



**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: FG-341-2021-W00474-01

(2) Sale Name: Daring Doty

(3) Contract Expiration Date: 10/31/2023

(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:

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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.



## Oregon Department of Forestry

2600 State St Salem OR 97310

PART III: EXHIBITS

### EXHIBIT B

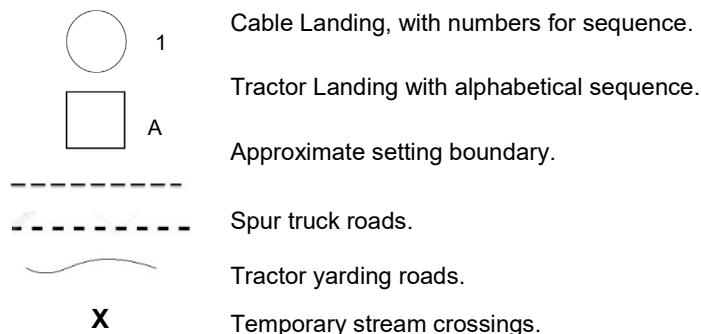
## INSTRUCTION SHEET FOR OPERATIONS PLAN

### 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

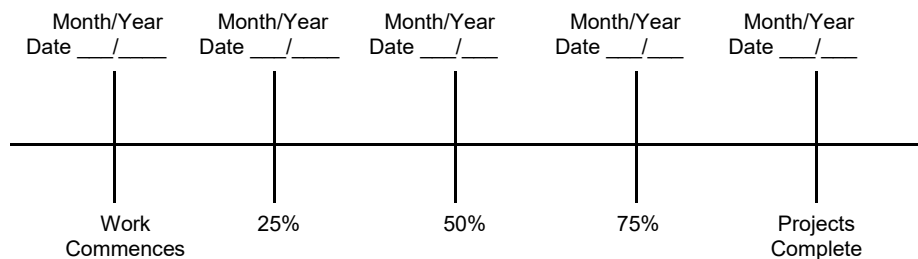
PART III: EXHIBITS

## EXHIBIT B OPERATIONS PLAN

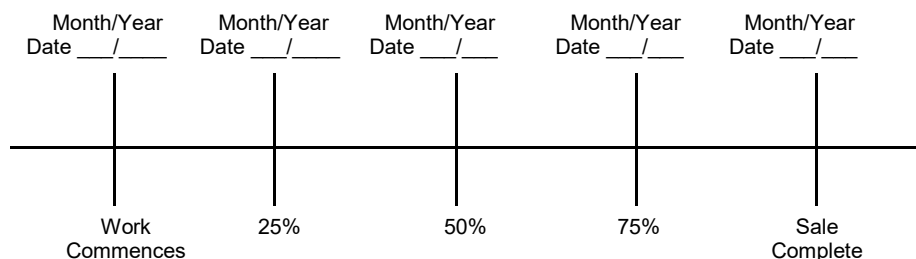
### Completion Timeline

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**  
Forest Grove - NWOA

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

(2) TO: \_\_\_\_\_  
(Third Party Scaling Organization)

(3) FROM: Forest Grove Phone (503) 357-2191  
(State Forestry District)  
Address: 801 GALES CRK RD  
FOREST GROVE, OR 97116-1199

(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: Daring Doty  
COUNTY: Tillamook

(10) STATE CONTRACT NUMBER:  
FG-341-2021-W00474-01

(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) 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)**  
**Forest Grove - 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](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@southernoregonlogscaling.com](mailto: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](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: [http://www.odf.state.or.us/DIVISIONS/management/asset\\_management/ScalingLocation.asp](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 <\\WPODFILL01\\Transfer\\ScalingInstructions> or e-mailed directly to [scaling@odf.state.or.us](mailto: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

## EXHIBIT D

### FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DRAINAGE
Match Existing	Match Existing	A to B	0+00 to 110+75	Ditch
Match Existing	Match Existing	C to D	0+00 to 18+40	Ditch
Match Existing	Match Existing	E to F	0+00 to 7+60	Ditch
Match Existing	Match Existing	G to H	0+00 to 5+90	Ditch
Match Existing	Match Existing	I to J	0+00 to 12+90	Ditch
Match Existing	Match Existing	K to L	0+00 to 4+00	Ditch
Match Existing	Match Existing	M to N	0+00 to 12+50	Ditch
Match Existing 26 feet	Match Existing 22 feet	O to P	0+00 to 3+60	Ditch
Match Existing 26 feet	Match Existing 22 feet		3+60 to 5+50	
Match Existing 26 feet	Match Existing 22 feet		5+50 to 6+20	
Match Existing 26 feet	Match Existing 22 feet		6+20 to 7+60	
Match Existing 26 feet	Match Existing 22 feet		7+60 to 15+20	
Match Existing 26 feet	Match Existing 22 feet		15+20 to 15+80	
Match Existing 26 feet	Match Existing 22 feet		15+80 to 81+20	
Match Existing 26 feet	Match Existing 22 feet		81+20 to 82+60	
Match Existing 26 feet	Match Existing 22 feet		82+60 to 94+75	
Match Existing	Match Existing	Q to R	0+00 to 13+40	Ditch
16 feet	12 feet	S to T	0+00 to 2+05	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 cutslopes shall be removed.

#### 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.** 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 55 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.

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.

**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 25 feet, plus 25-foot approaches at each end. Location: Intervisible but not greater than 750 feet apart.

**SLOPES.** Top of cutslope shall be rounded.

Solid Rock

Fractured Rock

Soil - side slopes 50% and over

Soil - side slopes less than 50%

#### **Cutslopes**

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

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

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

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

#### **Fill Slopes**

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

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

**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 stated or approved by STATE. Surface is to be outsloped or crowned for drainage with general grade no more than 3 percent. Surface as shown in the "Road Surfacing" table in this Exhibit, with 2 feet of subgrade extending out from base of the surfacing.

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

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

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



## EXHIBIT D

### FOREST ROAD SPECIFICATIONS

#### GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

- (1) Excavated Materials. Excavated materials shall be utilized for road construction and hauled in where required. 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.
- (2) Drainage Ditches. Construct ditchlines, including ditchouts, as directed by STATE. Cutslopes 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.
- (3) Culvert Installation. 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.
- (4) Subgrade Preparation and Application of Surfacing Rock.
  - (a) Complete culvert installations, drainage ditches, fill construction, ditchouts 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.

#### SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
<b>S to T</b>	0+00	Point S. Begin road construction; crown road, begin ditch. Install Culvert No. 3 (18" x 40') as cross drain into A to B (Giveout Grade Road) prism.
<b>END</b>	2+05	Point T. End road construction. Construct landing.

EXHIBIT D  
FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

- (1) Timber Removal. Remove all trees within clearing limits or marked with blue paint as specified in Section 2310, Designated Timber. All timber shall be hauled away during project work.
- (2) Excavated Materials. Excavated materials shall be utilized for road and fill construction and hauled in where required. 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.
- (3) Bank Slough Removal. Excavate all bank slough. Bank slough material shall not be pulled across existing surfacing rock. Excavated material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A.
- (4) 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.
- (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. (Ditch debris including woody debris shall be loaded and hauled to designated waste areas, and shall be accomplished with the use of an excavator and dump truck.) Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas.
- (6) Settling Ponds. Construct up to (3) settling ponds for erosion control in project areas and ditchlines where sedimentation or erosion is possible as directed by STATE. Excavated material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A. Waste materials shall be sloped and compacted for drainage. Settling pond dimensions shall be a finished length of (8) feet, width of (3) feet, and (3) feet in depth, or as directed by STATE. Backslopes shall be ¾:1. Ditch line armor and settling pond armor shall be 8 inches deep.
- (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) Subgrade Preparation and Application of Surfacing Rock.
  - (a) Complete culvert installations, drainage ditches, fill reconstruction, ditchouts, settling ponds, and other specified work prior to the application of new surfacing rock.
  - (b) Cut out all potholes and/or washboard sections from the existing surfacing.
  - (c) Process (grade and mix) the existing surface. Provide for a crown, outslope, or inslope of 4 to 6 percent, and compact in accordance to the "Compaction and Processing Requirements" in this Exhibit.
  - (d) Upon completion of above required work, apply, process, and compact surfacing rock in accordance to this Exhibit.

# EXHIBIT D

## FOREST ROAD SPECIFICATIONS

### SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
<b>A to B</b>	0+00	Point A. Giveout Grade. Begin road improvement. Crown road, clean or construct ditchlines.
	1+45	Existing culvert, install marker, clean inlet and outlet.
	10+25	Existing culvert, install marker, clean inlet and outlet.
	11+85	Point M. Junction with M to N on right.
	15+90	Point I. Junction with I to J on right.
	16+50	Existing culvert, install marker, clean inlet and outlet.
	21+50	Existing culvert, install marker, clean inlet and outlet.
	25+95	Existing culvert, install marker, clean inlet and outlet.
	26+95	Point C. Junction with C to D on right.
	27+50	Existing culvert, install marker, clean inlet and outlet.
	33+20	Existing culvert, install marker, clean inlet and outlet.
	37+10	Existing culvert, install marker, clean inlet and outlet.
	40+80	Point S. Junction with S to T on right.
	42+00	Junction on right
	43+70	Point E. Junction with E to F on right.
	45+75	Existing culvert, install marker, clean inlet and outlet.
	49+35	Existing culvert, install marker, clean inlet and outlet.
	52+90	Junction on left.
	54+50	Existing culvert, install marker, clean inlet and outlet.
	59+30	Existing culvert, install marker, clean inlet and outlet.
	64+40	Existing culvert, install marker, clean inlet and outlet.
	70+40	Existing culvert, install marker, clean inlet and outlet.
	78+00	Existing culvert, install marker, clean inlet and outlet.
	82+20	Existing culvert, install marker, clean inlet and outlet.
	86+05	Existing culvert, install marker, clean inlet and outlet.
	92+45	Remove existing culvert and install Culvert No. 1 (18" x 30') as cross drain.
	93+90	Junction on left.
	102+60	Existing culvert, clean inlet and outlet.

<b>A to B Continued</b>	104+75	Existing culvert, install marker, clean inlet and outlet.
	106+95	Existing culvert, clean inlet and outlet.
<b>END</b>	110+75	Point B. End road improvement.

<b>C to D</b>	0+00	Point C. Begin road improvement. Crown road, clean or construct ditchlines.
	4+80	Point G. Junction with G to H on right.
	8+95	Existing culvert, clean inlet and outlet. Repair outlet.
	9+30	Point K. Junction with K to L on right.
	12+75	Existing culvert, install marker, clean inlet and outlet.
	16+65	Improve Y-junction on left.
<b>END</b>	18+40	Point D. End road improvement.

<b>E to F</b>	0+00	Point E. Begin road improvement. Crown road, clean or construct ditchlines.
	0+25	Existing culvert, install marker, clean inlet and outlet.
	3+90	Improve roadside landing.
<b>END</b>	7+60	Point F. End road improvement.

<b>G to H</b>	0+00	Point G. Begin road improvement. Crown road, clean or construct ditchlines
<b>END</b>	5+90	Point H. End road improvement. Improve landing.

<b>I to J</b>	0+00	Point I. Begin road improvement. Crown road, clean or construct ditchlines.
	3+75	Existing culvert, install marker, clean inlet and outlet.
	7+45	Junction on right.
	8+80	Existing culvert, install marker, clean inlet and outlet.
	9+20	Junction on right.
<b>END</b>	12+90	Point J. End road improvement. Improve landing.

<b>K to L</b>	0+00	Point K. Begin road improvement. Crown road, clean or construct ditchlines.
<b>END</b>	4+00	Point L. End road improvement. Improve landing.

<b>M to N</b>	0+00	Point M. Begin road improvement. Crown road, clean or construct ditchlines.
	3+50	Remove existing culvert and install Culvert No. 2 (18" x 30') as cross drain.
	6+95	Existing culvert, install marker, clean inlet and outlet.
	11+50	Existing culvert, install marker, clean inlet and outlet.
<b>END</b>	12+50	Point N. End road improvement. Improve landing.

<b>O to P</b>	0+00	Point O. Begin road improvement. Crown road, clean or construct ditchlines.
	3+60	Fall all timber marked with blue paint. Stack merchantable timber outside the road prism. All woody debris, including slash and stumps shall be hauled to waste area. Begin cut slope lay back. End haul surplus material to waste area.
	5+10	Remove existing culvert and install Culvert No. 4 (18" x 50') as disconnect.
	5+50	End cut slope lay back.
	6+20	Fall all timber marked with blue paint. Stack merchantable timber outside the road prism. All woody debris, including slash and stumps shall be hauled to waste area. Begin cut slope lay back. End haul surplus material to waste area.
	7+60	End cut slope lay back.
	8+30	Existing culvert, install marker, clean inlet and outlet.
	14+20	Existing culvert, clean inlet and outlet.
	14+95	Live Stream. Remove existing culvert and install Culvert No. 5 (36" x 60').
	15+20	Fall all timber marked with blue paint. Stack merchantable timber outside the road prism. All woody debris, including slash and stumps shall be hauled to waste area. Begin cut slope lay back. End haul surplus material to waste area.
	15+80	End cut slope lay back.
	16+15	Live Stream. Remove existing culvert and install Culvert No. 6 (24" x 50').
	16+70	Existing culvert, clean inlet and outlet.
	22+10	Existing culvert, install marker, clean inlet and outlet.
	26+00	Waste area on left.
	26+20	Junction on left.
	27+95	Existing culvert, install marker, clean inlet and outlet.
	32+60	Junction on right.
	36+20	Existing culvert, clean inlet and outlet.
	36+60	Junction on right.
	44+75	Existing culvert, install marker, clean inlet and outlet.
	45+00	Junction on left.
	47+15	Existing culvert, install marker, clean inlet and outlet.

	49+90	Existing culvert, clean inlet and outlet.
<b>O to P Continued</b>	53+20	Existing culvert, install marker, clean inlet and outlet.
	58+40	Remove existing culvert and install Culvert No. 7 (18" x 30') as cross drain.
	60+50	Existing culvert, install marker, clean inlet and outlet.
	61+00	Junction with Q to R on right.
	68+70	Existing culvert, clean inlet and outlet.
	70+50	Existing culvert, clean inlet and outlet.
	73+50	Existing culvert, install marker, clean inlet and outlet.
	74+30	Junction on right. Improve 100' to landing.
	77+60	Existing culvert, clean inlet and outlet.
	80+00	Existing culvert, clean inlet and outlet.
	81+15	Junction on right. Improve 100' to landing.
	81+20	Fall all timber marked with blue paint. Stack merchantable timber outside the road prism. All woody debris, including slash and stumps shall be hauled to waste area. Begin cut slope lay back. End haul surplus material to waste area.
	82+60	End cut slope lay back.
	82+70	Existing culvert, clean inlet and outlet.
	87+75	Existing culvert, clean inlet and outlet.
	90+00	Existing culvert, clean inlet and outlet.
	93+00	Construct truck turnaround.
<b>END</b>	94+75	Point P. End road improvement. Improve landing.

<b>Q to R</b>	0+00	Point Q. Begin road improvement. Crown road, clean or construct ditchlines.
	1+00	Construct 3 settling ponds in ditch line of road.
	1+40	Live Stream. Remove existing culvert and install Culvert No. 8 (24" x 40').
	2+00	Construct 3 settling ponds in ditch line of road.
	5+20	Existing culvert, clean inlet and outlet.
	12+50	Construct truck turnaround.
<b>END</b>	13+40	Point R. End road improvement. Improve landing.

<b>Point U</b>	-	Install 20' Forest Gate in accordance with Exhibit H. Place boulders around gate for additional blocking.
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<b>Point V</b>	-	Install 20' Forest Gate in accordance with Exhibit H. Place boulders around gate for additional blocking.
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## EXHIBIT D

### FULL BENCH AND END-HAUL REQUIREMENTS

POINT TO POINT	STA. TO STA.
O to P	3+60 to 5+50
O to P	6+20 to 7+60
O to P	15+20 to 15+80
O to P	81+20 to 82+60

#### 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

- Full: No excavated material remains below the road.
- 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 3 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 Treatment

- Deposit at waste area, spread evenly, compact, and provide adequate drainage.
- Pile woody debris separate from other waste material.
- Mulch and seed all waste areas in accordance with Exhibit I.

EXHIBIT D  
ROCK TABLE

ROAD SEGMENT: A to B				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 110+75				
				Volume (CY) Per		Number of		
Culvert Bedding /Backfill	1½" - 0 Crushed	Culvert No. 1	Varies	Culvert	24	Culverts	1	24
Surfacing Rock	1½" - 0 Crushed	A to B	6"	Station	31	Stations	110.75	3,433
Junction	1½" - 0 Crushed	42+00, 52+90, 93+90. Points C, E, I, M & S.	6"	Junction	12	Junctions	10	120
Turnout	1½" - 0 Crushed	A to B	6"	Turnout	14	Turnouts	7	98
Total Rock for Road Segment:								3,675

ROAD SEGMENT: C to D				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 18+40				
				Volume (CY) Per		Number of		
Surfacing Rock	3" -0 Crushed	C to D	6"	Station	31	Stations	18.4	601
Junction	3" -0 Crushed	Points G & K	6"	Junction	24	Junctions	4	96
Total Rock for Road Segment:								697

ROAD SEGMENT: E to F				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 7+60				
				Volume (CY) Per		Number of		
Roadside Landing	3" -0 Crushed	3+90	6"	Landing	47	Landings	1	47
Total Rock for Road Segment:								47

ROAD SEGMENT: G to H				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 5+90				
				Volume (CY) Per		Number of		
Surfacing Rock	3" -0 Crushed	G to H	6"	Station	31	Stations	5.9	183
Landing	3" -0 Crushed	Point H	6"	Landing	47	Landings	1	47
Total Rock for Road Segment:								230

ROAD SEGMENT: I to J				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 12+90				
				Volume (CY) Per		Number of		
Surfacing Rock	3" -0 Crushed	I to J	6"	Station	31	Stations	12.9	400
Junction	3" -0 Crushed	7+45 & +920	6"	Junction	24	Junctions	2	48
Landing	3" -0 Crushed	Point J	6"	Landing	47	Landings	1	47
Total Rock for Road Segment:								495



ROAD SEGMENT: K to L				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 4+00				
				Volume (CY) Per		Number of		
Surfacing Rock	3" -0 Crushed	K to L	6"	Station	31	Stations	4	124
Landing	3" -0 Crushed	Point L	6"	Landing	47	Landings	1	47
Total Rock for Road Segment:								171

ROAD SEGMENT: M to N				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 12+50				
				Volume (CY) Per		Number of		
Culvert Bedding /Backfill	1½" - 0 Crushed	Culvert No. 2	Varies	Culvert	24	Culverts	1	24
Surfacing Rock	3" -0 Crushed	M to N	6"	Station	31	Stations	12.5	388
Landing	3" -0 Crushed	Point N	6"	Landing	90	Landings	1	90
Total Rock for Road Segment:								502

ROAD SEGMENT: O to P				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 94+75				
				Volume (CY) Per		Number of		
Culvert Bedding /Backfill	1½" - 0 Crushed	Culvert Nos. 4, 5, 6 & 7	Varies	Culvert	24	Culverts	4	96
Surfacing Rock	1½" - 0 Crushed	O to P	6"	Station	31	Stations	94.7	1,421
Junction	1½" - 0 Crushed	26+20, 32+60, 36+60, 45+00, 74+30, 81+15 & Point Q	6"	Junction	12	Junctions	6	72
Turnout	1½" - 0 Crushed	O to P	6"	Turnout	14	Turnouts	2	14
Turnaround	1½" - 0 Crushed	93+00	6"	Turnaround	10	Turnarounds	1	8
Curve Widening	1½" - 0 Crushed	3+60 to 5+50 6+20 to 7+60 15+20 to 15+80 81+20 to 82+60	12"	Station	55	Stations	5.3	293
Approach to Landing	1½" - 0 Crushed	74+30 & 81+15	6"	Station	31	Stations	2	30
50' Landing	1½" - 0 Crushed	74+30, 81+15	6"	Landing	47	Landings	2	50
70' Landing	1½" - 0 Crushed	94+75	6"	Landing	90	Landings	1	45
Total Rock for Road Segment:								2,030

ROAD SEGMENT: Q to R				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 13+40				
				Volume (CY) Per		Number of		
Culvert Bedding /Backfill	1½" - 0 Crushed	Culvert No. 8	Varies	Culvert	24	Culverts	1	24

Surfacing Rock	1½" - 0 Crushed	Q to R	6"	Station	31	Stations	13.4	201
Turnout	1½" - 0 Crushed	Q to R	6"	Turnout	14	Turnouts	1	10
Turnaround	1½" - 0 Crushed	12+50	6"	Turnaround	10	Turnarounds	1	8
Landing	1½" - 0 Crushed	Point R	6"	Landing	90	Landings	1	45
Total Rock for Road Segment:								288

ROAD SEGMENT: S to T				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 2+05				
				Volume (CY) Per		Number of		
Culvert Bedding /Backfill	1½" - 0 Crushed	Culvert No. 3	Varies	Culvert	24	Culverts	1	24
Surfacing Rock	3" -0 Crushed	S to T	12"	Station	65	Stations	2	133
Landing	3" -0 Crushed	Point T	12"	Landing	180	Landings	1	180
Total Rock for Road Segment:								337

Point: U				Point U				TOTAL VOLUME (EA)
Application	Rock Size and Type	Location		Volume (EA) Per		Number of		
				Blockage	6	Boulders	1	
Blocking	24"-36" Boulders	Point U	-	Blockage	6	Boulders	1	6
Total Rock for Point:								6

Point: V				Point				TOTAL VOLUME (EA)
Application	Rock Size and Type	Location		U				
				Volume (EA) Per		Number of		
Blocking	24"-36" Boulders	Point V	-	Blockage	6	Boulders	1	6
Total Rock for Point:								6

STOCKPILE			
Rock Size and Type	Location	Approximate Dimensions	Volume (Stockpile Measurement CY)
Crushed 1½" -0	Rock Creek Ridge Stockpile Site	Base: 95' x 95' Top: 50' x 50' Height: 15'	3,000
Crushed 3" -0	Camp 5 Stockpile Site	Base: 135' x 100' Top: 90' x 55' Height: 15'	5,500

TOTAL ROCK	24"-36" Boulders	3"-0 Crushed	1 ½"-0 Crushed
	12 ea	8,811 cy	7,323 cy

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

## EXHIBIT D

### ROCK ACCOUNTABILITY

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

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

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

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

Stockpile Measurement. Purchaser shall construct stockpiles according to the dimensions determined by STATE and included in the Quarry development plan required by Exhibit F. Dimensions will consist of the length and width of the base, length and width of the top, and height of all four corners. The finished stockpile surface shall be smooth, uniform, and all corners filled in. All stakes and reference points shall be protected until stockpile measurements are accepted by STATE.

## EXHIBIT D

### COMPACTION AND PROCESSING REQUIREMENTS

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

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

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

Subgrade shall be crowned, 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 that require rock surfacing	Vibratory Roller
All road segments that require subgrade reinforcement rock	Vibratory Grid Roller or a combination of Vibratory Roller and Dozer

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	FILL COMPACTION OPTIONS
All road segments	Vibratory Roller, Vibratory Hand-Operated, Backhoe-Mounted Tamper, or Dozer

## 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, 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.

ROAD SEGMENT	CRUSHED ROCK COMPACTION OPTIONS
All road segments requiring crushed rock	Vibratory Roller

### COMPACTION EQUIPMENT OPTIONS

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.

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

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

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. Culverts larger than 36 inches in diameter shall be constructed of corrugated aluminized Type 2 steel. Polyethylene culverts shall be double-walled and meet the requirements of AASHTO M-294-11, Type S, or ASTM F2648.

Joining shall be done with bands of like material and corrugations. Manufacturers' instructions shall be followed for prefabricated pipe assembly. 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.

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

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

Cross Drain Culverts

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

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

Disconnect Culverts

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

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

A bedding of 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 live stream culverts and all culverts on road improvement segments .

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

## EXHIBIT E

### CULVERT SPECIFICATIONS

Minimum height of cover over top of culvert to subgrade when road is to be rocked shall be as follows: 12" for culverts 18" to 36". 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 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 3 feet in diameter at the bottom. The outlet end of any culvert which would allow water to erode embankment soil shall be provided with an energy dissipator, half round, or other approved slope protection device. Construct lead-off ditches away from culvert outlets where the slope gradients restrict the free flow of water.

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

Compaction by tamping utilizing a Vibratory Hand-Operated or Backhoe-Mounted Tamper is required for all stream crossing culverts and culverts on improvement sections.

All culverts scheduled for replacement shall become property of the PURCHASER and be removed from STATE land in the same project period in which replacement occurred. 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 3 feet to the top of the culvert shall be marked by driving steel posts within 6 inches of the downgrade side. Posts shall be painted with a rust-resistant paint and be a minimum of 5 feet long, with the spade driven 2 feet into the ground. Install a culvert marker at each existing culvert that is missing a marker that could be reached by a grader blade.

Settling Ponds 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.

EXHIBIT E  
CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
1	18	30	A to B	92+45
2	18	30	M to N	3+50
3	18	40	S to T	0+00
4	18	50	O to P	5+10
5	36	60	O to P	14+95
6	24	50	O to P	16+15
7	18	30	O to P	58+40
8	24	40	Q to R	1+40

TOTAL LENGTHS BY DIAMETER		
18 INCH	24 INCH	36 INCH
180	90	60



## EXHIBIT F

### ROCK QUARRY DEVELOPMENT AND USE

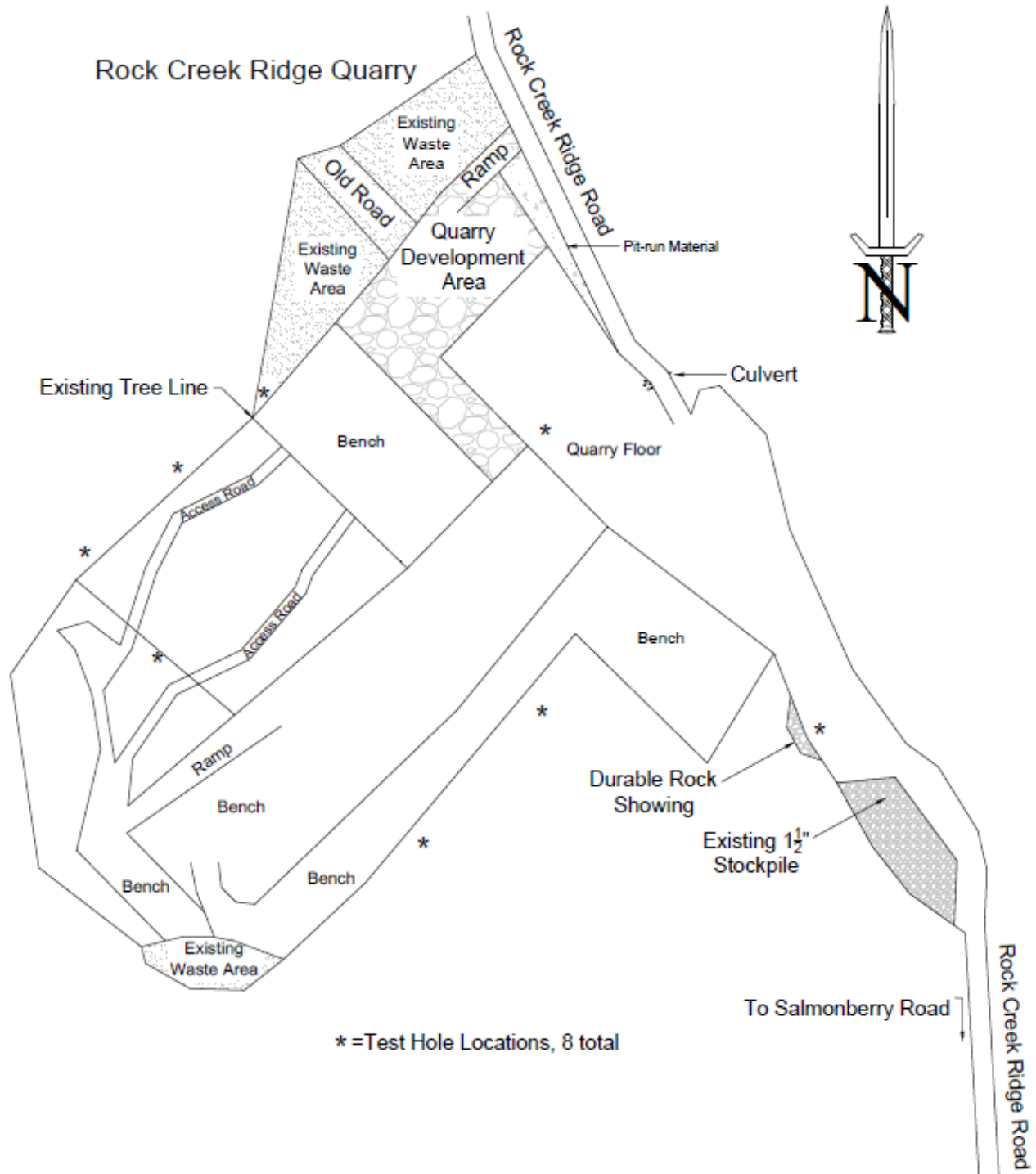
1. PURCHASER shall prepare a written development plan for the quarry area. The plan shall be submitted to STATE for approval prior to conducting any operation in quarry area. The plan shall include, but not be limited to:
  - (a) Location of benches and roads to benches.
  - (b) Disposal site for woody 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 STATE shall be notified 24 hours prior to the beginning of blasting operations. Working days shall be defined as Monday through Friday, 7:00 a.m. to 4:30 p.m.
4. Purchaser shall identify a Blaster in Charge (BIC) for all blasting operations. The BIC will be qualified by experience to oversee all phases of the blasting operations. The BIC shall provide direct supervision at all times when blasting and explosives handling activities are occurring on STATE LANDS.
5. 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. Each shot shall also have a "tattle-tale" end cap so that it is known if all charges were detonated. The CONTRACTOR shall detonate or remove all non-detonated explosives from STATE LANDS. 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.
6. Overburden shall be removed for a distance of 20 feet beyond the developed rock source. All overburden and reject material shall be hauled to the designated waste area as directed by STATE.
7. 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.
8. 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.
9. Quarry face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.
10. Oversized material that is produced shall be piled in a designated area adjacent to the pit. It shall not be wasted.
11. 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 quarry as directed by STATE.

## EXHIBIT F

### 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. Ditches, culverts, waterbars and other direct conveyances of water from the quarry or stockpile sites 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.
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.

EXHIBIT F  
QUARRY DEVELOPMENT AND USE



## EXHIBIT F

### 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. 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:

Hardness - Aggregate Hardness - Test Method AASHTO T 96: 30% Maximum

Durability – Test Method ODOT TM 208

Passing No. 20 Sieve: 30% 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 gradation 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 F

### [DURABLE] CRUSHED ROCK SPECIFICATIONS

#### Grading Requirements

##### For 1½"-0"

Passing	2" sieve	100%
Passing	1½" sieve	90-100%
Passing	¾" sieve	60-90%
Passing	¼" sieve	30-50%
Passing	No. 10 sieve	15-30%
Passing	No. 40 sieve	7-15%

##### For 3"-0"

Passing	4" sieve	100%
Passing	3" sieve	90-100%
Passing	1½" sieve	60-90%
Passing	¾" sieve	40-60%
Passing	¼" sieve	20-40%
Passing	No. 10 sieve	5-20%

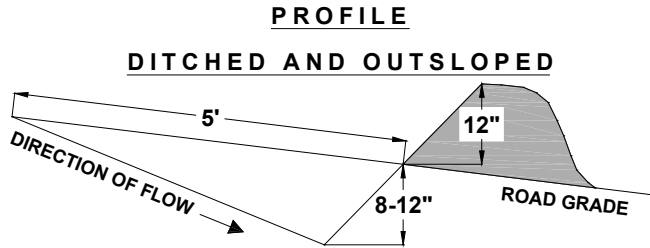
## EXHIBIT F

### QUARRY TEST DRILLING REQUIREMENTS

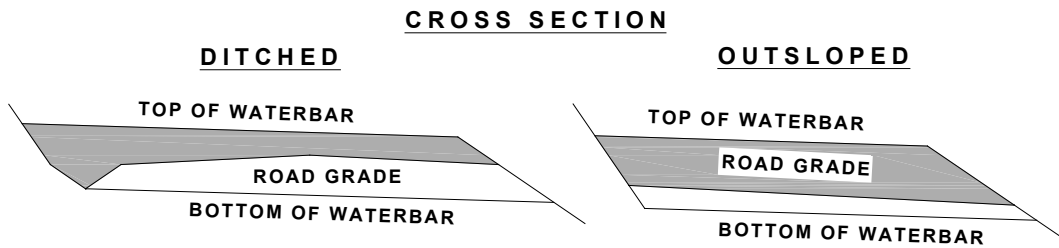
- 1) Notify STATE a minimum of 48 hours prior to beginning any operations. A STATE Representative shall be present during test drilling to monitor results, issue instructions, determine test hole locations and depths. The STATE also will certify hours of operation or acceptance of work when required under contract.
- 2) Work scheduling shall provide for continual operation until contract work is completed, unless interrupted by poor weather, fire closures, or other uncontrollable circumstances, equipment breakdowns shall be repaired without undue delay, and provision shall be made for replacement of equipment to prevent prolonged delays. Testing operations shall not be allowed from November 1 to March 31, or during any other period when operations might damage sites or affect stream flows. Any exception to these instructions must be authorized in writing by STATE.
- 3) The hydraulic rock drill shall be a crawler-type in the 40,000 pound class or greater, with a minimum penetration rate of 120 feet per hour while drilling a 4"-6" bore hole, in overburden, fractured rock and solid rock.
- 4) The operator must be experienced in operating hydraulic rock drills on rock test drilling operations, be able to operate the drill proficiently, and operate in the area as directed by STATE.
- 5) Support including transport, other equipment, replacements, supplies, maintenance, and repairs shall be furnished as required to complete work; and shall be furnished without cost to STATE.
- 6) Test holes shall be drilled to determine mass attitudes of rock strata, rates of drill advancement, depths of overburden and other pertinent information.
- 7) Each test hole shall be staked and assigned an individual number. Test holes shall be drilled for a maximum distance of 40' feet in vertical, horizontal and/or other directions, as directed by STATE.
- 8) STATE may elect to change the test drilling locations at the rock pit sites. However, no more than a total of 8 hours of hydraulic rock drill time will be utilized.
- 9) Access road construction may be required. Access roads shall be constructed by the PURCHASER using a small excavator. All routes and location of access roads shall be flagged and approved by STATE prior to construction. Timber removal shall be minimized and limited to that necessary to access the drill sites.
- 10) Upon completion of test drilling at each site, waterbar and block all excavator and test equipment access roads and reestablish drainage ditches, as directed by STATE.
- 11) Upon completion of test drilling, PURCHASER shall submit a test drill report containing the following information:
  - Date
  - Timber Sale / Contract / Job name
  - Location / Quarry name
  - Elevation of top of test hole
  - Company and drill operators name
  - Test hole numbers
  - GPS coordinates of each test hole in decimal degrees format
  - Hold depth
  - Hole profile with key of terms or abbreviations used
  - Map showing test hole locations with identifications

# EXHIBIT G

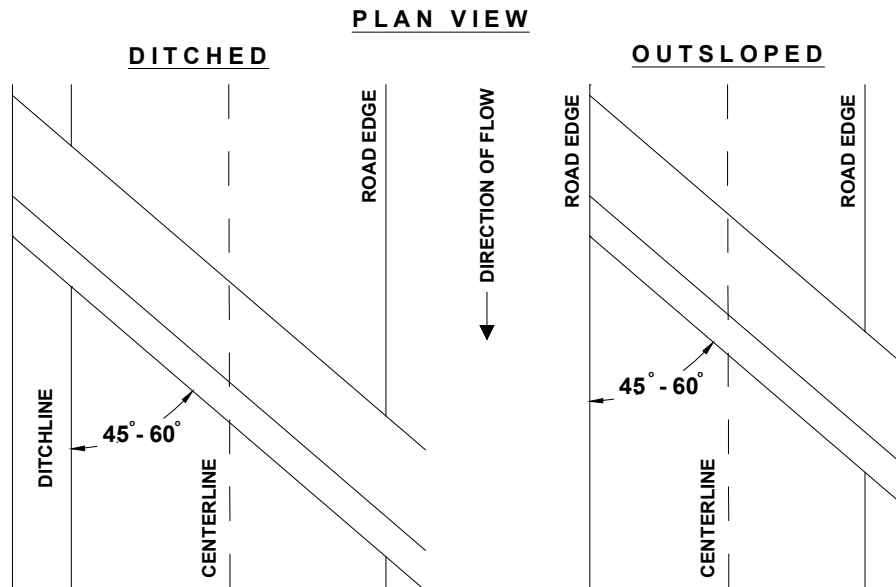
## WATERBAR SPECIFICATIONS



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 H

### FOREST ROAD GATE DESIGN, CONSTRUCTION, AND INSTALLATION

CONTRACTOR shall construct, and install two Forest Gates at Points U and V, as show on Exhibit A, according to the specifications in this Exhibit. Detailed gate plans may be provided by STATE.

#### GATE CONSTRUCTION AND SPECIFICATIONS

The gate shall be constructed to the design provided, with steel components meeting the specification and thicknesses within this Exhibit.

Lock pins and locks shall be provided by STATE.

The Gate Arm and Gate Arm Support and Braces shall be constructed with 3" x 4" x 3/16" rectangular tubing.

Gate Arm for gates at Points U and V shall be 20' long.

The Hinge Post and Lock Bell shall be constructed from 6" Sch 40 B.I.P.

The Latch Posts shall be constructed from 5" Sch 40 B.I.P.

Hinge Rings and Lock Rings shall be constructed from 8" D.O.M seamless 1/2" thick.

Channel Iron shall be 4" x 1 1/2 x 1/4" 6.25lb stock.

All Plates and Caps shall be A-36 flat steel 1/4" thick.

Flat Bar shall be constructed from A-36 flat steel 4" x 1" stock.

Rebar shall be #4, 1/2" in diameter.

All welds and cuts shall be completed prior to installation, except "Lock Rings", "Lock Tongue" and "Gate Arm Adjustment".

Gates shall be painted with a rust resistant primer coat and a topcoat of a rust resistant paint.

Prior to painting, gate and posts shall be cleaned and free of oil, debris and rust scale.

Gates to be installed at Points U and V shall be painted "Safety Yellow".

All gates shall be inspected and approved, in writing, by STATE prior to installation.

#### GATE INSTALLATION AND SPECIFICATIONS

The gate shall be installed to the design provided within this Exhibit.

Gate post location shall be marked on the ground by STATE.

Excavated post holes shall be inspected and approved by STATE before the installation of the posts and placing of the concrete.

All field welds shall be inspected and approved by STATE.

Gates shall be able to swing freely, in both directions, open and latch with ease after the curing of concrete.

A Latch Post shall be installed beside the road in the "Locked Open" direction of the swing on the hinge side of the road, being able to be locked open with the provided pin and lock.

All bare metal, welds, scrapes, cuts or grind marks shall be cleaned and painted to the specifications stated above in this Exhibit.



## FOREST ROAD GATE DESIGN, CONSTRUCTION, AND INSTALLATION



## EXHIBIT I

### SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required seed, fertilizer, and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed and fertilizer to all waste areas, and bare soils resulting from Project Nos. 1, 2 & 4. Apply straw mulch to all bare soils within 100' of streams resulting from Project Nos. 1 & 2 and to all waste areas.

Seeding Seasons. Seeding shall be performed only from March 1 through June 15 and August 15 through October 31. Seeding materials shall not be applied during windy weather or when the ground is excessively wet or frozen. Areas of disturbed soil shall be seeded by the end of the project period in which work was started. PURCHASER shall notify STATE within 24 hours of seeding and fertilizer application.

#### APPLICATION METHODS FOR SEED AND FERTILIZER

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

#### APPLICATION RATES FOR SEED AND FERTILIZER

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

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

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

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

#### APPLICATION RATES FOR MULCH

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

Application Locations:

Road Segment	Location
O to P	Culvert No. 5
O to P	Culvert No. 6
O to P	15+20 to 15+80
O to P	Waste Area 26+00
Q to R	Culvert No. 8

## EXHIBIT J

### SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

#### Description of Work to be Done

Areas designated for work under the contract shall be treated according to the specifications given below:

Clearing - brush, logging Slash, and other debris shall be cleared from planting sites and piled in windrows or piles, so that 80 percent or more of the soil organic layer is exposed. All woody vegetation other than trees is defined as brush in this exhibit.

Piles - shall be located at least 75 feet apart and shall be no more than 75 feet long. Piles shall be located inside the sale area designated for piling and shall be more than 50 feet from any cutting edge, standing tree, or existing road. Logs that do not meet Section 2045 Log Removal requirements, and chunks which are suitable for firewood shall be piled separately from Slash, near roads and Landings and alongside the road in locations designated by STATE.

Protective Measures - shall comply with Oregon Forest Practice Rules issued per ORS 527.610 to 527.992. Examples of protective measures are: (1) waterbarring tractor trails where necessary to prevent runoff toward streams; (2) not windrowing in streams or streamways; and (3) leaving Stream Buffers along designated streams.

Work specifications may be modified or waived only upon written notice from STATE.

## EXHIBIT J

### SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

#### Equipment Type, Equipment Operation, and Conduct of Work

The specifications given below are requirements for equipment type, equipment operation, and conduct of work under the contract.

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

- Log Loader – shovel: Grapple with rake attachment shall be a hydraulically controlled, with a 360-degree continuous rotation, and tooth length on rake arm shall be greater than 14 inches long, unless otherwise approved in writing by STATE.

Equipment	Rate	Acres	Appraised Value
Log Loader	\$200 / acre	10	\$2,000

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

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

Work Scheduling - work shall be accomplished only during dry weather conditions, and started within 14 calendar days after completion of yarding activities on the Timber Sale Area. Operations shall provide for continual operation until contract work is completed, unless interrupted by poor weather, fire closures, or other uncontrollable circumstances. Equipment breakdowns shall be repaired without undue delay, and provision shall be made for replacement of equipment to prevent prolonged delays. Piling operation shall not be allowed when operations might damage sites or affect stream flows. Any exception to these instructions must be authorized in writing by STATE.

STATE Representative - shall provide directions for the conduct of work according to specifications.