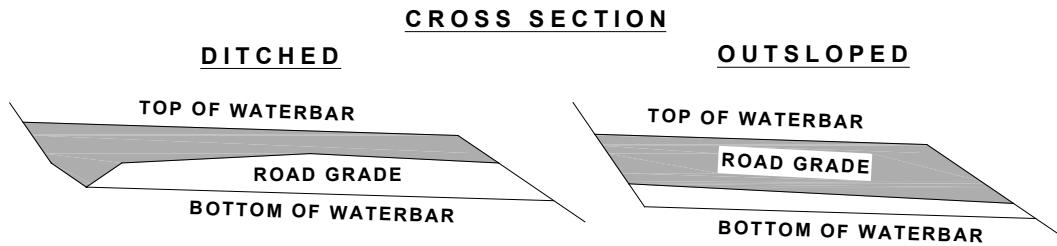


EXHIBIT D

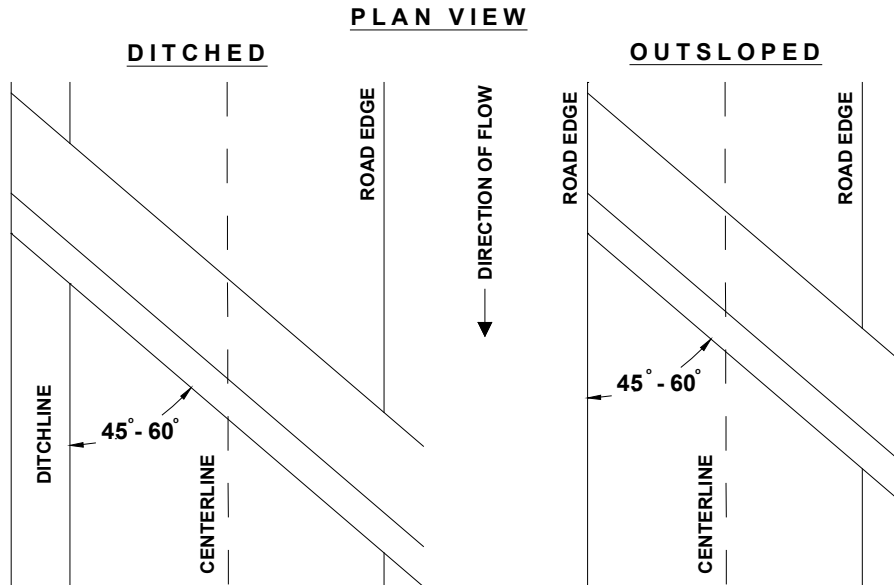
WATERBAR SPECIFICATIONS



SPACING OF WATERBARS	
ROAD GRADE	DISTANCE
< 6 %	400'
6 - 10 %	200'
11 - 15 %	150'
> 15 %	100'



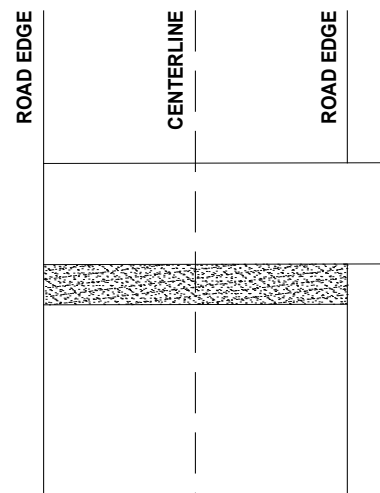
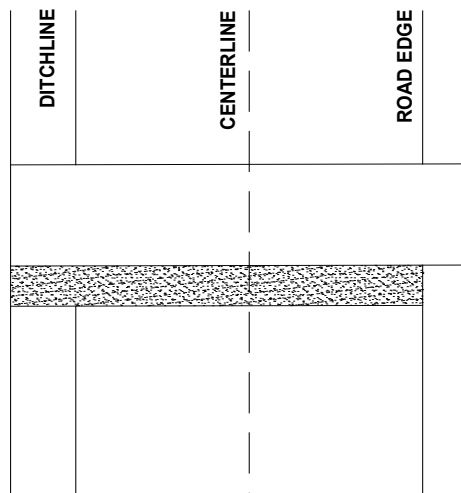
CONSTRUCT DITCHOUT THRU ANY EXISTING BERM.
CROSS DRAINAGE GRADIENT MINIMUM 3%.



PROFILE
DITCHED AND OUTSLOPED



DITCHED



Page 21 of 21

PART IV: OTHER INFORMATION

FPA WRITTEN PLAN for Yarding Corridors through Type F RMA's

Grouse Bully Thin Timber Sale

Location: Portions of Sections 25 & 35, T11S, R09W, W.M., Lincoln County, Oregon

Landowner: Oregon Department of Forestry
24533 Alsea Hwy
Philomath OR, 97370
(541) 929-3266

Protected Resources: Salmon Creek and Bevens Creek, small Type F streams.

Situation: Approximately 1,000 feet of Salmon Creek runs through Unit 1 of the Timber Sale Area and Unit 4 of the Timber Sale Area extends down to the Type F Riparian Management Area (RMA) of Bevens Creek. Thinning harvest operations will occur within 100 feet of the streams and yarding may occur over stream buffers.

Resource Protection Practices:

Along all of the above mentioned streams, as well as any other streams, the following practices are required under the timber sale contract, to protect the streams and streamside areas:

- No trees will be felled within 25 feet horizontal distance of perennial streams, except as necessary in cable corridors. Felled trees may not be removed from stream buffer.
- Trees that fall or slide into Type F RMA's shall not be removed without prior approval from STATE.
- Trees adjacent to the stream buffers (RMA's) will be felled away from or parallel to the streams to prevent trees from entering the aquatic areas.
- When cable logging is conducted nearby the RMA's, logging lines may cross, but will not be lowered into the RMA's during yarding, except during rigging. During rigging the lines must be pulled out of the RMA's when changing corridors.
- Cable corridors must be at least 100 feet apart where they cross the RMA's.

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practices Act regarding the use of cable corridors across Type F RMA's. I agree to the protection measures listed on this plan:

Purchaser/Operator Contract Representative

Date: _____

State Representative

Date: _____