



**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-341-2023-W00981-01

(2) Sale Name: Jesters Boot

(3) Contract Expiration Date: 10/31/2026

(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:

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(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.



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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.

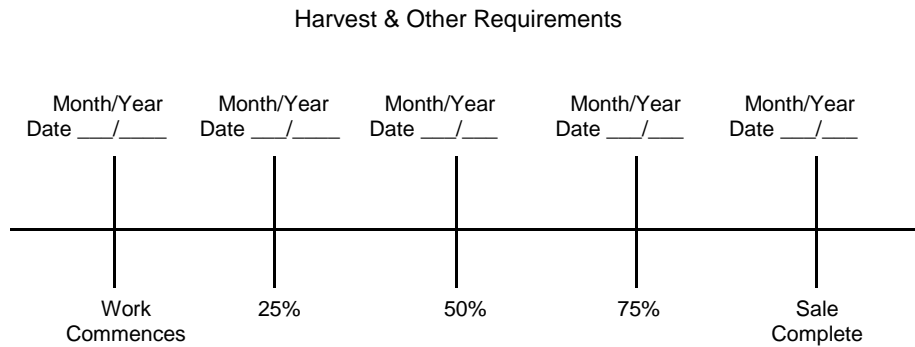
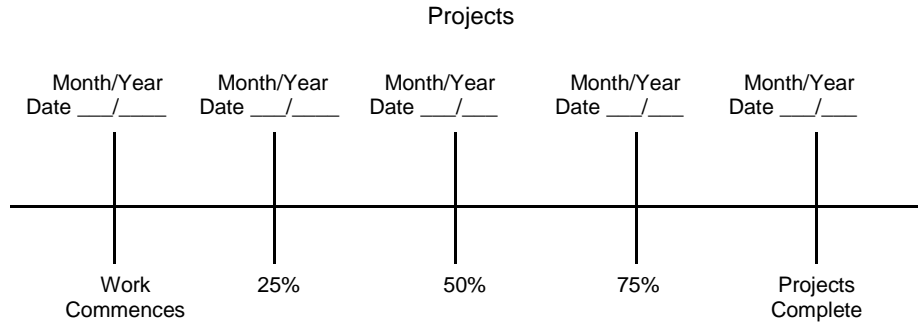
	1	Cable Landing, with numbers for sequence.
	A	Tractor Landing with alphabetical sequence.
		Approximate setting boundary.
		Spur truck roads.
		Tractor yarding roads.
<b>X</b>		Temporary stream crossings.



**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.



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

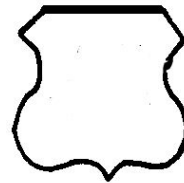
(8) APPROVED SCALING LOCATIONS (as shown on the ODF Approved Locations web-site )	Species	Yard	Truck	Weight

(9) **SALE NAME:** Jesters Boot  
 COUNTY: Clatsop

(10) **STATE CONTRACT NUMBER:**  
AT-341-2023-W00981-01

(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"/>
<b>NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE</b> .....	<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) \_\_\_\_\_

\_\_\_\_\_  
 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.**



**Oregon Department of Forestry**  
**EXHIBIT C - SAWMILL GRADE**  
**INSTRUCTIONS FOR EXHIBIT C**  
**Astoria - 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](mailto: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](mailto: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](mailto: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](mailto: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](mailto:info@nwlogscalpers.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](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**

Astoria, NWOA

(1) ORIGINAL REGISTRATION  Date \_\_\_\_\_  
 REVISION NUMBER 000  Date \_\_\_\_\_  
 CANCELLATION \_\_\_\_\_

(2) \_\_\_\_\_

**(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: \_\_\_\_\_

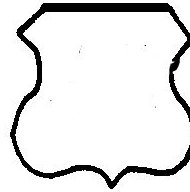
(9) SALE NAME: Jesters Boot

COUNTY: Clatsop

STATE CONTRACT NUMBER:  
AT-341-2023-W00981-01

(11) STATE BRAND REGISTRATION NUMBER: \_\_\_\_\_

(12) STATE BRAND INFORMATION: \_\_\_\_\_



(13) REMARKS:  
 \_\_\_\_\_

Operator's Name (Optional inclusion by District):  
 \_\_\_\_\_

(14) SIGNATURES:  
 \_\_\_\_\_

Purchaser or Authorized Representative Date

State Forester Representative Date

State Forester Representative PRINT NAME

(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.

(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.

(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

Astoria, 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](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](mailto: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](mailto: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](mailto: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](mailto:yamhilllog@frontier.com)

Northwest Log Scalers Inc.  
6137 NE 63rd St, Vancouver, WA, 98661  
Phone: (360) 553-7212 ext. 4 Fax:(360) 553-7213  
Email: [info@nwlogscalers.com](mailto:info@nwlogscalers.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	N/A	1A to 1B	0+00 to 1+50	Outsloped
14 feet	N/A	1C to 1D	0+00 to 1+50	Outsloped
14 feet	N/A	1E to 1F	0+00 to 3+55	Outsloped
16 feet	12 feet	1G to 1H	0+00 to 23+00	Crowned/Ditch
16 feet	12 feet	1I to 1J	0+00 to 150+70	Crowned/Ditch
16 feet	12 feet	1K to 1L	0+00 to 20+50	Crowned/Ditch
16 feet	12 feet	1M to 1N	0+00 to 22+80	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.

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, except for the following areas where debris shall be fully contained and hauled to a designated waste area:

- Where end-haul is required
- On side slopes exceeding 40 percent
- On unstable areas
- In any stream channel (Type F, N or D) or where material may enter the stream channel.

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. Plans are provided between points (1G to 1H).

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

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

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

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

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

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

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

DRAINAGE

Subgrade. Subgrade shall be crowned, outsloped, or insloped 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

	<u>Cut Slopes</u>	<u>Fill Slopes</u>
Solid Rock	Vertical to 1/4 :1	
Fractured Rock	1/2 :1	
Soil - side slopes 50% and over	3/4 :1	1 1/2 :1
Soil - side slopes less than 50%	1 :1	1 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 Exhibit I 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 or individually marked with an orange "C," 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) 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) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic-yard, track-mounted excavator.
- (6) 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, or insloped 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, outsloped, or insloped 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	0+00	Begin eight inch lift of 4"-0" crushed rock.
	1+00	End eight inch lift of 4"-0" crushed rock.
1C to 1D	0+00	Begin eight inch lift of 4"-0" crushed rock.
	1+00	End eight inch lift of 4"-0" crushed rock.
1E to 1F	0+00	Begin eight inch lift of 4"-0" crushed rock.
	1+00	End eight inch lift of 4"-0" crushed rock.
	2+00	Construct turnout.
1G to 1H	0+00	Begin 10 inch base lift of 4"-0" crushed rock. Begin four inch surface lift of 1 ½"-0" crushed rock.
	4+20	Install culvert. Install culvert marker.
	6+00	Construct turnout.
	12+00	Construct turnout.
	19+00	Construct turnout.
	21+00	Begin excavating cut bank and transitioning from new construction onto the existing road. Utilize excavated material from cutbank to establish grade to correspond to existing road grade at junction or as directed by STATE. Begin cut slope rounding.
	21+60	Install culvert. Install culvert marker.
	22+00	Remove existing culvert from junction.
	23+00	End cut slope rounding. End 10 inch base lift of 4"-0" crushed rock. End four inch surface lift of 1 ½"-0" crushed 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) Excavated Materials. Excavated materials shall be utilized for road and fill 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) 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. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Unsuitable backfill material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit.
- (4) 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.
- (5) Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. 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.
- (6) Fill Armor and Energy Dissipator Construction. Where rock is specified for fill armor, rock shall be machine placed and tamped at a 1½:1 slope, beginning at the toe of the fill. Where rock is used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with Exhibit H.
- (7) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic yard, track-mounted excavator.
- (8) Waste areas shall be uniformly sloped and compacted for drainage. Designated Waste materials shall be seeded and mulched in accordance with specifications in Exhibit K.
- (9) 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, outslope, or inslope of 4 to 6 percent, and compact in accordance with 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.

EXHIBIT D  
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
I1 to I2	0+00	Begin spot grading and utilize patch loads where needed.
	140+00	Replace existing culvert with Type "F" stream crossing structure as directed by STATE and as specified in Exhibit F. Install 102 inch by 60 foot 12 gauge aluminized steel round culvert at 3.0% grade. Utilize 6"-0" pit-run rock for culvert bedding reinforcement and 1½"-0" crushed rock for culvert bedding and backfill. Utilize quarry reject for backfill material from Buster Creek Quarry. Utilize 24"-6" riprap rock for stream bed retention and stream channel development and armor at inlet and outlet. Utilize approved material for fill reconstruction. Armor fill utilizing 24"-6" riprap rock. Apply 4"-0" crushed rock for road base reconstruction and 1½"-0" crushed rock for road surface reconstruction. Finished subgrade width shall be 20 feet and finished road surface shall be 12 feet. Waste shall be hauled to waste area approved by STATE.
	150+70	End spot grading and utilization of patch loads.
I3 to I4	0+00	Replace culvert, utilize 1½"-0" crushed rock for bedding and backfill. Install culvert marker.
	6+70	Replace culvert, utilize 1½"-0" crushed rock for bedding and backfill. Install culvert marker.
	13+00	Begin four inch lift of 4"-0" crushed rock. Begin two inch traction lift of 1½"-0" crushed rock.
	19+00	End two inch traction lift of 1½"-0" crushed rock.
	20+50	End four inch lift of 4"-0" crushed rock.
I5 to I6	0+00	Begin clearing and grubbing marked trees throughout this road segment. Begin excavating cutbank and widening of road subgrade about three feet and reestablish ditchline. Excavated material can be scattered on site in stable locations. Begin four inch lift of 1½"-0" crushed rock. Replace culvert, utilize 1½"-0" crushed rock for bedding and backfill. Install culvert marker.
	1+00	End excavating cutbank and widening of road.
	2+45	Begin excavating cutbank and widening of road subgrade about three feet and reestablish ditchline. Excavated material can be scattered on site in stable locations
	8+65	End excavating cutbank and widening of road.
	11+50	Begin excavating cutbank and widening of road subgrade about three feet and reestablish ditchline. Excavated material can be scattered on site in stable locations
	17+15	End excavating cutbank and widening of road.

EXHIBIT D

FULL BENCH AND END-HAUL REQUIREMENTS

POINT TO POINT	STA. TO STA.	CONTAINMENT - SIDECAST
I1 to I2	140+00	1

Full Bench and End-Haul Areas General Requirements

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

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

Containment/Sidecast

- (1) Full: No excavated material remains below the road.
- (2) Normal/Incidental: The amount of excavated material lost over the outside edge of the road shall not exceed one foot in depth.
- (3) Sidecast: Material shall be spread evenly below the road so that it does not build up behind trees, snags, or other debris, and shall not exceed three feet in depth.

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

Waste Area Location

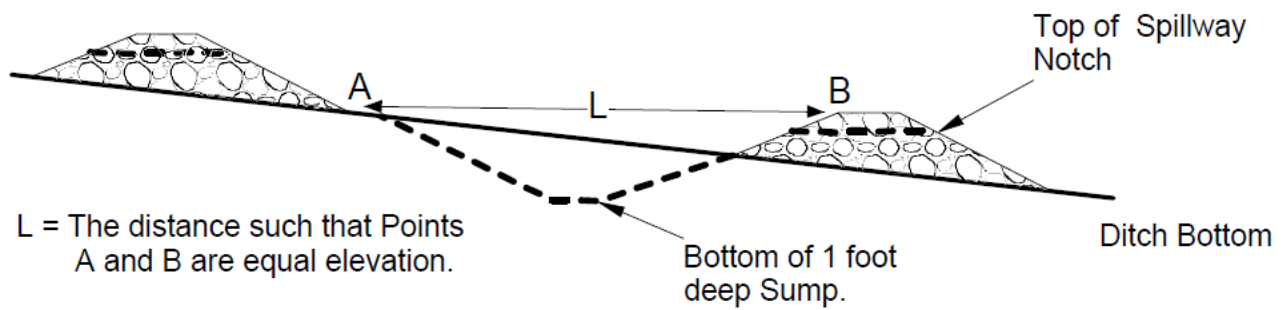
- As shown on Exhibit A and as marked in the field.
- Setback from slope break shall be a minimum of 20 feet horizontal measurement.
- Waste area shall not exceed 6 feet in height.

Waste Area Treatment

- Deposit at waste area, spread evenly, compact, and provide adequate drainage.
- Woody debris shall be donated to the stream.
- Mulch and seed all waste areas in accordance with Exhibit K.

EXHIBIT D  
TYPICAL ROCK DITCH FILTER

SPACING BETWEEN ROCK FILTERS



ROCK DITCH FILTER

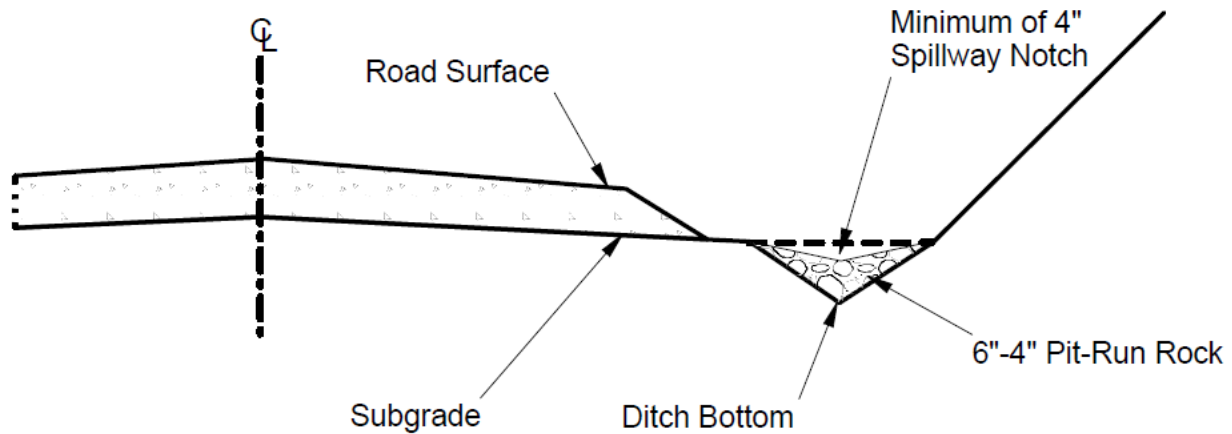


EXHIBIT D

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 1+50		
				Volume (CY) Per		Number Of		
Base Rock	4"-0" crushed	0+00 to 1+00	8	station	50	stations	1.00	50
Junctions	1 1/2"-0" crushed	0+00	N/A	junction	22	junctions	1	22
Total Rock for Road Segment:				1A to 1B				72
ROAD SEGMENT: 1C to 1D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1C to 1D		0+00 to 1+50		
				Volume (CY) Per		Number Of		
Base Rock	4"-0" crushed	0+00 to 1+00	8	station	50	stations	1.00	50
Junctions	1 1/2"-0" crushed	0+00	N/A	junction	22	junctions	1	22
Total Rock for Road Segment:				1C to 1D				72
ROAD SEGMENT: 1E to 1F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1E to 1F		0+00 to 3+55		
				Volume (CY) Per		Number Of		
Base Rock	4"-0" crushed	0+00 to 1+00	8	station	50	stations	1.00	50
Junctions	1 1/2"-0" crushed	0+00	N/A	junction	22	junctions	1	22
Total Rock for Road Segment:				1E to 1F				72
ROAD SEGMENT: 1G to 1H				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1G to 1H		0+00 to 23+00		
				Volume (CY) Per		Number of		
Base Rock	4"-0" crushed	0+00 to 23+00	10	station	63	stations	23.00	1,449
Junctions	1 1/2"-0" crushed	0+00, 23+00	N/A	junction	22	junctions	2	44
Surface Rock	1 1/2"-0" crushed	0+00 to 23+00	4	station	25	stations	23.00	575
Turnouts	4"-0" crushed	6+00, 12+00, 18+00	N/A	turnout	22	turnouts	3	66
Turnouts	1 1/2"-0" crushed	6+00, 12+00, 18+00	N/A	turnout	22	turnouts	3	66
Total Rock for Road Segment:				1G to 1H				2,200



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 150+70		
				Volume (CY) Per		Number Of		
Surface Leveling Rock	1 1/2"-0" crushed	15+35 (2), 26+45 (2), 58+00 (2), 75+00 (2), 97+40 (1), 99+55 (1)	N/A	load	11	loads	10	110
Culvert Bedding Reinforcement	6"-0" pit-run	140+00	N/A	load	11	loads	6	66
Culvert Bedding and Backfill	1 1/2"-0" crushed	140+00	N/A	load	11	loads	18	198
Stream Bed Retention	24"-6" riprap	140+00	N/A	load	11	loads	4	44
Inlet / Outlet Channel Armor	24"-6" riprap	140+00	N/A	load	11	loads	4	44
Fill Armor	24"-6" riprap	140+00	N/A	load	11	loads	13	143
Road Base Reconstruction	4"-0" crushed	140+00	10	station	63	stations	0.9	57
Road Surface Reconstruction	1 1/2"-0" crushed	140+00	4	station	25	stations	0.9	23
Total Rock for Road Segment:				I1 to I2				684
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 20+50		
				Volume (CY) Per		Number of		
Leveling Rock	1 1/2"-0" crushed		N/A	load	11	loads	6	66
Culvert Bedding and Backfill	1 1/2"-0" crushed	0+00, 6+70	N/A	culvert	44	culverts	2	88
Turnaround	1 1/2"-0" crushed	11+60	N/A	turnaround	22	turnaround	1	22
Surfacing	4"-0" crushed	13+00 to 20+50	4	station	25	stations	7.5	188
Traction Rock	1 1/2"-0" crushed	13+00 to 19+00	2	station	13	stations	6.0	78
Turnouts	1 1/2"-0" crushed	15+65	N/A	turnout	22	turnouts	1	22
Landings	6"-0" pit-run	20+50	N/A	landing	55	landings	1	55
Total Rock for Road Segment:				I3 to I4				519

EXHIBIT D

ROAD SURFACING

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 22+80		
				Volume (CY) Per		Number Of		
Surfacing	1 1/2"-0" crushed	0+00 to 22+80	4	station	25	stations	22.8	570
Junctions	1 1/2"-0" crushed	0+00	N/A	junction	22	junctions	1	22
Culvert Bedding and Backfill	1 1/2"-0" crushed	0+00	N/A	culvert	44	culverts	1	44
Turnouts	1 1/2"-0" crushed	4+05, 6+55, 11+00, 17+15, 22+80	N/A	turnout	22	turnouts	5	110
Total Rock for Road Segment:				I5 to I6				746

ROCK TOTALS (CY)	4"-0"	1 1/2"-0"	1 1/2"-0" Culvert Bedding & Backfill	24"-6"	6"-0"
4,354	1,898	1,774	330	231	121

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 on Exhibit D. 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 Exhibit D. Truck measure volumes are given, but shall not limit the amount of rock spread.

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

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 15<sup>th</sup> 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. 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, outsloped, or insloped at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	SUBGRADE COMPACTION 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	FILLS COMPACTION OPTIONS
All road segments.	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 compacted and processed during the same project period it is spread, unless otherwise approved in writing by STATE.

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

ROAD SEGMENT	PIT-RUN COMPACTION OPTIONS
Segments requiring pit-run rock	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) 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 as directed by STATE 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 36 inches in diameter and smaller shall be constructed of corrugated polyethylene, unless otherwise specified in the Contract. Culverts larger than 36 inches in diameter shall be constructed of corrugated aluminized Type 2 steel, 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-36-03<sup>1</sup>."

Polyethylene joints shall be made with split couplings, corrugated to engage the culvert corrugations, and shall engage a minimum of four corrugations, two 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 three 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 three percent or greater than 10 percent.

#### Disconnect Culverts

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

The foundation and trench walls for all culverts shall be free from logs, stumps, limbs, stones, and other objects which would dent or damage the culvert. The culvert trench shall be excavated three culvert diameters wide to permit compaction and working on each side of the culvert. Tamping shall be done in 6-inch lifts, one 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.

Backfill shall consist of crushed rock on improvement segments and job-excavated soil 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.

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" and 18" for culverts 42" to 96". Minimum vertical cover for other designs shall be as specified by STATE.

EXHIBIT E  
CULVERT SPECIFICATIONS

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 intake end of cross drain and disconnect culverts shall be provided with a sediment catching basin three 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 and culverts on improvement sections.

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.

The intake ends of culverts in fills less than three feet to the top of the culvert shall be marked by driving white fiberglass posts within six inches of the downgrade side. Posts shall be a minimum of six feet long and 2½ inches wide, with the spade driven two feet into the ground. Install a culvert marker at each existing culvert that is missing a marker that could be reached by a grader blade.

Energy Dissipators shall be installed within 72 hours of culvert installation, unless otherwise approved in writing by STATE. Steel posts used with half round installation shall be painted with rust preventative paint.

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

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

<u>Dia.</u>	<u>Steel Culvert</u>	<u>Thickness</u>		<u>Band Gauges</u>	<u>Band Widths (")</u>	
	<u>Gauge</u>	<u>Uncoated</u>	<u>Coated</u>		<u>Annular</u>	<u>Helical</u>
18-36	16	(0.0598")	(0.064")	16	12	12
42-54	14	(0.0747")	(0.079")	16	12	12
60-84	12	(0.1046")	(0.109")	16	24	24
90-120	12	(0.1046")	(0.109")	16	26	26

Culverts larger than 60" in diameter shall have (3" x 1") corrugations.

EXHIBIT E  
CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	GAUGE	ROAD SEGMENT POINT TO POINT	STATION
1	18	30	CPP	N/A	1G to 1H	4+20
2	18	50	CPP	N/A	1G to 1H	21+60
3**	102	60	ACSP	12 Gauge	I1 to I2	140+00
4	18	60	CPP	N/A	I3 to I4	0+00
5	18	40	CPP	N/A	I3 to I4	6+70
6	18	50	CPP	N/A	I5 to I6	0+00

TOTAL LENGTHS BY DIAMETER	
18 INCH	102 INCH
230	60

ACSP = Aluminized, CPP = Polyethylene

\*\* 1:1 Step Beveled Inlet



## EXHIBIT F

### TYPE F STREAM CROSSING STRUCTURE

PURCHASER shall install one fish passable Type F structure.

#### GENERAL TYPE F CONSTRUCTION SPECIFICATIONS

- (a) New culvert shall be a 102" diameter, 12 gauge aluminized corrugated steel round pipe, 60 feet in length and shall be 5.7 foot high step beveled on the inlet side at a 1:1 ratio.
- (b) Work shall be conducted only during periods of low water flows and between July 1 and August 31, annually. STATE shall be notified a minimum of 48 hours prior to beginning the work. STATE has prepared a FPA "Written Plan" for this work.
- (c) Remove the existing embankment and culvert to accommodate the work area for stream crossing construction. Existing embankment(s) shall be excavated to the design stream course level. All woody debris encountered during excavation shall be removed.
- (d) Salvage onsite existing riprap material for reuse as riprap for the new structure.
- (e) Excavated debris and materials unsuitable for embankment construction shall be end hauled to the designated waste area, as directed by STATE. The existing, removed culvert, shall be hauled to an approved refuse site off of STATE land.
- (f) Waste materials shall be sloped for drainage and stability, as directed by STATE. Prior to hauling waste materials, the waste area shall be cleared of large woody debris. The debris shall be piled adjacent to the waste area. All exposed excavation areas and waste materials shall be seeded and mulched as specified by Exhibit K. Applied mulch shall be a minimum of two inches deep and provide a uniform cover. Large woody debris shall be redistributed over the waste area after all waste materials have been hauled.
- (g) Oil spill response materials shall be on site before the work begins.
- (h) A minimum two cubic-yard, track-mounted excavator shall be used for all excavation, stream channel development, and riprap placement.
- (i) Grass seed and straw mulch shall be applied to all exposed areas, bare soils and waste materials as directed by STATE in accordance with Exhibit K.
- (j) De-watering of the work site shall be accomplished according to PURCHASER's STATE approved plan and prior to the removal of any additional fill material for the development of the culvert bed, and stream channel. The work site shall be de-watered by the use of cofferdams, pumps, temporary diversion ditches and/or drainage structures.
- (k) Remove existing fill, culvert, and any logs or woody debris.
- (l) Type "F" stream fill reconstruction must allow free passage of fish as provided in the Oregon Forest Practice Rules. Modifications of the existing culvert geometry shall be required to allow free passage of fish.
- (m) Use of an on-site hydraulic rock hammer may be required for the breaking of rock strata encountered during the development of the culvert bed.

## EXHIBIT F

### TYPE F STREAM CROSSING STRUCTURE

#### GENERAL TYPE F CONSTRUCTION SPECIFICATIONS

- (n) Remove additional fill and logs or woody debris for the development of the new culvert bed. The new culvert bed will be different horizontally and vertically from the existing culvert bed. The new culvert inlet and outlet coordinates are designated in this exhibit.
- (o) Site survey and design information, including survey control point coordinates are available upon request.

#### SPECIFIC CULVERT INSTALLATION SPECIFICATIONS

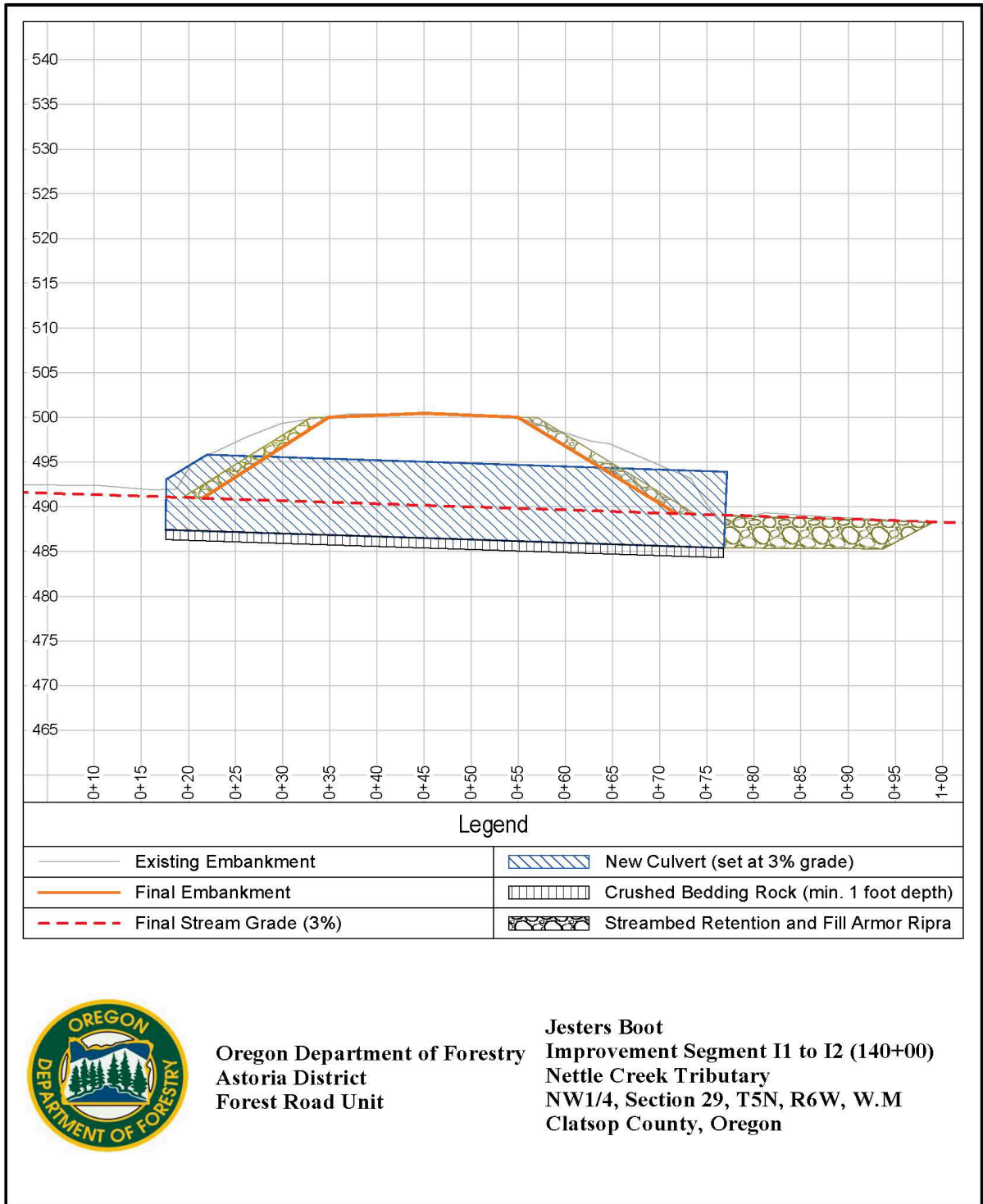
##### **Road Segment I1 to I2, Station 140+00.**

- (a) Develop the stream channel for a distance of 25 feet upstream of the new culvert inlet and 25 feet downstream of the new culvert outlet, as directed by STATE. The stream channel width shall be 7.5 feet and stream channel banks shall be sloped at 1½:1. Utilize 24"-6" riprap rock to armor the developed stream channel, as directed by STATE.
- (b) The new culvert position shall be different horizontally and vertically from the existing culvert, as shown on this exhibit and as directed by STATE. The new culvert inlet shall be approximately S44°E, 5.1 feet horizontal distance, and cut 4.4 feet from the existing inlet. The new culvert outlet shall be approximately S39°W, 6.5 feet horizontal distance, and cut 5.2 feet from the existing outlet. The excavation to trench bottom from road surface at center of new pipe is approximately 14.5 feet deep.
- (c) Reusable excavated material shall be staged onsite. Excavated waste material unsuitable for embankment construction shall be hauled to the onsite waste area designated by STATE. Material used for fill reconstruction shall be recovered onsite material and reject material from the upper Buster Creek Quarry as directed by STATE. Backfill shall be compacted as specified in Exhibit D.
- (d) Final stream grade and new culvert grade shall be -3.0%. New culvert inlet and outlet shall be sunk 3.3 feet below final stream grade.
- (e) Utilize 6"-0" pit-run rock for culvert bedding reinforcement. Utilize 1 1/2"-0" crushed rock for culvert bedding material. Utilize 1 1/2"-0" crushed rock for culvert backfill around culvert haunches and to cover the top of the culvert. Bedding and top cover shall be a minimum of 14" compacted depth.
- (f) At the culvert outlet, utilize 24"-6" riprap rock for riprap and streambed retention for a minimum distance downstream of three times the culvert diameter, or as directed by STATE. Place and embed material at the outlet of the new culvert to establish the stream channel elevation and allow stream sediment materials to settle in the barrel of the pipe.
- (g) Utilize recovered stream cobble on both the inlet and outlet to assist in the formation of a new stream bed.
- (h) Utilize 24"-6" riprap rock for fill armor material placed and tamped at a 1½:1 slope for a minimum thickness of 2 feet beginning at the toes.
- (i) Finished subgrade shall be 20 feet in width.

- (j) Finished road base rock reconstruction shall be a new 10-inch lift (63 cy per station) of 4"-0" crushed rock. Road base reconstruction subgrade shall be graded and shaped and new rock base shall be processed and compacted in accordance with Exhibit D.
- (k) Finished road surface rock reconstruction shall be a new 4-inch lift (25 cy per station) of 1 ½"-0" crushed rock. New rock surfacing shall be processed and compacted in accordance with Exhibit D.

EXHIBIT F

TYPE F STREAM CROSSING STRUCTURE

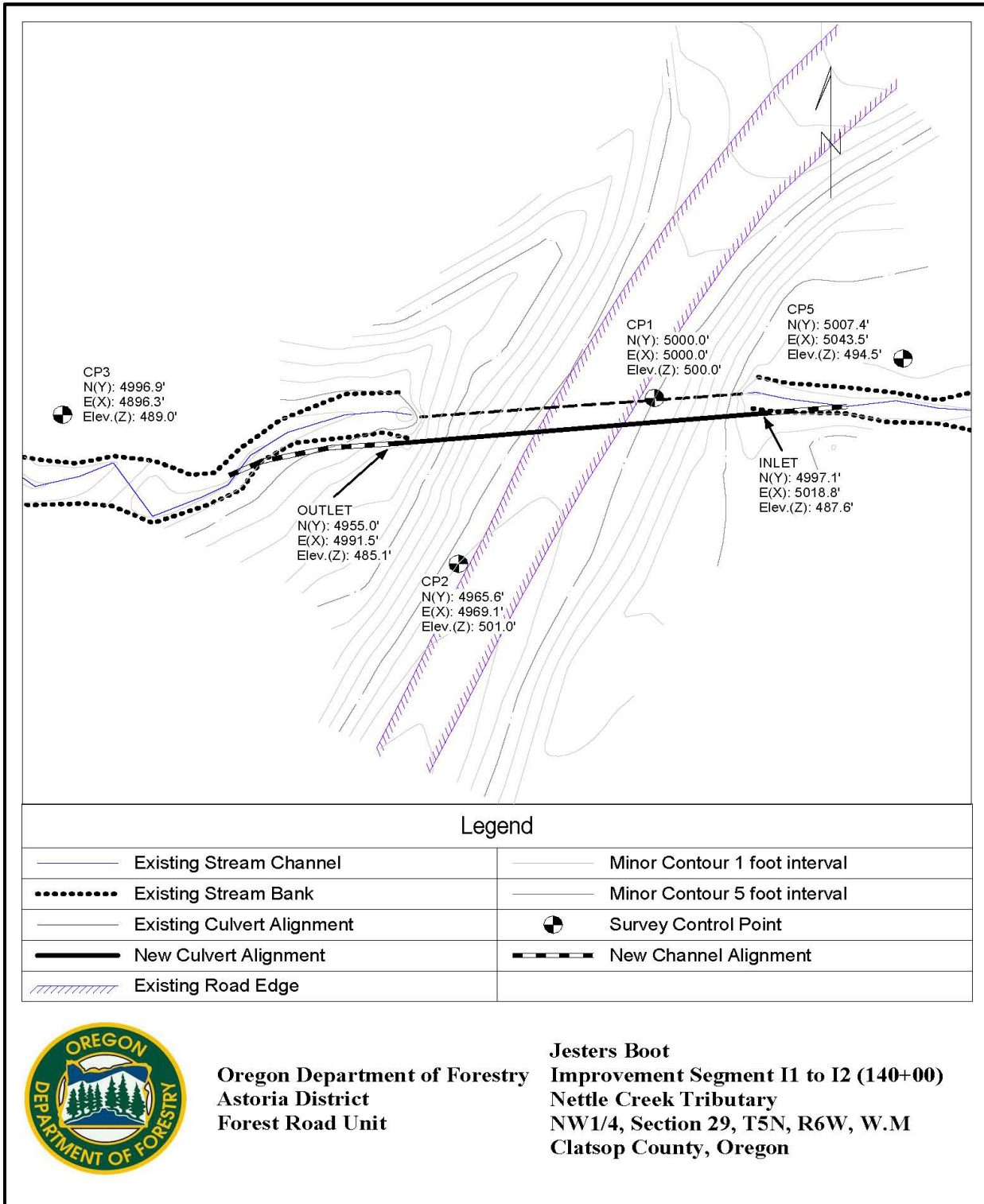


Oregon Department of Forestry  
Astoria District  
Forest Road Unit

Jesters Boot  
Improvement Segment I1 to I2 (140+00)  
Nettle Creek Tributary  
NW1/4, Section 29, T5N, R6W, W.M  
Clatsop County, Oregon

EXHIBIT F

TYPE F STREAM CROSSING STRUCTURE



## EXHIBIT G

### 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. 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.
4. Quarry face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.
5. 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. Unused shot rock material that is produced shall be piled in the vicinity of the rock pit as directed by STATE. Dirt, overburden, and reject material shall be hauled to designated waste area.
6. The quarry floor shall be developed to provide for drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained. Ditches, culverts, waterbars and other direct conveyances of water from the quarry or stockpile site(s) shall be constructed to drain to the forest floor in locations that will provide filtration. Quarry access roads shall be cleared and blocked upon completion of quarry use as directed by STATE.
7. 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.

### PIT-RUN, RIPRAP ROCK SPECIFICATIONS

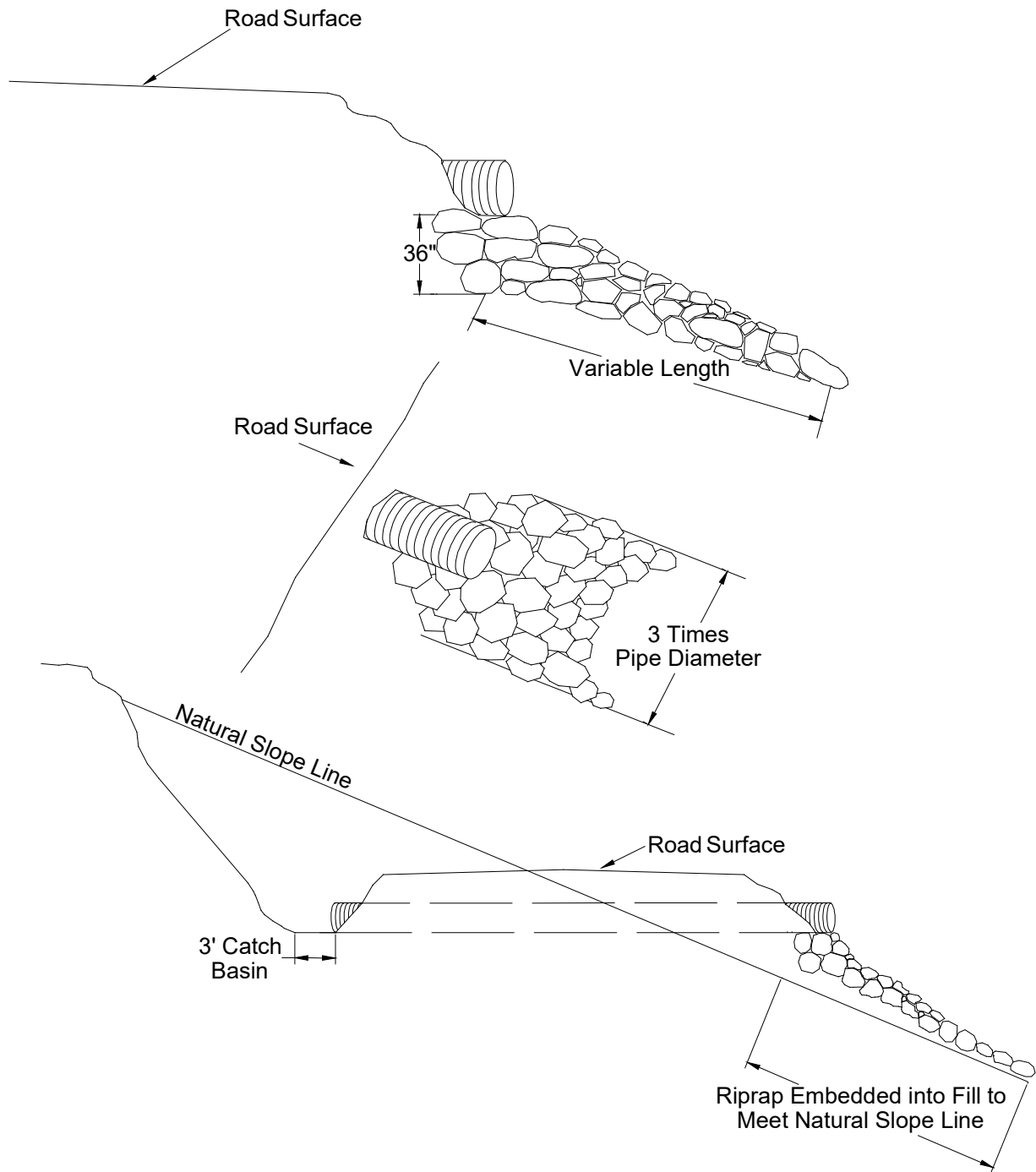
For Pit-Run	Passing	10" sieve	100%
	Passing	6" sieve	60-85%
	Passing	3" sieve	30-50%
	Passing	¼" sieve	0-10%

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

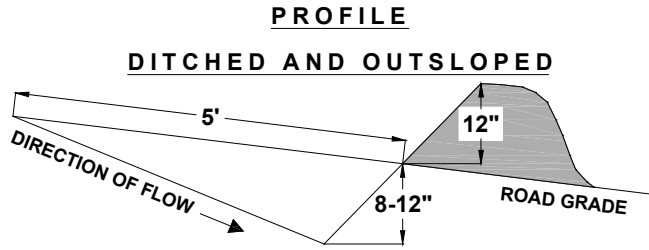
TYPICAL EMBEDDED ENERGY DISSIPATOR



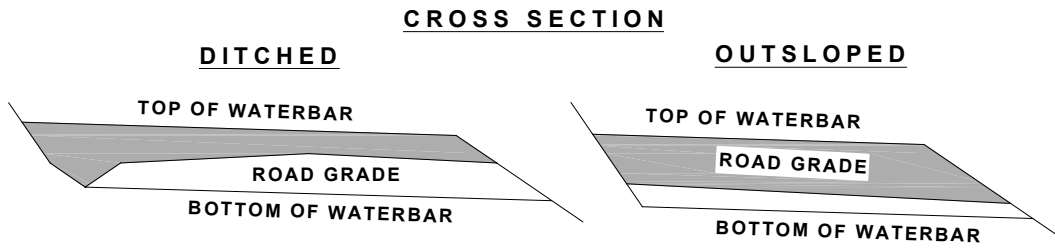
Dissipator shall be installed prior to the installation of the culvert, unless approved by STATE.

# EXHIBIT I

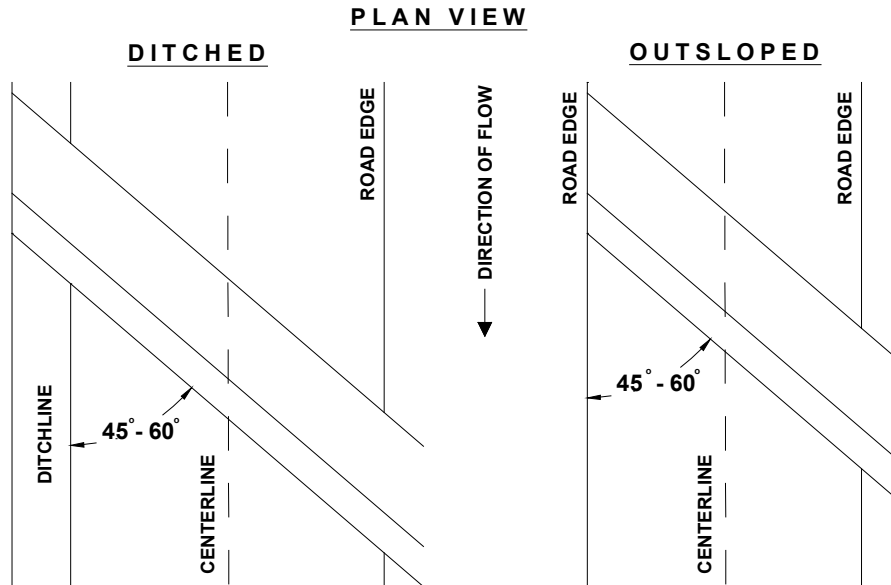
## WATERBAR SPECIFICATIONS



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%.





## EXHIBIT J

### ROAD VACATING SPECIFICATIONS

PURCHASER shall vacate at the following points: V1 to V2 and V3 to V4. Specific objectives for this project include:

- (a) Fill removal and stream channel development.
  - (b) Culvert removal.
  - (c) Restoration of natural contours by outsloping of the road prism.
  - (d) Sidecast pullback.
  - (e) Minimize disturbance of existing vegetation.
- 
- (1) Tree Removal. Cut or remove all trees necessary to access the project area and to facilitate vacating operations, as directed by STATE. Timber shall NOT be removed as designated timber, unless located within posted timber sale boundaries or right-of-way boundaries.
  - (2) Fill Removal and Stream Channel Development. Remove fills to the natural stream course level(s). Stream channel(s) shall be excavated/developed to specified widths. Developed stream banks shall be sloped at natural contours or no steeper than 1 ½:1, as directed by STATE.
  - (3) Culvert Removal. Remove drainage structures and culverts. Removed culverts shall be hauled to an approved refuse site off of STATE land.
  - (4) Outslope Road. Outslope road to restore natural contours or establish a minimum of 10 percent slope for drainage at designated locations. If the road grade exceeds 10 percent, outslope of the road shall be two percent greater than the road grade.
  - (5) Use of Excavated Materials.
    - a) Fill Excavation and Sidecast Pullback. Excavated materials shall be placed on the interior (cut) side of the road, and utilized to restore the cut slope to natural contours, or to a minimum 10 percent outsloped surface for drainage. Any excess material will be hauled to a designated waste area, as directed by STATE.
    - b) Woody Debris Shall be placed on the surface of pullback/fill material.
    - c) Block Roads. Use excavated material from fill removals to block roads from vehicle access, as directed by STATE.
  - (6) Erosion Control. Erosion control shall be completed in a progressive manner. Grass seed and straw mulch shall be applied for every 500 feet of road vacated, prior to continuing work.

All excavated material and bare soil shall utilize grass seed and straw mulch approved by STATE and in accordance with the specifications in Exhibit K. Applied mulch shall be a minimum of two inches deep and provide a uniform cover.
  - (7) Construct Waterbars as directed by STATE. Construct waterbars according to the specifications in Exhibit I.

## EXHIBIT J

### ROAD VACATING SPECIFICATIONS

- (8) Equipment. A minimum 1½ cubic-yard, track mounted excavator shall be used for all excavation, culvert removal, streambed preparation, road blocking, and waterbarring, unless otherwise approved in writing by STATE.
- (9) Dry Conditions. All work shall be performed during dry conditions acceptable to STATE.
- (10) Support, including transport, other equipment, replacements, supplies, maintenance, and repairs, shall be furnished as required to complete the project and shall be furnished without cost to STATE, other than as agreed under the contract terms.

#### SPECIFIC INSTRUCTIONS/SPECIFICATIONS:

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
V1 to V2	0+00	Construct road block.
	4+00	Excavate fill and remove culvert to develop a natural channel width of nine feet. Waste material can be keyed in onsite to recreate natural contours as directed by STATE. Construct waterbars on both sides of vacated fill. Utilize the ditchline and road prism for additional waste area if needed. Seed and mulch vacated fill and all exposed soils.
	6+15	Excavate fill and remove culvert to develop a natural channel width of four feet. Waste material can be keyed in onsite to recreate natural contours as directed by STATE. Construct waterbars on both sides of vacated fill. Utilize the ditchline and road prism for additional waste area if needed. Seed and mulch vacated fill and all exposed soils.
	7+45	Remove culvert and construct waterbar.
	9+45	Remove culvert and construct waterbar.
	18+80	Remove culvert and construct waterbar.
	24+20	Remove culvert and construct waterbar.
	31+50	Remove culvert and construct waterbar.
	36+80	Remove culvert and construct waterbar.
	40+80	Remove culvert and construct waterbar.
V3 to V4	0+00	Construct road block.
	1+70	Excavate fill and remove culvert to develop a natural channel width of four feet. Waste material can be keyed in onsite to recreate natural contours as directed by STATE. Construct waterbars on both sides of vacated fill. Utilize the ditchline and road prism for additional waste area if needed. Seed and mulch vacated fill and all exposed soils.

## EXHIBIT K

### 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 and bare soils resulting from Project No. 2 and 3.

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. PURCHASER shall notify STATE within 24 hours of seeding application.

#### 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.

#### APPLICATION RATES FOR MULCH

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

Application Locations:

Road Segment	Location	Road Segment	Location
I1 to I2	140+00	V3 to V4	1+70
V1 to V2	4+00	Waste Areas	Used for I1 to I2 (140+00)
V1 to V2	6+15		

## EXHIBIT L

### STREAM ENHANCEMENT INSTRUCTIONS

#### General Instructions:

- (a) Work shall be conducted only during the in-water working period which varies by watershed. The in-water work period for Buster Creek is from July 1 to August 31, annually, unless otherwise approved in writing by STATE. STATE shall be notified a minimum of 48 hours prior to beginning work. STATE has prepared the required FPA "Written Plan" for this work.
- (b) Stream crossings shall be limited to those necessary to access the sites and whenever possible equipment shall operate from the banks to minimize stream disturbance. Turbidity shall not exceed 10 percent above natural stream turbidities as a result of work. The turbidity may be exceeded for a limited duration (per OAR 340-41), provided all practicable erosion control measures have been implemented. Oil spill response materials shall be on site before work begins.
- (c) Trees required for stream enhancement work shall be conifers obtained from the sale area. Trees shall not be sourced from within stream buffers. Trees can have defects such as double tops, crooked trunks, heart rot, etc. as long as they meet the required size dimensions.
- (d) Trees shall be uprooted as needed, cut to length, or broken, and delivered to the project site, as directed by STATE. Trees shall be transported by log truck or other means so that roads are not damaged (i.e., trees cannot be dragged on road surface).
- (e) Access routes shall be selected to minimize disturbance to the riparian area, and equipment transporting trees to the sites shall take care to avoid damage to existing in-stream logs, riparian or other trees. Trees that are cleared from within the riparian management area (RMA) to gain access shall be placed in the creek or used to block access trails.
- (f) All areas of bare or disturbed soils shall be seeded with an approved grass seed mix. Fertilizer shall not be used. All access trails shall be thoroughly blocked to prevent access using large woody debris or boulders, water barred, ripped, or tilled, and mulched upon completion according to Exhibit K, as directed by STATE.
- (g) A total of six stream enhancement structures shall be constructed between points SE1 and SE2. Each structure shall consist of five conifer pieces. Two pieces at each structure shall have root wads attached.

#### Specific Instructions:

<u>Location</u>	<u>Work Description</u>
SE1 to SE2	Install six stream enhancement sites at least 100 feet apart. Each structure shall consist of five key conifer pieces. Two of the key pieces shall have root wads attached. Pieces with root wads attached shall be at least 45 feet in length and 16 inches in diameter at the small end. Pieces without root wads attached shall be at least 60 feet in length and 12 inches in diameter on the small end.

All root wads shall be placed in the stream channel and keyed into the bank. The opposite end of these pieces shall be keyed into adjacent trees to prevent movement. The pieces shall be placed in a complex configuration (log jam) to connect the stream to its natural floodplain.

**PART IV: OTHER INFORMATION**

**FOREST PRACTICES ACT “WRITTEN PLAN”  
For Stream Enhancement Operations within 100 feet of Type F Stream**

Timber Sale Area is located in Portions of Sections, 19 and 20 of T5N, R6W, W.M., Clatsop County, Oregon.

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

Protected Resources:

Buster Creek

Specific Site Characteristics:

SE1 to SE2 – Buster Creek (Large, Type F Stream) delineates the northern boundary for approximately 4,550 feet. Channel width ranges from approximately 25 to 30 feet in width in this reach.

The stream habitat is relatively uniform with a meandering channel along the entire reach which is predominantly a single channel. Streamside vegetation is predominately red alder with a mix of Douglas-fir, western hemlock, Sitka spruce, and salmonberry.

Tree and Vegetation Retention:

FPA defines the RMA width of a large Type F stream as 100 feet. The Timber Sale Boundary for the Unit is posted at least 100 feet from the Type F stream. The RMA is dominated by red alder. All logs for stream placement will be sourced from the Unit.

Practices:

Purchaser will exercise caution around active beaver dams, pools, ponds, and lodges and shall not operate within 30 feet of existing sites.

A total of six stream enhancement structures will be constructed between project points SE1 and SE 2. Work to be done is described as follows:

Structures will be at least 100 feet apart and have a minimum of 5 conifer pieces at each location, with at least two having a root wad attached. Pieces with root wads attached shall be at least 45 feet in length and 16 inches in diameter at the small end. Pieces without root wads attached shall be at least 60 feet in length and 12 inches in diameter on the small end. All root wads will be placed in water and keyed into the bank. The opposing end will be keyed into adjacent trees to prevent movement. Trees will be obtained from within the timber sale area only and will not be taken from stream buffers. Logs will be placed in a complex configuration (log jam) to connect the stream to its natural floodplain.

Stream Enhancement structures must be created by the PURCHASER for stream improvement as recommended by the ODF Aquatic and Riparian Specialist and District staff. This work will take place during the in-stream work period for Buster Creek (July 1 – August 31). If the work cannot be done during the designated in-stream work period, an ODFW fisheries biologist will be consulted to field verify any fish habitat concerns and approve any work to be conducted outside the designated period.

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: \_\_\_\_\_

**FOREST PRACTICES ACT “WRITTEN PLAN”  
For Type F stream crossing structure**

NW 1/4, Section 29, T5N, R6W, W.M. Clatsop County, Oregon.

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

**Protected Resources:**

A small Type F Tributary of Nettle Creek crosses Nettle Creek Road with an existing fill. Fill reconstruction will create a fill which is about 10 feet deep. A “written plan” is required for any activities within 100 feet of any Type F streams.

**Specific Site Characteristics:**

The tributary of Nettle Creek (small, Type F) fisheries resource. The existing culvert is in a deteriorating condition and needs replacement. The existing structure will be replaced with a fish passage design structure. Total fill depth from bottom of excavation trench to road surface is approximately 10.5 feet.

**Situation:**

The current structure is in failing condition and is a partial blockage to fish passage upstream.

**Solution:**

Design a crossing structure that meets or exceeds the need of this particular stream crossing site and FPA requirements for Type F stream crossings.

**Drainage Area and Structure Design:**

Current FPA guidelines were used to design the new fish passage structure. The drainage area is 150 acres (0.23 square miles) determined from LiDAR data. The 50 year peak flow for this drainage is 200 cfs per square mile determined from the Peak Flow 50 Year Recurrence Interval isoline data. Therefore the 50 year peak flow for this stream crossing is 47 cfs. Table 1 from ODF Forest Practices Technical Note Number 5 (effective May 10, 2002) lists a maximum flow of 65 cfs from a 48” diameter culvert.

The stream crossing will utilize a streambed simulation strategy and preserve a natural stream channel with a minimum of 7.4 feet width. A countersunk 102” diameter x 60’ length culvert constructed of aluminized corrugated steel will be installed at the Type F stream crossing. The 102” (8.5’) culvert will be embedded 39.6” (3.3’) at the inlet and outlet leaving an effective flow capacity of 405 cfs, exceeding the 47 cfs requirement. The culvert design includes a 1:1 step beveled inlet opening to improve culvert efficiency. The culvert barrel will be seeded with on-site stream cobble if available. The design life of this culvert is a minimum of 50 years. The fill slopes will be armored with pit-run rock to minimize surface erosion.

New Stream Gradient:	3.0%
Size of Watershed:	150 acres
Average Stream Width:	7.4 feet
Streambed material:	Cobble, Gravel, Fines/Sand
50 Year Peak Flow/Mi. <sup>2</sup> :	200 cfs
50 Year Peak Flow:	47 cfs
Flow Capacity of New Structure:	Approx. 405 cfs

**PART IV: OTHER OPERATIONS**

**FOREST PRACTICES ACT "WRITTEN PLAN"  
For Type F stream crossing structure**

NW 1/4, Section 29, T5N, R6W, W.M. Clatsop County, Oregon.

**Resource Protection Practices:**

- Machine activity in stream channel shall be minimized.
- All fill excavation, backfilling, stream channel development, and riprap placement shall be performed using a minimum two cubic yard track mounted excavator.
- In-stream work, including de-watering, excavation, culvert installation, and riprap placement shall be conducted during dry weather periods, low water stream flows and from July 1 through August 31, annually.
- A dewatering plan shall be developed and followed from the start of excavation until the structure is in place and water flowing.
- An erosion control plan shall be developed and followed to prevent sediment from entering the stream during construction work.
- Clearing debris, and excavation material shall be hauled to a designated waste area and left in a stable condition.
- Selected native earth materials free from woody debris will be used for back filling. Fill material will be thoroughly compacted with specialized compaction equipment.
- Reconstructed fill slopes will not exceed 1 ½:1.
- Riprap rock shall be used to protect the structure, road approaches/embankments, and stream banks from erosion.
- Riprap rock will be used to armor both the inlet and outlet fill slopes to minimize erosion.
- All bare soils and waste areas will be mulched and seeded to prevent erosion.
- Oil spill response materials shall be on site before work begins.

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practices Act regarding the operations conducted within Type F streams and constructing a permanent stream. I agree to the protection measures listed on this plan.

Submitted

\_\_\_\_\_   
Purchaser/Operator

\_\_\_\_\_   
Date

Attachments: Exhibit A and F

Original: Salem

Copies: Operator, Purchaser, District File, Roads Unit, Marketing Unit

**FOREST PRACTICES ACT “WRITTEN PLAN”**  
**For vacating a permanent stream crossing fill within 100 feet of Type F Stream**

SE 1/4, Section 24, T5N, R6W, W.M. Clatsop County, Oregon.

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

**Protected Resources:**

A small Type F Tributary of Nettle Creek crosses Nettle Creek Road with an existing fill. This planned project will remove a fill which is roughly 13 feet deep. A “written plan” is required for operations within 100 feet of a Type F stream for vacating the existing fill.

**Specific Site Characteristics:**

The tributary of Nettle Creek (small, Type F) fisheries resource. The existing culvert and fill are an artificial fish barrier and the existing structure will be removed.

**Situation:**

The current fill structure is a partial blockage to fish passage upstream and is deteriorating.

**Solution:**

Vacate the current crossing structure and fill. Portions of the road are within 100 feet of the Type F stream. The existing culvert and fill will be removed to reduce the risk to resources. Waterbars will be constructed on either side of the fill and exposed soils will be seeded and mulched to meet FPA requirements for Type F stream crossings.

**Practices:**

Along the above mentioned Type F stream the following practices are required under the timber sale contract:

- All excavation and fill removal will be performed using track-mounted excavators.
- Work will be performed only during dry weather periods, low water stream flows, and between May 1 and October 31, annually. In addition, in-stream work and temporary crossing of Type F streams will be conducted between July 1 and August 31 annually.
- Temporary crossings of Type F streams will be minimized to only those trips necessary to facilitate vacating of V1 through V2. Stream banks will be re-sloped, compacted, and seeded and mulched to minimize run-off or erosion. In-stream disturbance will be minimized by utilizing nearby logs to cross the stream. Logs used for the crossing will be removed from the stream channel and placed in stable locations upon completion of the vacating project.
- Excavated fill materials will be used for recontouring slopes and placed in approved waste areas and left in a stable condition.
- Bare soils shall be grass seeded and mulched with straw mulch approved by STATE. Applied mulch shall be a minimum of two inches deep and provide a uniform cover.
- Disturbance to existing vegetation will be minimized.



**FOREST PRACTICES ACT "WRITTEN PLAN"**  
**For vacating a permanent stream crossing fill within 100 feet of Type F Stream**

SE 1/4, Section 19, T5N, R6W, W.M. Clatsop County, Oregon.

Size of Watershed:	201.3 acres
Average Stream Width:	6 feet
Streambed material:	Cobble, Gravel, Fines/Sand
50 Year Peak Flow/Mi. <sup>2</sup> :	200 cfs
50 Year Peak Flow:	63 cfs

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 during the vacating of a permanent stream crossing fill. I agree to the protection measures listed on this plan.

Submitted

\_\_\_\_\_

Purchaser/Operator

\_\_\_\_\_

Date



**OREGON DEPARTMENT of FISH and WILDLIFE**  
**FISH SCREENING PROGRAM**  
**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: (\_\_\_\_) \_\_\_\_\_