



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: AT-341-2019-W00588-01

(2) Sale Name: Pied Piper

(3) Contract Expiration Date: 06/30/2022

(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>

	<u>Subcontractor Name.</u>	<u>Start Date</u>	<u>Cell No.</u>	<u>Alt Phone</u>
FELLING				
YARDING				

(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

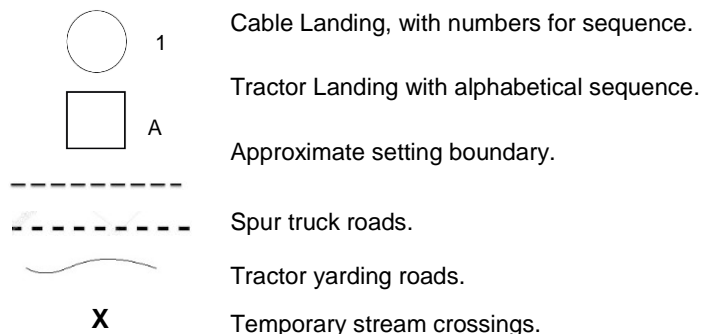
INSTRUCTION SHEET FOR OPERATIONS PLAN

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

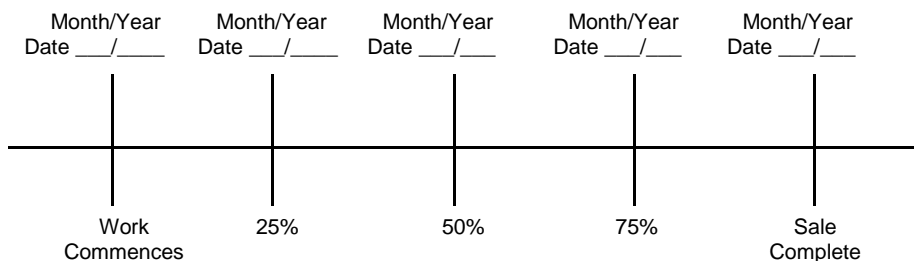
2600 State St Salem OR 97310

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

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, 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
Astoria - NWOA

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

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

(3) FROM: Astoria Phone (503) 325-5451
(State Forestry District)
Address: 92219 HWY 202
ASTORIA, OR 97103

(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: Pied Piper
COUNTY: Clatsop

(10) STATE CONTRACT NUMBER:
AT-341-2019-W00588-01

(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

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

(16) SIGNATURES:

Purchaser or Authorized Representative Date

State Forester Representative Date

State Forester Representative PRINT NAME



Oregon Department of Forestry
EXHIBIT C - SAWMILL GRADE
INSTRUCTIONS FOR FORM 343-307a (rev. 11/11)
Astoria - NWOA

- (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

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

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

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(s), Purchaser, Specific distribution instructions are outlined on the last page of this report: Instructions for Form



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

Astoria, NWOA

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

(2) TO: _____
(Approved Pulp Processing Facility)

(3) FROM: Astoria Phone (503) 325-5451
(State Forestry District)
Address: 92219 HWY 202
ASTORIA, OR 97103

(4) PURCHASER: _____

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

Mailing Address: _____

Phone Number: _____

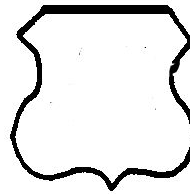
(9) SALE NAME: Pied Piper

COUNTY: Clatsop

(10) STATE CONTRACT NUMBER:
AT-341-2019-W00588-01

(11) STATE BRAND REGISTRATION NUMBER: _____

(12) STATE BRAND INFORMATION:



(13) REMARKS:

(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.

Distribution: ORIGINAL: Salem/ COPIES: TPSO, Approved Pulp Processing Location, Purchaser, District, Mgmt. Unit



Oregon Department of Forestry
EXHIBIT C - PULP SORT
Instructions for Form 343-307b

Astoria, NWOA

- (1) **Must Complete.** Check appropriate box. REVISION NUMBER requires comments in the Remarks Section(13). 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) **Must Complete.** Approved Pulp Processing Facility. Write in as written in the Approved Log Delivery Location http://www.odf.state.or.us/DIVISIONS/management/asset_management/ScalingLocation.asp
- (3) **Must Complete.** State Forestry District and District Phone Number.
- (4) **Must Complete.** Purchaser's business name as it appears on the Contract.
- (5) **Must Complete.** 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@southernoregonlogscaling.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 Scalars Inc.
6137 NE 63rd St, Vancouver, WA, 98661
Phone: (360) 553-7212 ext. 4 Fax: (360) 553-7213
Email: info@nwlogscalars.com

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

- (6) **Must Complete.** Big end log not to exceed _____ inches. 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.
- (7) **Must Complete.** Enter sale name and county. If more than one county write in all the counties that the sale is located in.
- (8) **Must Complete.** Enter sale Contract number.
- (9) **Must Complete.** Enter Oregon's State Brand Registry Number **(REQUIRED)**.
- (10) **Must Complete.** 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).
- (11) Use this section to list any special instructions or the reason for any revisions in section item(1).
- (12) **Must Complete.** Purchaser required 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 \\WPODFILL01\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 Pulp Processing 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	1A to 1B	0+00 to 5+00	Crowned/Ditch
16 feet	12 feet	2A to 2B	0+00 to 4+00	Outsloped
16 feet	12 feet	2C to 2D	0+00 to 30+35	Crowned/Ditch
16 feet	12 feet	2E to 2F	0+00 to 1+00	Crowned/Ditch
16 feet	12 feet	2G to 2H	00+00 to 1+50	Outsloped
16 feet	12 feet	3A to 3B	0+00 to 16+25	Crowned/Ditch
16 feet	12 feet	3C to 3D	0+00 to 24+90	Crowned/Ditch
16 feet	12 feet	3E to 3F	0+00 to 7+15	Crowned/Ditch
16 feet	12 feet	I1 to I2	0+00 250+55	Crowned/Ditch
16 feet	12 feet	I3 to I4	0+00 to 70+55	Crowned/Ditch
16 feet	12 feet	I5 to I6	0+00 to 16+75	Crowned/Ditch
16 feet	12 feet	I7 to I8	0+00 to 15+50	Crowned/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.

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. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing debris shall not be left lodged against standing trees.

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

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 or where material will accumulate in areas deemed a high-risk site by STATE.

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/outsloped 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 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

Solid Rock

Fractured Rock

Soil - side slopes 50% and over

Soil - side slopes less than 50%

Back Slopes

Vertical to $\frac{1}{4}$:1

$\frac{1}{2}$:1

$\frac{3}{4}$:1

1 :1

Fill Slopes

1½:1

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 K, and blocked from vehicular traffic prior to October 1, annually and as directed by STATE.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

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. 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. Drainage Ditches. Construct ditchlines, including ditchouts, as directed by STATE. Cut slopes of ditchlines and ditchouts shall not exceed a 1:1 slope. Construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE.

4. Culvert Installation. Culverts in live streams shall be installed with the inlet and outlet on grade with the stream bottom, unless otherwise specified in writing. Fill construction 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. STATE may require the use of crushed rock for culvert bedding.

5. 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 I.

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

7. 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/outsloped 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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
1A to 1B	1+50	Construct landing.
	3+00-5+00	Begin lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
	5+00	Construct landing.
2A to 2B	2+00-4+00	Begin lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
	4+00	Construct landing.
2C to 2D	24+95	Fill Construction. Utilize 66 cubic yards of ¾"-0" crushed rock for bedding and backfill for new culvert installation. Utilize borrow material from existing cutslope near fill construction site, or as directed by STATE.
	28+35	Begin lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
	30+35	Construct Landing. End lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
2G to 2H	1+50	Construct landing.
3A to 3B	2+25	Begin sidecast pullback as shown on Exhibit L, end-haul sidecast material to waste area as directed by STATE. Shift existing road grade left 3 feet to realign road subgrade.
	3+10	End sidecast pullback.
	14+25	Begin lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
	16+25	Construct Landing. End lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
3C to 3D	13+80	Begin lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
	14+80	Construct landing.
	15+80	End lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
	22+90	Begin lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
	24+90	Construct Landing. End lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
3E to 3F	5+15	Begin lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
	7+15	Construct Landing. End lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

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. Roadside Brushing. Conduct roadside brushing as specified in Exhibit J.

3. Excavated Materials. Excavated materials shall be utilized for road construction. 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.

4. Bank Slough Removal. Excavate 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.

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

6. Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Cut slopes of ditchlines and ditchouts shall not exceed a 1:1 slope. Clean out all culvert inlets and outlets for a 10-foot radius. 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.

7. 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.

8. 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 I.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

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

10. Road Grading, 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, and compact in accordance to the "Compaction and Processing Requirements" in this Exhibit.
- (e) Upon completion of above required work, apply, process, and compact surfacing rock in accordance with this Exhibit.

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
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I1 to I2

0+00	Begin loading and hauling of ditch waste material.
59+75	Install 18"x40' CPP culvert and utilize 44 cubic yards of 3/4"-0" crushed rock for culvert bedding and backfill. Install culvert marker.
61+90	End loading and hauling of ditch waste material.
91+00	Install 18"x40' CPP culvert and utilize 44 cubic yards of 3/4"-0" crushed rock for culvert bedding and backfill. Install culvert marker.
126+90	Begin loading and hauling of bank slough material.
128+60	End loading and hauling of bank slough material.
139+40	Load and haul bank slough material.
189+80	Install 18"x40' CPP culvert and utilize 44 cubic yards of 3/4"-0" crushed rock for culvert bedding and backfill. Install culvert marker.
238+70	Install 18"x50' CPP culvert and utilize 44 cubic yards of 3/4"-0" crushed rock for culvert bedding and backfill. Install culvert marker.

I3 to I4

23+35	Clean culvert inlet.
24+85	Load and haul bank slough material.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
I3 to I4		
	57+35	Clean culvert inlet
I5 to I6		
	14+75	Begin lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
	15+25	Construct landing.
	16+75	End lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
I7 to I8		
	13+50	Begin lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.
	15+50	End lift of 6"-0" pit-run subgrade (Landing) reinforcement rock.

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT 1A to 1B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A to 1B		0+00 to 5+00		
				Volume (CY) per		Number of		
Base Rock	4"-0" crushed	0+00-5+00	8	station	50	stations	5.00	250
Junction Rock	4"-0" crushed	0+00	8	Junctions	22	Junctions	1	22
Subgrade Reinforcement	6"-0" pit-run	3+00-5+00	12	station	75	stations	2	150
Landings	6"-0" pit-run	1+50, 5+00	N/A	Landing	88	Landings	2	176
Total Rock for Road Segment:			1A to 1B					598
ROAD SEGMENT 2A to 2B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B		0+00 to 4+00		
				Volume (CY) per		Number of		
Base Rock	4"-0" crushed	0+00-4+00	8	station	50	stations	4.00	200
Turnouts	4"-0" crushed	1+20	8	TO	22	TO's	1	22
Turnarounds	4"-0" crushed	2+50	8	TA	22	TA's	1	22
Junction Rock	4"-0" crushed	0+00	8	Junctions	22	Junctions	1	22
Subgrade Reinforcement	6"-0" pit-run	2+00-4+00	12	station	75	stations	2	150
Landings	6"-0" pit-run	4+00	N/A	Landing	88	Landings	1	88
Total Rock for Road Segment:			2A to 2B					504
ROAD SEGMENT 2C to 2D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2C to 2D		0+00 to 30+35		
				Volume (CY) per		Number of		
Base Rock	4"-0" crushed	0+00-30+35	8	station	50	stations	30.35	1,519
Turnouts	4"-0" crushed	3+15,7+30,13+80 ,20+30,27+05	8	TO	22	TO's	5	110
Turnarounds	4"-0" crushed	27+05	8	TA	11	TA's	1	11
Junction Rock	4"-0" crushed	0+00	8	Junctions	11	Junctions	1	11
Curve Widening	4"-0" crushed		8	curve	11	curves	3	33
Culvert Bedding/Backfill	3/4"-0" crushed	24+95	N/A	load	11	loads	6	66
Traction Rock	3/4"-0" crushed	13+80-30+35	2	station	13	stations	16.55	215
Subgrade Reinforcement	6"-0" pit-run	28+35-30+35	12	station	75	stations	2	150
Landings	6"-0" pit-run	30+35	N/A	Landing	88	Landings	1	88
Total Rock for Road Segment:			2C to 2D					2,203
ROAD SEGMENT 2E to 2F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2E to 2F		0+00 to 1+00		
				Volume (CY) per		Number of		
Base Rock	4"-0" crushed	1+00	8	station	50	stations	1.00	50
Junction Rock	4"-0" crushed	0+00	8	Junctions	22	Junctions	1	22
Landings	6"-0" pit-run	1+00	N/A	Landing	88	Landings	1	88
Total Rock for Road Segment:			2E to 2F					160
ROAD SEGMENT 2G to 2H				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2G to 2H		0+00 to 1+50		
				Volume (CY) per		Number of		
Base Rock	4"-0" crushed	0+00-1+50	8	station	50	stations	1.50	75
Turnarounds	4"-0" crushed	0+00	8	TA	22	TA's	1	22
Junction Rock	4"-0" crushed	0+00	8	Junctions	22	Junctions	1	22
Landings	6"-0" pit-run	1+50	N/A	Landing	88	Landings	1	88
Total Rock for Road Segment:			2G to 2H					207

EXHIBIT D
ROAD SURFACING

ROAD SEGMENT 3A to 3B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	3A to 3B		0+00 to 16+25		
				Volume (CY) per		Number of		
Base Rock	4"-0" crushed	0+00-16+25	8	station	50	stations	16.25	813
Turnouts	4"-0" crushed	3+65,8+95	8	TO	22	TO's	2	44
Turnarounds	4"-0" crushed	10+40	8	TA	22	TA's	1	22
Junction Rock	4"-0" crushed	0+00	8	Junctions	22	Junctions	1	22
Subgrade Reinforcement	6"-0" pit-run	14+25-16+25	12	station	75	stations	2	150
Landings	6"-0" pit-run	16+25	N/A	Landing	88	Landings	1	88
Total Rock for Road Segment:			3A to 3B					1,139
ROAD SEGMENT 3C to 3D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	3C to 3D		0+00 to 24+90		
				Volume (CY) per		Number of		
Base Rock	4"-0" crushed	0+00-24+90	8	station	50	stations	24.90	1,245
Turnouts	4"-0" crushed	4+30,8+30,12+80 ,18+40	8	TO	22	TO's	4	88
Turnarounds	4"-0" crushed	12+80,23+90	8	TA	22	TA's	2	44
Junction Rock	4"-0" crushed	0+00	8	Junctions	22	Junctions	1	22
Traction Rock	3/4"-0" crushed	8+30-10+65, 14+80-24+90	2	station	13	stations	12.45	162
Turnouts	3/4"-0" crushed	8+30,18+40	2	TO	11	TO's	2	22
Subgrade Reinforcement	6"-0" pit-run	13+80-15+80, 22+90-24+90	12	station	75	stations	4	300
Landings	6"-0" pit-run	18+40,24+90	N/A	Landing	88	Landings	2	176
Total Rock for Road Segment:			3C to 3D					2,059
ROAD SEGMENT 3E to 3F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	3E to 3F		0+00 to 7+15		
				Volume (CY) per		Number of		
Base Rock	4"-0" crushed	0+00-7+15	8	station	50	stations	7.15	358
Turnouts	4"-0" crushed	4+00	8	TO	22	TO's	1	22
Turnarounds	4"-0" crushed	4+00	8	TA	22	TA's	1	22
Junction Rock	4"-0" crushed	0+00	8	Junctions	22	Junctions	1	22
Subgrade Reinforcement	6"-0" pit-run	5+15-7+15	12	station	75	stations	2	150
Landings	6"-0" pit-run	7+15	N/A	Landing	88	Landings	1	88
Total Rock for Road Segment:			3E to 3F					662

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT I1 to I2			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2		0+00 to 250+55		
				Volume (CY) per		Number of		
Surface Leveling Rock	3/4"-0" crushed		N/A	load	11	loads	20	220
Surfacing	3/4"-0" crushed	0+00-250+55	6	station	38	stations	250.55	9,521
Turnouts	3/4"-0" crushed	5+90, 10+25, 14+25, 18+90, 22+45, 24+85, 28+45, 30+10, 32+55, 34+90, 39+30, 41+95, 43+80, 48+50, 51+60, 54+25, 56+00, 58+00, 66+30, 74+20, 76+40, 82+85, 89+55, 94+35, 104+90, 112+10, 122+25, 124+90, 126+90, 131+50, 134+30, 146+20, 153+95, 157+40, 161+70, 166+20, 169+85, 172+35, 173+75, 177+80, 183+55, 190+75, 198+25, 204+70, 209+10, 211+85, 218+00, 220+75, 227+80, 234+75, 245+00	6	turnout	22	turnouts	51	1,122
Junctions	3/4"-0" crushed	61+90, 63+50, 90+70, 91+00, 117+95, 168+20, 174+90, 175+80, 186+50, 200+25, 238+70, 240+85, 250+00	6	junction	22	junctions	13	286
Curve Widening Surface	3/4"-0" crushed		6	load	11	loads	22	242
Culvert Bedding and Backfill	3/4"-0" crushed	59+75, 91+00, 189+80, 238+70	N/A	culvert	44	culverts	4	176
Culvert Energy Dissipator	24"-6" riprap	117+35	N/A	dissipator	11	dissipators	1	11
Total Rock for Road Segment:			I1 to I2					11,578
ROAD SEGMENT I3 to I4			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3 to I4		0+00 to 70+55		
				Volume (CY) per		Number of		
Surface Leveling Rock	3/4"-0" crushed		N/A	load	11	loads	15	165
Surfacing	3/4"-0" crushed	0+00-14+05	6	station	38	stations	14.05	534
Total Rock for Road Segment:			I3 to I4					699
ROAD SEGMENT I5 to I6			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	
Application	Rock Size and Type	Location	Depth of Rock (inches)	I5 to I6		0+00 to 16+75		
				Volume (CY) per		Number of		
Subgrade Leveling Rock	4"-0" crushed		N/A	load	11	loads	5	55
Surfacing	4"-0" crushed	0+00-16+75	4	station	25	stations	16.75	419
Turnouts	4"-0" crushed	9+00	4	turnout	22	turnout	1	22
Turnaround	4"-0" crushed	14+70	4	turnaround	11	turnaround	1	11
Junctions	4"-0" crushed	0+00	4	junction	11	junctions	1	11
Traction Rock	3/4"-0" crushed	0+85-9+00	2	station	13	stations	8.2	106
Subgrade Reinforcement	6"-0" pit-run	14+75-16+75	12	station	75	stations	2	150
Landings	6"-0" pit run	15+25, 16+75	N/A	Landing	88	Landings	2	176
Total Rock for Road Segment:			I5 to I6					950
ROAD SEGMENT I7 to I8			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	
Application	Rock Size and Type	Location	Depth of Rock (inches)	I7 to I8		0+00 to 15+50		
				Volume (CY) per		Number of		
Subgrade Leveling Rock	3/4"-0" crushed		N/A	load	11	loads	10	110
Subgrade Leveling Rock	4"-0" crushed		N/A	load	11	loads	5	55
Subgrade Reinforcement	6"-0" pit-run	13+50-15+50	12	station	75	stations	2	150
Landings	6"-0" pit run	15+50	N/A	Landing	88	Landings	1	88
Total Rock for Road Segment:			I7 to I8					403

ROCK TOTALS (CY)	24"-6"	6"-0"	4"-0"	3/4"-0"
21,162	11	2,494	5,710	12,947

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.

Rock Checking. All rock spreading shall be done only when a STATE representative is present. STATE shall issue a receipt for each load delivered, and rock shall be measured without allowance for shrinkage or shakedown during hauling. Total truck measure volume for each road segment shall be as shown in this Exhibit. Deliver at least 500 cubic yards per 8-hour shift, unless otherwise approved by STATE. A penalty of \$10 for each 10 cubic yards which are not delivered during a single shift shall be billed, and payment shall be required prior to final acceptance of the project by STATE.

Depth Measurement. Rock shall be spread and compacted according to the depths specified in this Exhibit. 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 this Exhibit. 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.

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 as specified in the "Forest Roads Specifications" table in this Exhibit.

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 road segments.	1

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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, 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 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 this Exhibit.

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All road segments requiring crushed rock.	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 this Exhibit.

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
Segments requiring pit-run rock	3

- (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) Rubber-Tired Skidders. A rubber-tired skidder weighing a minimum of 20,000 pounds shall be operated over the fill layers so that the entire layered surface comes in contact with the tires. Skidders with oversized tires (high flotation) are not acceptable for compaction.
- (3) Dozer. A dozer/track-type tractor weighing a minimum of 45,000 pounds shall be operated over the pit-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.

Polyethylene culverts shall be double-walled and meet the requirements of AASHTO M-294-06, Type S Culvert.

Polyethylene culverts shall not be used where required culvert diameter is over 24 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. Culverts in live streams shall be installed with the inlet and outlet on grade with the stream bottom, unless otherwise specified in writing.

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

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 on road improvement segments.

On road improvement segments, backfill shall consist of, crushed rock. On new construction, backfill shall consist of, job-excavated soil free of stumps, limbs, rocks, or other objects which would damage the culvert.

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

Minimum height of cover over top of culvert to subgrade when road is to be rockered shall be as follows: 12" for culverts 18" to 36". 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.

Culverts 24 inches in diameter or larger shall have 1:1 beveled inlets.

EXHIBIT E

CULVERT SPECIFICATIONS

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.

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.

The intake ends of culverts in fills less than 3 feet to the top of the culvert shall be marked by driving white fiberglass posts within 6 inches of the downgrade side. Posts shall be a minimum of 6 feet long and 2½ inches wide, with the spade driven 2 feet into the ground.

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	GAUGE	ROAD SEGMENT POINT TO POINT	STATION
1	18	30	CPP	N/A	2A to 2B	0+00
2	18	40	CPP	N/A	2C to 2D	1+80
3	18	30	CPP	N/A	2C to 2D	3+95
4	18	30	CPP	N/A	2C to 2D	6+15
5	18	40	CPP	N/A	2C to 2D	10+10
6	18	40	CPP	N/A	2C to 2D	16+55
7	18	40	CPP	N/A	2C to 2D	19+35
*8	18	30	CPP	N/A	2C to 2D	23+80
9	24	60	CPP	N/A	2C to 2D	24+95
10	18	30	CPP	N/A	2C to 2D	29+35
11	18	30	CPP	N/A	3C to 3D	0+00
*12	18	40	CPP	N/A	I1 to I2	59+75
13	18	40	CPP	N/A	I1 to I2	91+00
14	18	40	CPP	N/A	I1 to I2	189+80
15	18	50	CPP	N/A	I1 to I2	238+70

CPP = Polyethylene
* = Ditch Disconnect Culvert

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 minimum distance of 20 feet beyond the developed rock source. Overburden removal shall continue beyond the developed rock source as shown on Exhibit F.
4. An Onsite meeting shall be conducted to develop the written development plan for the quarry area, specifically to determine overburden removal areas and rock source development.
5. All overburden and reject material shall be hauled to the designated waste area as directed by STATE.
6. 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.
7. At the Lost Lake Quarry, fall all timber within the posted right-of-way boundary and remove all merchantable timber. All woody debris, including stumps and Slash shall be hauled to the designated disposal areas, piled and disposed of by burning as directed by STATE.
8. PURCHASER shall obtain a FPA Burn Permit prior to debris disposal for the Lost Lake Quarry.
9. Controlled blasting techniques shall be utilized for any blasting operations, and shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain as much material as possible within the quarry development area. PURCHASER shall maintain a comprehensive blasting log that contains all pertinent data for all blasting operations. The blasting log shall be submitted to the STATE after the completion of all blasting activity. The blasting log is intended for STATE record keeping purposes only.
10. 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.
11. Quarry face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

12. 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.
13. 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.
14. Oversized material that is produced or encountered during development shall be broken down and utilized for crushing or utilized for riprap rock.

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

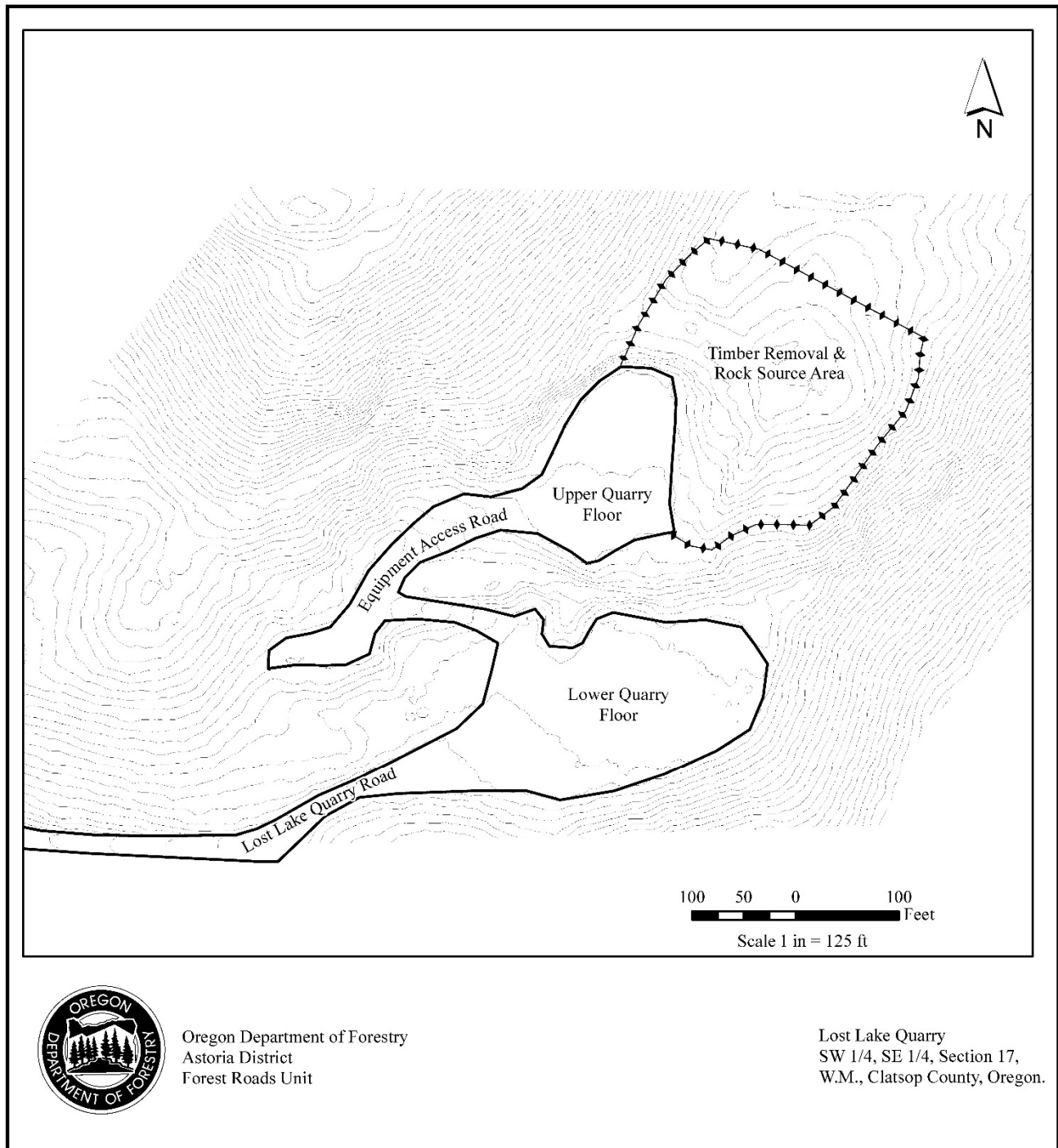


EXHIBIT G

CRUSHED ROCK SPECIFICATIONS

Materials. The material shall be fragments of rock crushed to the required size. The material shall be free from vegetation and lumps of clay. STATE may require screening and/or rejecting of materials utilized for production of crushed rock for the purpose of removing excess fine material. Excess fines are present, when greater than 5 percent of a total rock sample weight, passes a #200 sieve, or as determined visually by STATE. Rock crushing shall be limited to periods when weather conditions are acceptable to STATE.

Quality and Grading Requirements. The base material shall be rock. River gravel shall not be used. Crushed rock shall meet the grading requirements that follow.

Rock strength: for rock not produced from STATE quarries, the material from which base material is produced or manufactured shall meet the following test requirement for Aggregate Hardness - Test Method AASHTO T 96, 35 percent Maximum.

For the purpose of crushing rock specified under the projects in Section 2610, "Project Work," PURCHASER shall utilize a three-stage rock crusher, or equivalent, unless otherwise approved by STATE.

The rock crusher shall be calibrated to produce rock as specified in this exhibit. Prior to the commencement of production crushing, PURCHASER shall sample, test, and provide rock test results meeting STATE specifications. STATE may then sample and test crushed rock for approval to proceed. PURCHASER shall take one sample of each 2,000 cubic yards of crushed rock material produced thereafter, using approved AASHTO sampling procedures. PURCHASER shall submit samples to a certified laboratory or shall perform testing for graduation requirements using AASHTO T 11 and AASHTO T 27 testing procedures. Prior to testing, each sample shall be split, making one-half of the sample, with proper identification, available for testing by STATE. Each sample and the results of PURCHASER testing shall be made available to STATE within 24 hours of sampling. Any rock crushed prior to STATE approval to proceed shall not be credited to the required rock quantity. Any subsequent rock tests not meeting STATE specifications shall be reason for rejection of that portion of crushed rock produced after that test and shall not be credited to the required rock quantity. STATE may sample the crushed rock at any time during the operation. Results of STATE's tests shall prevail over all other test results.

EXHIBIT G

CRUSHED ROCK SPECIFICATIONS

Grading Requirements

<u>For 3/4"-0"</u>	Passing	1" sieve	100%
	Passing	3/4" sieve	90-100%
	Passing	3/8" sieve	55-75%
	Passing	1/4" sieve	40-60%
	Passing	No. 10 sieve	20-40%
	Passing	No. 40 sieve	8-16%

<u>For 1 1/2"-0"</u>	Passing	2" sieve	100%
	Passing	1 1/2" sieve	90-100%
	Passing	3/4" sieve	60-90%
	Passing	1/4" sieve	30-50%
	Passing	No. 10 sieve	15-30%
	Passing	No. 40 sieve	7-15%

<u>For 4"-0"</u>	Passing	5" sieve	100%
	Passing	4" sieve	90-100%
	Passing	2" sieve	60-90%
	Passing	3/4" sieve	35-60%
	Passing	1/4" sieve	15-35%
	Passing	No. 10 sieve	0-20%

The referenced sieve shall have square openings as set forth in AASHTO M 92, Woven Cloth Series. The determinations of size and gradation shall be as set forth in AASHTO T 27.

PIT-RUN ROCK SPECIFICATIONS

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

For 6"-4" Pit-Run A minimum of 50 percent of the material shall measure a minimum of 5 inches, measured in one dimension. Material shall be clean, well graded, and free of 3"-0" fines.

For 24"-6" 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 H

ENGINEERED EMULSION ROAD SURFACE STABILIZATION
SPECIFICATIONS (I1 to I2, 0+00 to 90+00)

Engineered Emulsion Mix Design

- 1) An engineered emulsion mix design shall be developed to provide a 5 to 7 year lifespan of gravel road surface stabilization.
- 2) The engineered emulsion mix design shall be performed by a Technical Advisor from the material supplier company.
- 3) The engineered emulsion mix design shall meet the following specifications.

Tests on Base Asphalt	Test Method	Specification (MIN.)	Specification (MAX.)
Penetration @25°C, (77°F), 100g, 5s dmm	ASTM D5	55	75
Softening Point, Ring and Ball (°F/°C)	ASTM D36	115/46	126/52
Tests on Emulsion			
Saybolt Viscosity @ 25°C (77°F), SFS	ASTM D7496	75	200
Storage Stability, 5 day, %	ASTM D6930	-	5
Sieve Test, %	ASTM D6933	-	0.1
Residue, % by Evaporation (weight)	ASTM D6934	60	-

- 4) The PURCHASER shall provide to STATE a letter from the Technical Advisor describing the final project engineered emulsion mix design and brief description of steps taken to establish the design for STATE approval prior to application.

Application of Engineered Emulsion Road Surface Stabilization Material

- 1) The engineered emulsion material shall be applied immediately following the application of the new rock surfacing course of I1 to I2 (0+00 to 90+00) as described in Exhibit D.
- 2) All phases of the engineered emulsion application shall be directed on-site by the Technical Advisor and STATE to assure project quality control and quality assurance.
- 3) The engineered emulsion material shall be applied using a Reclaimer processor in conjunction with distributor truck procedure to uniformly blend the emulsion with the top 2 inches of existing gravel, creating a homogeneous mixture. The Reclaimer used shall be a self-propelled machine specifically designed and manufactured to accurately deliver and proportion the designed engineered emulsion mix and aggregate to a revolving blade mixer that discharges the thoroughly mixed product on a continuous flow basis. The machine shall be capable of mixing materials at pre-set proportions and depth regardless of the speed of the machine and without changing machine settings.

EXHIBIT H

ENGINEERED EMULSION ROAD SURFACE STABILIZATION
SPECIFICATIONS (I1 to I2, 0+00 to 90+00)

Application of Engineered Emulsion Road Surface Stabilization Material

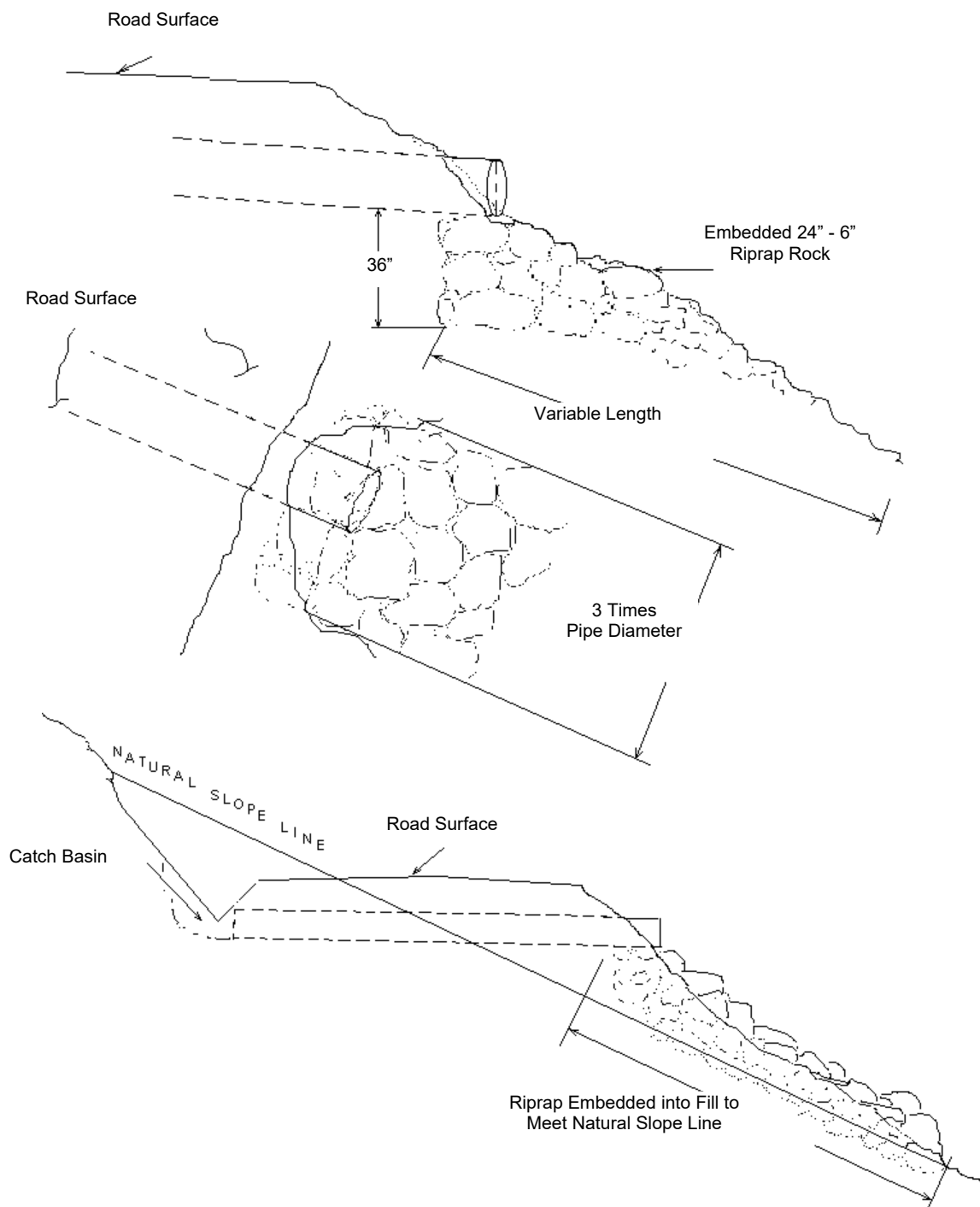
- 4) The distributor truck coupled to the Reclaimer shall also be capable of independent application via machine controlled spray bar capable of delivering engineered emulsion at the specifications prescribed by the Technical Advisor to areas unable to be treated by the Recamier, if applicable.
- 5) After the mixed product is delivered from the Reclaimer the road shall be graded and crowned to meet the requirements of Exhibit D using a motor grader meeting the minimum grader specification of 180 horsepower and an operating weight of 40,500 pounds, per the direction of the Technical Advisor and STATE.
- 6) Immediately following the road grading and crowning the road surface shall be compacted with a minimum of two complete coverages, performing addition coverages as directed by Technical Advisor or STATE. The roller used for compaction shall meet the requirements of Exhibit D (1) Vibratory Rollers and shall be equipped with a mechanical water spray system approved by the Technical Advisor and STATE. The roller shall be capable of operating at speeds compatible with the surface treatment operation.
- 7) Application of engineered emulsion material is to be on road segments of no more than 1/3 mile in length. The next 1/3 mile segment shall not be started until the previous segment is completely compacted and approved by Technical Advisor and STATE.

General

- 1) Engineered emulsion material shall only be applied to road surfaces when the temperature is above 70°F and humidity is below 75%, or as directed by Technical Advisor and STATE.
- 2) PURCHASER may submit for approval from STATE alternative application procedures from the Technical Advisor. Any such submittal must clearly demonstrate why the Reclaimer coupled to distributor truck method will not be used and must outline the alternative equipment, procedures, and quality assurance / quality control methods used to achieve a final product equal to the Reclaimer coupled to distributor truck method.
- 3) Engineered emulsion shall not be applied to the next road segment until the previous road segment has received full compaction and when directed by STATE.
- 4) Engineered emulsion shall not be applied in a manner that spatters or mars adjacent structures or trees. Discharge engineered emulsion only on roads approved by STATE.
- 5) Discharge engineered emulsion only in approved areas, and do not allow it to flow into ditches or stream courses.
- 6) PURCHASER shall close the road during engineered emulsion application and not reopen the road until the final road surface is approved by the Technical Advisor and STATE.

EXHIBIT I

TYPICAL EMBEDDED ENERGY DISSIPATOR



Dissipator shall be installed prior to the installation of the culvert, unless approved by STATE.

EXHIBIT J
ROAD BRUSHING SPECIFICATIONS

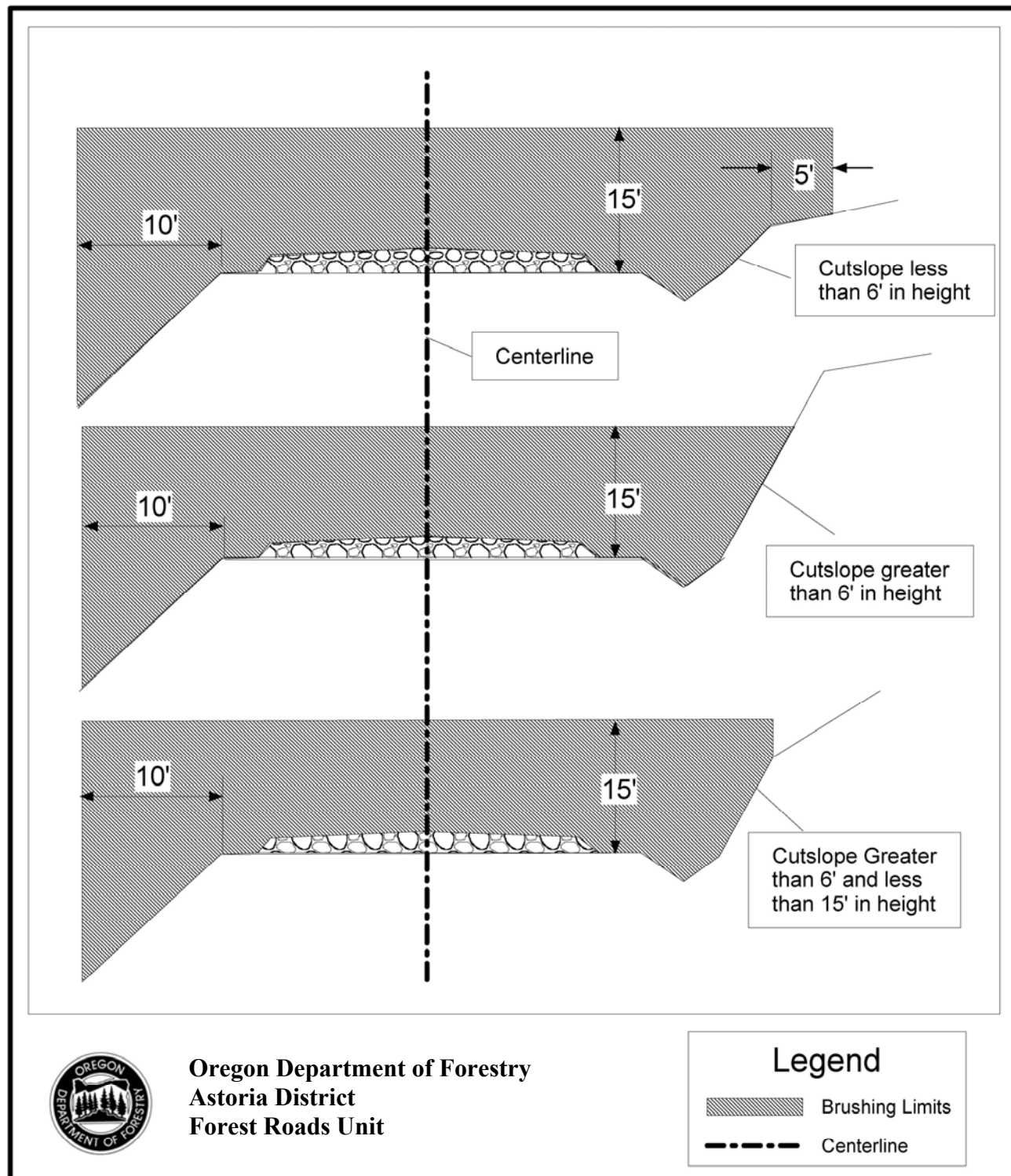


EXHIBIT J

ROAD BRUSHING SPECIFICATIONS

REQUIREMENTS

The minimum height of brushing shall be for all situations 15 feet from the road surface, and the minimum width of brushing on the down slope side of the road shall be 10 feet horizontal distance. The minimum width of brushing on the cutslope side of the road shall be dictated by the height of the cutslope as indicated in the three drawings above. In situations where site distance is an issue brushing heights on the cutslope may vary from the above drawings, as directed by STATE.

Brush and trees shall be cut to a maximum height of 6 inches above the ground surface or obstructions such as rocks or existing stumps.

Debris resulting from the brushing operation shall be removed from the roadway, cutslope, ditches, water courses, culvert inlets/outlets, and sediment catch basins. Debris shall be mulched or scattered downslope from the road or placed in other stable locations. Large debris, 6 inches or larger in diameter, shall be mulched or cut into lengths 6 feet or less to facilitate rapid decay, unless otherwise approved by STATE.

Trees larger than 6 inches in diameter at stump height, located within brushing limits but outside of the ditchline or shoulder, shall not be cut down, but shall be limbed for road visibility.

Existing debris on the roadway, cutslope, ditchline, or catch basin shall be removed and treated. Debris shall be mulched or scattered downslope from the road or placed in other stable locations. Large non-merchantable debris, 6 inches or larger in diameter, shall be mulched or cut into lengths 6 feet or less to facilitate rapid decay, unless otherwise approved by STATE.

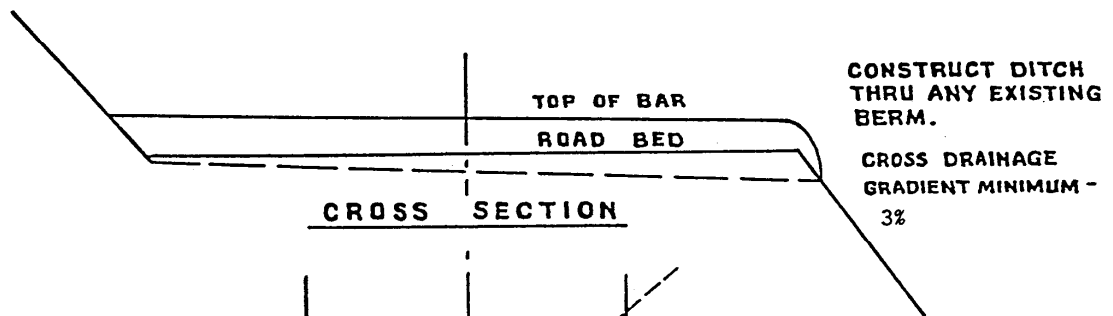
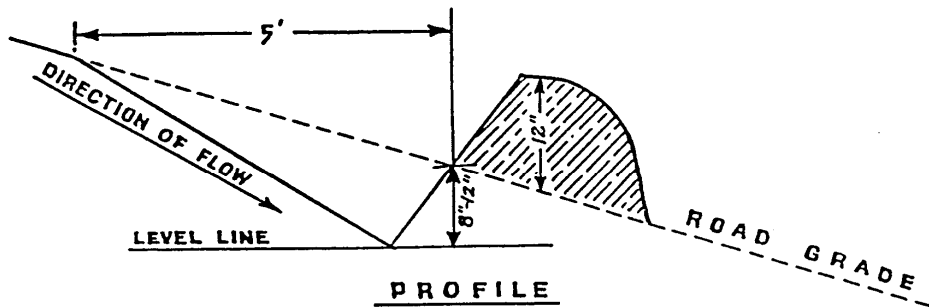
Merchantable blown down trees encountered shall be bucked in lengths as directed by STATE, and placed in locations acceptable to STATE, or pushed out of the road prism.

When spur roads to be brushed end with a landing, the landing is to be brushed as directed by STATE.

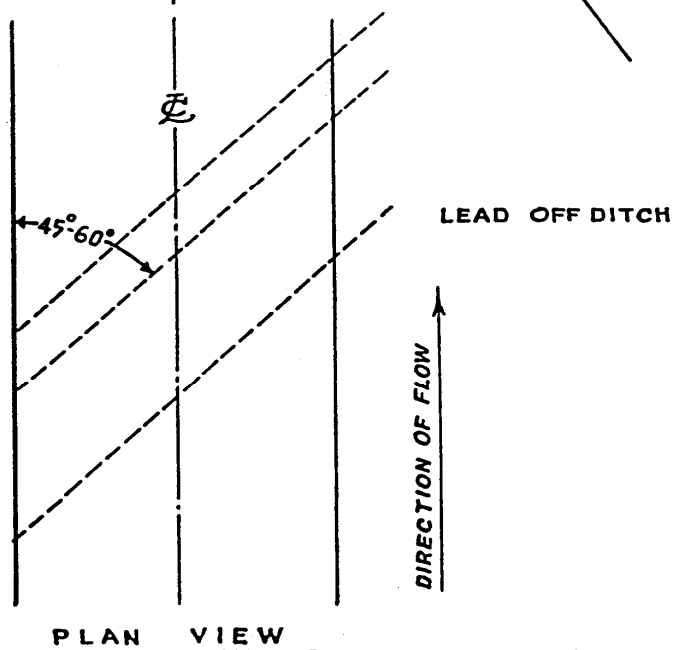
Exhibit A. All roads to be brushed are indicated on the Exhibit A roadside brushing map. All road in the Quartz Basin between Highway 26 and Lower Nehalem Road, are being brushed. Brushing points in bold (**Pt. B1**) are marked in the field only, for the purpose of landmark references and all other points are not marked.

CULVERT AND ROAD MARKER DAMAGES. Culvert and road markers damaged, or any portion of a marker damaged from PURCHASER activities shall be replaced.

EXHIBIT K
 WATERBAR SPECIFICATIONS



SPACING OF WATERBARS	
ROAD GRADE	DISTANCE
$\leq 5\%$	400'
6-10%	200'
11-15%	150'
16-20% or greater	100'



WATERBAR SPECIFICATIONS
 FOR CROSS DITCHING #298

EXHIBIT L

TYPICAL CROSS SECTION VIEW OF SIDECAST PULLBACK AND ROAD REALIGNMENT

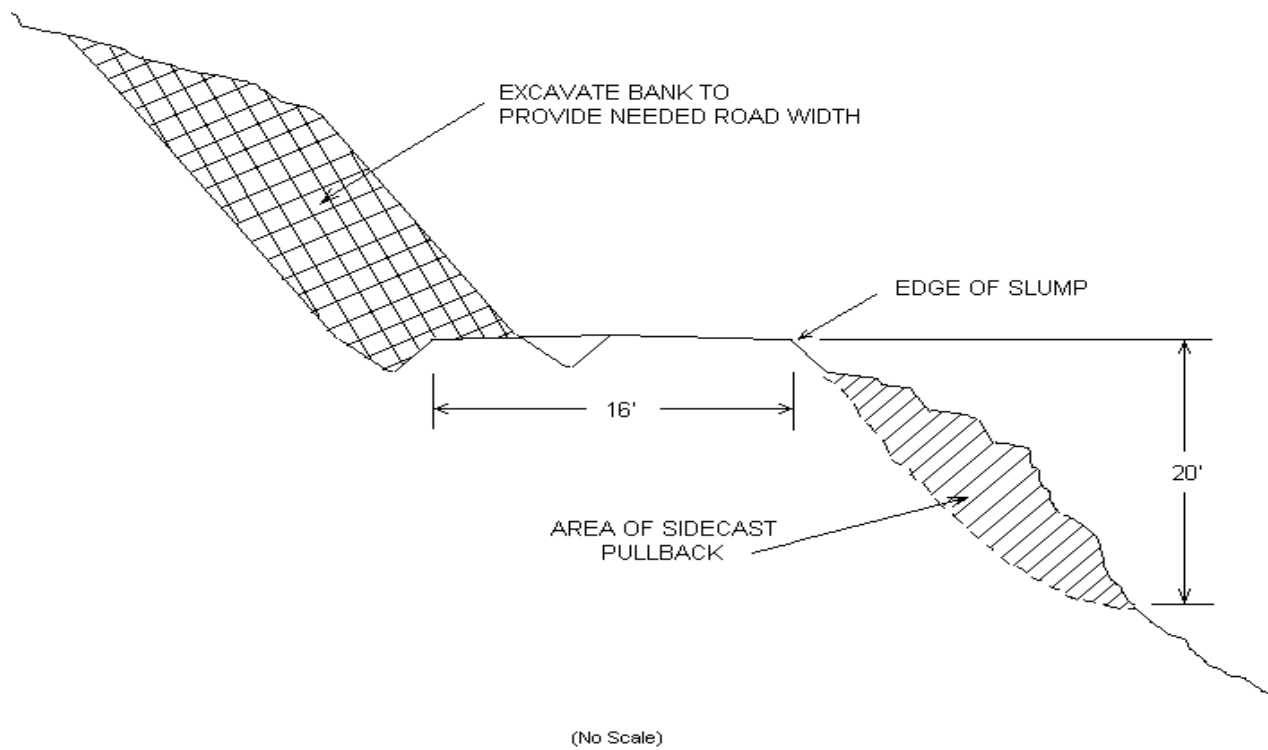


EXHIBIT M

SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required seed and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed and straw mulch to all waste areas resulting from Projects No. 1 and 2 and as directed by STATE.

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

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

APPLICATION RATES FOR SEED

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%

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.

PART IV: OTHER INFORMATION

FOREST PRACTICES ACT "WRITTEN Plan" For Operations within 100 feet of Type F Stream

Portions of Section 7 of T4N, R7W, W.M., Clatsop County, Oregon

Landowner: Oregon Department of Forestry
92219 Hwy 202
Astoria, OR 97103
(503) 325-5451

Protected Resources:

1. Nehalem River
2. Tributaries of Nehalem River

Specific Site Characteristics:

1. The Tributary of Nehalem River (small, Type F) flows on the East boundary of Area 3 for approximately 150 feet.

Tree and Vegetation Retention:

Vegetation within the buffers consists of a combination of conifers, hardwoods, and shrubs.

The Type F stream adjacent to Area 3 is outside of the sale area. If trees need to be felled within FPA defined stream buffers (RMA's) to allow for cable corridors, trees cut within 25 feet will not be removed. Cable lines may extend over and/or through these buffers.

Cable lines may extend over and/or through the Type F riparian area to allow for tail holds but no harvest will occur on the adjacent state lands and no yarding will take place through the buffer.

Resource Protection Practices:

Along the above mentioned stream, 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 stream buffer (RMA), except as necessary in cable corridors.
- Trees that fall or slide into the 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.
- Logs shall be fully suspended when yarding across all stream buffers (RMA's).
- 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 operations conducted within 100 feet of Type F and D streams. I agree to the protection measures listed on this plan:

Submitted: _____
Purchaser/Operator Contract Representative

Date: _____

Original: Salem

CC: Operator, Purchaser, District file, Sunset Unit

FOREST PRACTICES ACT "WRITTEN Plan"

Portions of Section 7 of T4N, R7W, W.M., Clatsop County, Oregon

Protected Resources:

Two High Landslide Hazard Locations (HLHL) with Intermediate downslope public safety risk have been identified by the Area Geotechnical Specialist as being located within Areas 1 and Area 2. It has been determined that there is an intermediate risk with a moderated impact rating to homes downslope from locations within Areas 1 and 2.

Area 1 One HLHL has been identified in Area 1 along the small seasonal stream with intermediate downslope public safety risk to one structure along the Lower Nehalem County Road (Shown as Home 1 on the attached geotechnical report).

Area 2 One HLHL has been identified in Area 2 along the small seasonal streams with intermediate downslope public safety risk to one structure along the Lower Nehalem County Road (Shown as Home 3 on the attached geotechnical report).

Specific Site Characteristics:

- See the attached geotechnical report.

Tree and Vegetation Retention:

Wildlife trees, reserve tree areas and posted stream buffers have been located within the HLHL locations as recommended by the ODF NWOA Geotechnical Specialist, as shown on Exhibit "A".

Practices:

Along and within the above mentioned HLHL areas that are within Areas 1 and 2, the following practices are required under the timber sale contract:

- No trees will be felled within the reserve tree areas or stream buffers (RMA's), except where required for cable corridors.
- 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.
- No ground based logging equipment will be permitted within 50 feet of the RMA's.
- Cable corridors must be at least 100 feet apart where they are permitted to cross the RMA's.
- Gouging of soils is not permitted.

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 Type N RMA's when changing corridors.

In addition all cedar trees less than 10 inches DBH will be retained and all other conifer trees less than 8 inches DBH will be retained.

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practices Act regarding the operations conducted within 100 feet of Type F streams. I agree to the protection measures listed on this plan:

Submitted: _____
Purchaser/Operator Contract Representative

Date: _____



OREGON DEPARTMENT of FISH and WILDLIFE

SMALL PUMP SCREEN SELF CERTIFICATION

The Oregon Water Resources Department in coordination and cooperation with the Oregon Department of Fish and Wildlife includes screen requirements on pumps to protect fish as a condition of many surface water and/or reservoir water right permits. This is done in accordance with ORS 537.153.

The Oregon Department of Fish and Wildlife does not usually inspect small pump screens at **pumped diversions less than 225 gpm** (gallons per minute), but furnishes the following fish screening criteria information to the water right permit holder:

Screen material open area must be at least 27% of the total wetted screen area.

Perforated plate: Openings shall not exceed 3/32 or 0.0938 inches (2.38 mm).

Mesh/Woven wire screen: Square openings shall not exceed 3/32 or 0.0938 inches (2.38 mm) in the narrow direction, e.g., 3/32 inch x 3/32 inch open mesh.

Profile bar screen/Wedge wire: Openings shall not exceed 0.0689 inches (1.75 mm) in the narrow direction.

Screen area must be large enough not to cause fish impact. Wetted screen area depends on the water flow rate and the water approach velocity. **Approach velocity** is the water velocity perpendicular to and approximately three inches in front of any part of the screen face.

An Active pump screen is a self-cleaning screen that has a proven cleaning system. The **screen approach velocity for active pump screens** shall not exceed 0.4 fps (feet per second) or 0.12 mps (meters per second). The wetted screen area in square feet is calculated by dividing the maximum water flow rate in cubic feet per second (1 cfs = 449 gpm) by 0.4 fps.

A Passive pump screen is a screen that has no cleaning system other than periodic manual cleaning. **Screen approach velocity for passive pump screens** shall not exceed 0.2 fps or 0.06 mps. The wetted screen area in square feet is calculated by dividing the maximum water flow rate by 0.2 fps.

For further information on fish screening please contact:

Oregon Department of Fish and Wildlife, Statewide Fish Screening Coordinator: 503.947.6229
Oregon Department of Fish and Wildlife, Screening Program Administrative Specialist:
503.947.6224

As evidence of having met fish screen installation requirements, please sign the certification and send to: **Oregon Water Resources Department, Water Rights Section, 725 Summer Street NE, Suite A, Salem, OR 97301-1271.**

Certification: I certify that my small pumped diversion of less than 225 gpm meets fish screening criteria, and that I will maintain it to comply with regulatory criteria. I also understand that should fish screening standards change, I may be required to modify my installation to meet applicable standards.

Applicant Signature: _____ Date: ____/____/____ WRD File #: _____

Printed Name and Address: _____

Phone: (____) _____ Fax: (____) _____