PART III: EXHIBITS

OREGON DEPARTMENT OF FORESTRY

TIMBER SALE OPERATIONS PLAN

(See Page 2 for instructions)

Date Received by STATE: _____

(1) Contract No.: 341-15-29

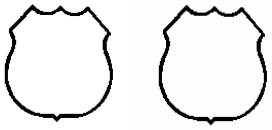
(2) Sale Name: Klaskanine Ridge Combination

(3) Contract Expiration Date: October 31, 2016

Project Completion Dates:
Projects 1, 2, 3, 4 and 5– Prior to October 31, 2015.
Projects 6 and 7 – Prior to September 15, 2016.

(4) Purchaser: _____ _____

(5) State Brand Information (complete):



(6) Purchaser Representatives:

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

(7) State Representatives:

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

(8) Name of Subcontractors & Starting Dates:

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

(9) Comments: _____

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

EXHIBIT B

INSTRUCTION SHEET FOR OPERATIONS PLAN

SUBMIT ONE COPY OF PLAN TO STATE

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

Explanation of Item No. (from Page 1)

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

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

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

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

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

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

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

	Cable Landing, with numbers for sequence.
	Tractor Landing with alphabetical sequence.
_ _ _ _ _	Approximate setting boundary.
- - - - - - - -	Spur truck roads.
	Tractor yarding roads.
X	Temporary stream crossings.

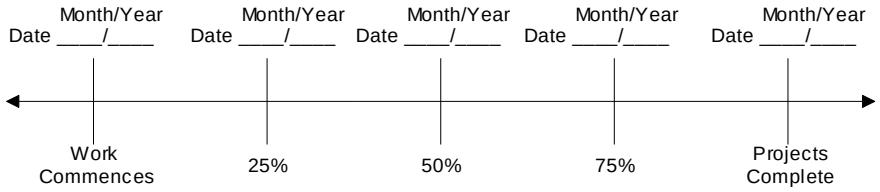
EXHIBIT B

OPERATIONS PLAN

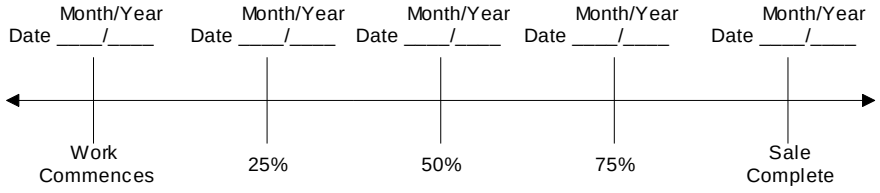
Completion Timeline

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

Projects



Harvest & Other Requirements



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

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

APPROVED: Date: _____

STATE OF OREGON - DEPARTMENT OF FORESTRY

_____

Title _____

SUBMITTED BY:
PURCHASER

_____

Title _____

Original: Salem
cc: District File
Purchaser

EXHIBIT C – SAWMILL GRADE (WESTSIDE SCALE)

SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

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

(3) FROM: Astoria (04) Phone (503) 325-5451
(State Forestry District)
Address 92219 Highway 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

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

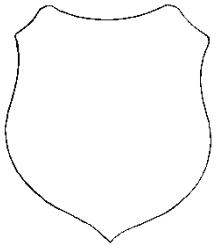
(8) **APPROVED SCALING LOCATIONS** (as shown on the ODF Approved Locations web-site)	Species	Yard	Truck	Weight

(9) SALE NAME: Klaskanine Ridge Combination
COUNTY: Clatsop

(10) STATE CONTRACT NUMBER: 341-15-29

(11) STATE BRAND REGISTRATION NUMBER:
_____

(12) STATE BRAND INFORMATION (COMPLETE):



(13) PAINT REQUIRED: YES ☒
COLOR: Orange

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

(15) **REMARKS** _____

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

(16) SIGNATURES:

_____
Purchaser or Authorized Representative Date

_____
State Forester Representative Date

_____
State Forester Representative PRINT NAME

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

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

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

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

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

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

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

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

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

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

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

(3) State District office, address and phone.

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

(5) Minimum Scaling Specifications.

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

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

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

(9) Enter sale name and county.

(10) Enter sale Contract number.

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

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

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

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

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

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

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

EXHIBIT C – PULP SORT

PROCESSING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

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

(3) FROM: Astoria (04) Phone 503-325-5451
(State Forestry District)

(4) PURCHASER: _____

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

_____
Mailing Address: _____
Phone Number: _____

(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

- Mail to ODF weekly.
- Convert to mbf using 10 tons per mbf.

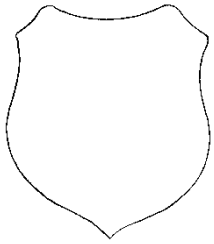
(9) SALE NAME: Klaskanine Ridge Combination

COUNTY: Clatsop

(10) STATE CONTRACT NUMBER: 341-15-29

(11) STATE BRAND REGISTRATION NUMBER _____

(12) STATE BRAND INFORMATION: (COMPLETE BELOW)



(13) PAINT REQUIRED: YES ☒
COLOR: Orange

(14) REMARKS: _____

Operator's Name (Optional inclusion by District):

_____

(15) SIGNATURES:

_____
Purchaser or Authorized Representative Date

_____
State Forester Representative Date

_____
State Forester Representative PRINT NAME

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

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

EXHIBIT C – PULP SORT

INSTRUCTIONS FOR FORM 343-307b (rev. 11/11)

(1) **Must Complete.** Check appropriate box. REVISION NUMBER requires comments in the Remarks Section (13). CANCELLATION requires logging and hauling to be complete, recall branding hammers, date and sign where indicated, write diagonally across page "CANCEL", and send to TPSO.

(2) **Must Complete**. Approved Pulp Processing Facility. Write in as written in the Approved Log Delivery Location http://www.odf.state.or.us/DIVISIONS/management/asset_management/ScalingLocation.asp

(3) **Must Complete.** State Forestry District and District Phone Number.

(4) **Must Complete**. Purchaser's business name as it appears on the Contract.

(5) **Must Complete.** Third Party Scaling Organization that will be processing the weight tickets, mailing address, and phone number.

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

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

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

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

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

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

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

(9) **Must Complete**. Enter sale name and county. If more than one county write in all the counties that the sale is located in.

(10) **Must Complete**. Enter sale Contract number.

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

(12) **Must Complete**. Show brand assigned to timber sale. One brand only. If more than one brand is assigned to the sale: (1) make a separate form for each brand and (2) on each form, explain and show other brand(s) in the Remarks section Item (13).

(13) Use this section to list any special instructions or the reason for any revisions in section item (1).

(14) **Must Complete.** Purchaser required to sign and date completed form in addition to State Forester Representative, sign and print name on the form.

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DRAINAGE
16 feet	12 feet	1A to 1B	0+00 to 4+15	Crowned/Ditch
16 feet	12 feet	1C to 1D	0+00 to 4+50	Crowned/Ditch
16 feet	12 feet	2A to 2B	0+00 to 17+10	Crowned/Ditch
14 feet	12 feet	2C to 2D	0+00 to 6+85	Outsloped
16 feet	12 feet	2E to 2F	0+00 to 18+20	Crowned/Ditch
14 feet	12 feet	2G to 2H	0+00 to 7+90	Outsloped
16 feet	12 feet	2I to 2J	0+00 to 11+05	Crowned/Ditch
16 feet	12 feet	3A to 3B	0+00 to 16+32	Crowned/Ditch
16 feet	12 feet	3C to 3D	0+00 to 10+70	Crowned/Ditch
16 feet	12 feet	3E to 3F	0+00 to 2+30	Crowned/Ditch
16 feet	12 feet	4A to 4B	0+00 to 4+00	Crowned/Ditch
16 feet	12 feet	4C to 4D	0+00 to 10+00	Crowned/Ditch
16 feet	12 feet	I1 to I2	0+00 to154+70	Crowned/Ditch
16 feet	12 feet	I3 to I4	0+00 to 29+45	Crowned/Ditch
16 feet	12 feet	I5 to I6	0+00 to184+50	Crowned/Ditch
16 feet	12 feet	I7 to I8	0+00 to 86+20	Crowned/Ditch
16 feet	12 feet	I9 to I10	0+00 to 51+00	Crowned/Ditch
16 feet	12 feet	I11 to I12	0+00 to 21+10	Crowned/Ditch
16 feet	12 feet	I13 to I14	0+00 to 184+15	Crowned/Ditch

CLEARING. This work shall consist of clearing, removing, and disposing of all trees, Snags, Down Timber, brush, surface objects, and protruding obstructions within the clearing limits.

Where clearing limits have not been marked, the clearing limits shall extend 5 feet back of the top of the cutslope and 5 feet out from the toe of the fill slope, except on Road Segment 3A to 3B where the clearing limits shall extend 10 feet back of the top of the cutslope and 10 feet out from the toe of the fill slope, or as directed by STATE. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing debris shall not be left lodged against standing trees.

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

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

GRUBBING CLASSIFICATION.

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

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

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

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 available at the Astoria District Office.

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

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

Sidecast includes any road generated excess excavation material which is not essential as part of the road prism, is not compacted, and is below the roadway. Sidecast shall not be placed where it will enter a stream course or where material will accumulate in areas deemed a high-risk site by STATE.

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

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

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

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

DRAINAGE

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

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

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

Top of cutslope shall be rounded.

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

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

SEASONAL WINTERIZATION. All unsurfaced roads or unfinished subgrades shall be waterbarred in accordance with the specifications in Exhibit 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. 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. Excess excavated material not used for embankment shall be sidecast on slopes up to 50 percent end hauled or pushed to waste areas as shown on Exhibit A and/or marked in the field.

3. 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.

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

5. Controlled Blasting. 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 material within the road prism.

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 at 4 to 6 percent.

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

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS:

Segment	Station	Work Description:
2E to 2F	1+50	Begin cut slope rounding.
	2+10	End cut slope rounding.
	5+90	Begin end haul.
	6+00	Begin cut slope rounding.
	6+20	End cut slope rounding.
	9+00	End end haul
	9+00	Begin fill widening.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS (CONTINUED):

Segment	Station	Work Description:
2E to 2F (cont.)	9+50	End fill widening.
	13+40	Begin fill widening.
	15+00	End fill widening.
	15+00	Begin end haul
	15+50	End end haul.
2I to 2J	5+46	Begin fill widening.
	7+05	End fill widening.
	7+25	Begin cut slope rounding.
	8+00	End cut slope rounding.
	8+40	Begin fill widening.
	10+06	End fill widening.
3A to 3B	4+40	Begin cut slope rounding.
	5+30	Begin full containment and end haul.
	5+60	Begin curve widening.
	6+90	End curve widening.
	7+80	End cut slope rounding.
	8+00	End full containment.
	9+00	End end haul.
	9+60	Begin fill widening.
	12+00	End fill widening, begin curve widening.
	12+40	End curve widening.

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

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

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. All waste materials shall be hauled to nearby waste areas and shall be uniformly sloped and compacted for drainage. Waste materials shall be seeded and mulched in accordance with specifications in Exhibit M. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit. Crushed rock shall be used for backfilling excavation trenches less than 3 feet deep. STATE may require the use of crushed rock for culvert bedding. Removed culverts shall be hauled off of STATE land.

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 or hauled to designated waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels. Install a culvert marker at each newly installed culvert and at each existing culvert that is missing a marker that could be reached by a grader blade.

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. 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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS (CONTINUED):

9. Subgrade Preparation and Application of Surfacing Rock (continued).

(c) Apply required patching and leveling rock, as directed by STATE.

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

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

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

Segment	Station	Work Description:
I1 to I2	0+00	Point I1 Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize 1½"-0" crushed rock for subgrade leveling.
	0+70	Clean ditchout left.
	16+00	Begin ditch reconstruction and clean out.
	16+75	Subgrade reconstruction: Utilize 20 cubic yards of 24"-6" rip rap, 22 cubic yards of 4"-0" crushed rock, and 11 cubic yards of 1½"-0" crushed rock to repair the subgrade and road surface.
	17+00	End ditch reconstruction and clean out.
	18+35	Install new 18" x 30' CPP ditch disconnect culvert. Utilize 10 cubic yards 1½"-0" crushed rock for culvert bedding and backfill. Install culvert marker. Utilize 11 cubic yards 1½"-0" crushed rock for surface rock replacement. Begin ditch reconstruction and clean out.
	20+50	End ditch reconstruction and clean out.
	21+00	Begin ditch reconstruction and clean out.
	25+00	End ditch reconstruction and clean out.
	44+00	Clean ditchout right.
	82+50	Repair inlet of 24" aluminum stream culvert. Utilize 11 cubic yards 24"-6" riprap rock for culvert outlet dissipator. Install culvert marker.
	88+00	Utilize 11 cubic yards 24"-6" riprap rock for culvert inlet protection. Utilize 11 cubic yards 24"-6" riprap rock for culvert outlet dissipator. Install culvert marker.
	107+00	Begin 2" lift of ¾"-0" crushed rock traction surface.
	109+00	Begin re-construction of turnout left. Utilize 22 cubic yards of 4"-0" crushed rock and 11 cubic yards of 1½"-0" crushed rock.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS (CONTINUED)

Segment	Station	Work Description:
I1 to I2 (cont.)	110+00	End construction of turnout left.
	112+10	Clean ditchout left. Begin ditch reconstruction and clean out.
	114+00	End 2" lift of ¾"-0" crushed rock and begin 2" lift of 1½"-0" crushed rock for traction surface.
	119+35	Clean outlet on existing culvert.
	122+00	Clean outlet on existing culvert.
	127+00	Construct ditchout right for existing culvert.
	131+60	End 2" lift of 1½"-0" crushed rock for traction surface.
	141+50	Begin construction of turnout right. Utilize 22 cubic yards of 4"-0" crushed rock and 11 cubic yards of 1½"-0" crushed rock.
	142+90	End construction of turnout right.
	145+50	End ditch reconstruction and clean out.
I3 to I4	0+00	Point I3 Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize 1½"-0" crushed rock for subgrade leveling. Begin Sod removal.
	8+20	Begin ditch reconstruction and clean out.
	9+77	Replace 18" x 60' CPP stream culvert. Utilize 20 cubic yards 1½"-0" crushed rock for culvert bedding and backfill. Utilize 11 cubic yards 1½"-0" crushed rock for surface rock replacement. Install culvert marker. Reconstruct catch basin.
	11+70	Reconstruct catch basin.
	14+45	Reconstruct catch basin.
	15+22	Reconstruct catch basin and clean culvert inlet.
	16+76	Reconstruct catch basin and clean culvert inlet.
	17+75	Begin construction of turnout right. Utilize 22 cubic yards of 4"-0" crushed rock and 11 cubic yards of 1½"-0" crushed rock.
	19+20	End construction of turnout right.
	21+33	Reconstruct catch basin.
	24+00	End ditch reconstruction and clean out.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS (CONTINUED)

Segment	Station	Work Description:
I3 to I4 (cont.)	24+25	Clean culvert inlet.
I5 to I6	0+00	Point I5 Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize ¾"-0" crushed rock for subgrade leveling.
	24+60	Remove sidecast material off existing fill slope. End haul waste to approved waste area on site. Utilize 44 cubic yards 6"-0" pit-run rock for fill slope improvement and armoring. Begin road centerline realignment.
	26+40	Install new 18" x 40' CPP ditch disconnect culvert. Utilize 11 cubic yards 1½"-0" crushed rock for culvert bedding and backfill. Install culvert marker. Construct ditchout.
	26+80	End road centerline realignment.
	57+50	Remove sidecast material off existing fill slope. End haul waste to approved waste area on site. Utilize 55 cubic yards 6"-0" pit-run rock for fill slope improvement and armoring.
	83+05	Utilize excavator to deepen existing ditchline to new culvert at station 84+60. End haul waste to approved waste area on site. Utilize 11 cubic yards 6"-0" pit-run rock to armor bottom of ditchline.
	84+60	Install new 18" x 30' CPP culvert. Utilize 11 cubic yards 1½"-0" crushed rock for culvert bedding and backfill. Install culvert marker. Construct large inlet catch basin. End haul waste to approved waste area on site. Utilize 11 cubic yards 6"-0" pit-run rock to armor bottom of catch basin.
	128+90	Utilize excavator to reestablish ditchline and improve cut slope. End haul waste to designated waste area on site.
	132+30	Begin 2" lift of ¾"-0" crushed rock traction surface.
	141+40	Begin sod removal.
	145+40	End sod removal. End 2" lift of ¾"-0" crushed rock traction surface.
	151+70	Install culvert marker.
	152+40	Install new 18" x 30' CPP ditch disconnect culvert. Utilize 11 cubic yards 1½"-0" crushed rock for culvert bedding and backfill. Utilize 11 cubic yards 24"-6" riprap rock for culvert outlet dissipator. Install culvert marker.
	158+65	Install new 18" x 30' CPP ditch disconnect culvert. Utilize 11 cubic yards 1½"-0" crushed rock for culvert bedding and backfill. Install culvert marker.
	174+20	Construct ditchout.
	184+50	Point I6, end road improvement.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS (CONTINUED)

Segment	Station	Work Description:
I7 to I8	0+00	Point I7 Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Begin sod removal. Utilize ¾"-0" crushed rock for subgrade leveling.
	12+20	Utilize 11 cubic yards 4"-0" crushed rock for turnout subgrade improvement.
	14+05	Install culvert outlet dissipator. Utilize 11 cubic yards 24"-6" riprap rock.
	48+75	Install 18" x 30' CPP stream disconnect culvert. Utilize 11 cubic yards 1½"-0" crushed rock for culvert bedding and backfill. Utilize 11 cubic yards 24"-6" riprap rock for culvert outlet dissipator. Install culvert marker.
	60+65	Utilize jack to improve outlet of existing culvert.
	86+20	End sod removal. End road improvement.
I9 to I10	0+00	Point I9 Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Begin sod removal. Begin 4" lift of 4"-0" crushed rock. Begin 2" lift of ¾"-0" crushed rock traction surface.
	7+00	Replace existing culvert. Utilize 11 cubic yards 1½"-0" crushed rock for culvert bedding and backfill. Install culvert marker.
	9+50	End 2" lift of ¾"-0" crushed rock traction surface.
	20+60	Begin 2" lift of ¾"-0" crushed rock traction surface.
	22+95	End 2" lift of ¾"-0" crushed rock traction surface.
	25+50	Install culvert outlet dissipator. Utilize 11 cubic yards 24"-6" riprap rock.
	27+80	Begin utilizing excavator to reestablish ditchline and improve cut slope, scatter waste.
	28+60	End utilizing excavator to reestablish ditchline and improve cut slope, scatter waste.
	31+00	Utilize excavator to dig out sediment catch basin. End haul waste to approved waste area.
	32+80	Utilize excavator to reestablish ditchline and improve cut slope, scatter waste.
	34+75	Begin 2" lift of ¾"-0" crushed rock traction surface.
	44+75	End 2" lift of ¾"-0" crushed rock traction surface.
	51+00	Point I10. End road improvement. End sod removal. End 4" lift of 4"-0" crushed rock.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS (CONTINUED)

Segment	Station	Work Description:
I11 to I12	0+00	Point I11 Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Begin sod removal. Begin 4" lift of 4"-0" crushed rock.
	1+30	Utilize excavator to improve existing water use site. End haul waste to approved waste area on site.
	3+80	Install culvert marker.
	6+10	Utilize excavator to construct slopes of existing slide to 1½ :1. End haul waste material to approved waste area on site. Utilize 55 cubic yards 6"-0" pit-run rock for fill slope improvement and armoring.
	6+60	Remove existing culvert. Utilize 44 cubic yards 4"-0" crushed rock for road base reconstruction.
	6+80	Install new 42" x 50' ACSP. Utilize 22 cubic yards 6"-0" pit-run rock and 33 cubic yards 1 ½"-0" crushed rock for culvert bedding and backfill. Utilize 22 cubic yards 24"-6" rip rap rock for culvert outlet dissipator. Install culvert marker.
	7+55	Install new 18" x 30' CPP ditch disconnect culvert. Utilize 11 cubic yards 1½"-0" crushed rock for culvert bedding and backfill. Utilize 11 cubic yards 24"-6" rip rap rock for culvert outlet dissipator. Install culvert marker.
	10+80	Install culvert marker.
	11+30	Remove sidecast material off existing fill slope. End haul waste to approved waste area on site. Utilize 44 cubic yards 6"-0" pit-run rock for fill slope improvement and armoring.
	12+05	Install culvert marker.
	13+40	Construct ditchout.
	14+10	Install culvert marker.
	15+40	Utilize 11 cubic yards 4"-0" crushed rock for turnout subgrade improvement.
	18+40	Install culvert outlet dissipator. Utilize 11 cubic yards 24"-6" rip rap rock. Install culvert marker.
	19+30	Install culvert outlet dissipator. Utilize 11 cubic yards 24"-6" rip rap rock. Install culvert marker.
	20+05	Install culvert marker.
	21+10	Point I12. End road improvement. End sod removal. End 4" lift 4"-0" crushed rock.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS (CONTINUED)

Segment	Station	Work Description:
I13 to I14	0+00	Point I2 Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize 4”-0” and 1½”-0” crushed rock for subgrade leveling.
	20+00	Utilize 11 cubic yards of 4”-0” crushed rock for leveling rock.
	22+50	Utilize 11 cubic yards of 4”-0” crushed rock for leveling rock.
	25+50	Utilize 11 cubic yards of 4”-0” crushed rock for leveling rock.
	29+10	Utilize 11 cubic yards of 4”-0” crushed rock for leveling rock.
	64+30	Utilize 11 cubic yards of 1½”-0” crushed rock for leveling rock.
	71+90	Utilize 11 cubic yards of 1½”-0” crushed rock for leveling rock.
	75+25	Utilize 22 cubic yards of 1½”-0” crushed rock for leveling rock.
	100+25	Utilize 11 cubic yards of 4”-0” crushed rock for leveling rock at junction.
	106+00	Utilize 11 cubic yards of 4”-0” crushed rock for leveling rock.

EXHIBIT D

FULL BENCH AND END-HAUL REQUIREMENTS

POINT TO POINT	STA. TO STA.	CONTAINMENT - SIDECAST
2E to 2F	5+90 to 9+00	1
2E to 2F	15+00 to 15+50	1
3A to 3B	5+30 to 8+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.

Clearing and grubbing debris shall be end-hauled on 3A to 3B between stations 5+30 and 8+00.

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 1 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 3 feet in depth. Sidecast shall not be placed where it will enter a stream course or where material will accumulate in areas deemed a high-risk site by STATE.

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 M.

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT Application	1A-1B Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT 1A-1B Volume (CY) per		Sta. to Sta. 0+00 to 4+15 Number of		TOTAL VOLUME (CY)
Base Rock	6"- 0" pit-run	0+00-4+15	6	station	38	stations	4.15	158
Junctions	6"- 0" pit-run	0+00	10	junction	40	junctions	1	40
Junctions	1½"-0" crushed	0+00	N/A	junction	20	junctions	1	20
Landings	6"- 0" pit-run	4+15	N/A	landing	50	landings	1	50
Total Rock for Road Segment:			1A-1B					268
ROAD SEGMENT Application	1C-1D Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT 1C-1D Volume (CY) per		Sta. to Sta. 0+00 to 4+50 Number of		TOTAL VOLUME (CY)
Base Rock	6"- 0" pit-run	0+00-4+50	6	station	38	stations	4.50	171
Junctions	6"- 0" pit-run	0+00	10	junction	40	junctions	1	40
Junctions	1½"-0" crushed	0+00	N/A	junction	20	junctions	1	20
Landings	6"- 0" pit-run	4+50	N/A	landing	50	landings	1	50
Total Rock for Road Segment:			1C-1D					281
ROAD SEGMENT Application	2A-2B Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT 2A-2B Volume (CY) per		Sta. to Sta. 0+00 to 17+10 Number of		TOTAL VOLUME (CY)
Base Rock	6"- 0" pit-run	0+00-17+10	10	station	63	stations	17.10	1,077
Junctions	6"- 0" pit-run	0+00	10	junction	40	junctions	1	40
Turnouts	6"- 0" pit-run	6+00, 10+70	10	TO	48	TO's	2	96
Turnarounds	6"- 0" pit-run	15+70	10	TA	20	TA's	1	20
Landings	6"- 0" pit-run	11+00, 17+10	N/A	landing	80	landings	2	160
Total Rock for Road Segment:			2A-2B					1,393
ROAD SEGMENT Application	2C-2D Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT 2C-2D Volume (CY) per		Sta. to Sta. 0+00 to 6+85 Number of		TOTAL VOLUME (CY)
Base Rock	6"- 0" pit-run	0+00-0+50	10	station	63	stations	0.50	32
Total Rock for Road Segment:			2C-2D					32
ROAD SEGMENT Application	2E-2F Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT 2E-2F Volume (CY) per		Sta. to Sta. 0+00 to 18+20 Number of		TOTAL VOLUME (CY)
Base Rock	6"- 0" pit-run	0+00-18+20	10	station	63	stations	18.20	1,147
Junctions	6"- 0" pit-run	0+00	10	junction	40	junctions	1	40
Junctions	1½"-0" crushed	0+00	N/A	junction	20	junctions	1	20
Fill Widening (1 ft /side)	6"- 0" pit-run	9+00 to 9+50	10	station	8	stations	0.50	4
Fill Widening (2 ft /side)	6"- 0" pit-run	13+40 to 15+00	10	station	16	stations	1.60	26

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT Application	2E-2F Rock Size and Type	(continued) Location	Depth of Rock (inches)	POINT TO POINT 2E-2F Volume (CY) per		Sta. to Sta. 0+00 to 18+20 Number of		TOTAL VOLUME (CY)
Turnouts	6"- 0" pit-run	1+35 to 2+45, 4+64 to 6+15, 11+40 to 12+60	10	TO	48	TO's	3	144
Turnarounds	6"- 0" pit-run	15+55	10	TA	20	TA's	2	40
Dissipator Rock	24" - 6" riprap	6+60	N/A	culvert	20	culverts	1	20
Landings	6"- 0" pit-run	18+20	N/A	landing	80	landings	1	80
Total Rock for Road Segment:			2E-2F					1,520
ROAD SEGMENT Application	**2G-2H Rock Size and Type**	**Location**	**Depth of Rock (inches)**	**POINT TO POINT 2G-2H Volume (CY) per**		**Sta. to Sta. 0+00 to 7+90 Number of**		**TOTAL VOLUME (CY)**
Base Rock	6"- 0" pit-run	0+00-0+50	10	station	63	stations	0.50	32
Junctions	1½"-0" crushed	0+00	N/A	junction	20	junctions	1	20
Total Rock for Road Segment:			2G-2H					52
ROAD SEGMENT Application	**2I-2J Rock Size and Type**	**Location**	**Depth of Rock (inches)**	**POINT TO POINT 2I-2J Volume (CY) per**		**Sta. to Sta. 0+00 to 11+05 Number of**		**TOTAL VOLUME (CY)**
Base Rock	6"- 0" pit-run	0+00-11+05	10	station	63	stations	11.05	696
Junctions	6"- 0" pit-run	0+00	10	junction	40	junctions	1	40
Junctions	1½"-0" crushed	0+00	N/A	junction	20	junctions	1	20
Fill Widening (1 ft)	6"- 0" pit-run	5+45 to 7+05 8+40 to 10+05	10	station	8	stations	3.25	26
Turnouts	6"- 0" pit-run	1+90 to 3+45	10	TO	48	TO's	1	48
Turnarounds	6"- 0" pit-run	8+55	10	TA	20	TA's	1	20
Landings	6"- 0" pit-run	11+05	N/A	landing	80	landings	1	80
Total Rock for Road Segment:			2I-2J					930
ROAD SEGMENT Application	**3A-3B Rock Size and Type**	**Location**	**Depth of Rock (inches)**	**POINT TO POINT 3A-3B Volume (CY) per**		**Sta. to Sta. 0+00 to 16+32 Number of**		**TOTAL VOLUME (CY)**
Base Rock	6"- 0" pit-run	0+00-16+32	10	station	63	stations	16.32	1,028
Surface Rock	1½"-0" crushed	0+00-16+32	4	station	25	stations	16.32	408
Junctions	6"- 0" pit run	0+00	10	junction	40	junctions	1	40
Junctions	1½"-0" crushed	0+00	N/A	junction	20	junctions	1	20
Curve Widening (3ft)	6"- 0" pit-run	5+60 to 6+90, 12+00 to 12+40	10	station	14	stations	1.70	24
Curve Widening (3ft)	1½"-0" crushed	5+60 to 6+90, 12+00 to 12+40	4	station	5	stations	1.70	9
Fill Widening (2 ft)	6"- 0" pit-run	9+60 to 12+00	10	station	16	stations	2.40	38
Fill Widening (2 ft)	1½"-0" crushed	9+60 to 12+00	4	station	8	stations	2.40	19

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT Application	3A-3B (Continued) Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT 3A-3B Volume (CY) per		Sta. to Sta. 0+00 to 16+32 Number of		TOTAL VOLUME (CY)
Turnouts	6"- 0" pit-run	3+00 to 4+00, 7+95 to 8+95, 12+35 to 13+35	10	TO	30	TO's	3	90
Turnouts	1½"-0" crushed	3+00 to 4+00, 7+95 to 8+95, 12+35 to 13+35	4	TO	11	TO's	3	33
Turnouts	6"- 0" pit-run	15+15 to 16+32	10	TO	48	TO's	1	48
Turnouts	1½"-0" crushed	15+15 to 16+32	4	TO	20	TO's	1	24
Turnarounds	6"- 0" pit-run	8+00	10	TA	20	TA's	1	20
Turnarounds	1½"-0" crushed	8+00	4	TA	10	TA's	1	10
Dissipator Rock	24" - 6" riprap	4+40	N/A	culvert	20	culverts	1	20
Total Rock for Road Segment:			3A-3B					1,831

ROAD SEGMENT Application	3C-3D Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT 3C-3D Volume (CY) per		Sta. to Sta. 0+00 to 10+70 Number of		TOTAL VOLUME (CY)
Base Rock	6"- 0" pit-run	0+00-10+70	10	station	63	stations	10.70	674
Junctions	6"- 0" pit-run	0+00	10	junction	40	junctions	1	40
Junctions	1½"-0" crushed	0+00	N/A	junction	20	junctions	1	20
Turnouts	6"- 0" pit-run	3+00 to 4+00	10	TO	30	TO's	1	30
Turnarounds	6"- 0" pit-run	8+00	10	TA	20	TA's	1	20
Landings	6"- 0" pit-run	10+70	N/A	landing	80	landings	1	80
Total Rock for Road Segment:			3C-3D					864

ROAD SEGMENT Application	3E-3F Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT 3E-3F Volume (CY) per		Sta. to Sta. 0+00 to 2+30 Number of		TOTAL VOLUME (CY)
Base Rock	6"- 0" pit-run	0+00-2+30	10	station	63	stations	2.30	145
Junctions	6"- 0" pit-run	0+00	10	junction	40	junctions	1	40
Junctions	1½"-0" crushed	0+00	N/A	junction	20	junctions	1	20
Landings	6"- 0" pit-run	2+30	N/A	landing	80	landings	1	80
Total Rock for Road Segment:			3E-3F					285

ROAD SEGMENT Application	4A-4B Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT 4A-4B Volume (CY) per		Sta. to Sta. 0+00 to 4+00 Number of		TOTAL VOLUME (CY)
Base Rock	6"- 0" pit-run	0+00-4+00	10	station	63	stations	2.30	145
Landings	6"- 0" pit-run	4+00	N/A	landing	80	landings	1	80
Total Rock for Road Segment:			4A-4B					225

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT Application	4C-4D Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT 4C-4D Volume (CY) per		Sta. to Sta. 0+00 to 10+00 Number of		TOTAL VOLUME (CY)
Base Rock	6"- 0" pit-run	0+00-10+00	10	station	63	stations	10.00	630
Junctions	6"- 0" pit-run	0+00	10	junction	40	junctions	1	40
Turnouts	6"- 0" pit-run	3+20 to 4+20	10	TO	30	TO's	1	30
Turnarounds	6"- 0" pit-run	4+20	10	TA	20	TA's	1	20
Dissipator Rock	24" - 6" riprap	8+10	N/A	culvert	20	culverts	1	20
Landings	6"- 0" pit-run	6+40, 10+00	N/A	landing	80	landings	2	160
Total Rock for Road Segment:			4C-4D					900
ROAD SEGMENT Application	**I1-I2 Rock Size and Type**	**Location**	**Depth of Rock (inches)**	**POINT TO POINT I1-I2 Volume (CY) per**		**Sta. to Sta. 0+00 to 154+70 Number of**		**TOTAL VOLUME (CY)**
Leveling Rock	1½"-0" crushed	0+00 to 154+70	N/A	load	11	loads	30.00	330
Subgrade Rock	4"-0" crushed	16+75	6	repair	22	repairs	1.00	22
Surface Rock	1½"-0" crushed	16+75	4	repair	11	repairs	1.00	11
Surface Traction Rock	¾"-0" crushed	107+00 to 114+00	2	station	13	stations	7.00	91
Surface Traction Rock	1½"-0" crushed	114+00 to 131+60	2	station	13	stations	17.60	229
Junctions	1½"-0" crushed	22+50, 45+25, 64+30, 102+10, 102+40, 107+10, 123+20, 136+60	N/A	junction	20	junctions	9	180
Curve Widening	1½"-0" crushed	6+80 to 62+80, 71+45 to 72.05, 89+50 to 90+50, 99+00 to 100+00	N/A	station	3	stations	3.60	11
Turnouts	4"-0" crushed	109+00 to 110+00 141+50 to 142+90	N/A	TO	22	TO's	2	44
Turnouts	1½"-0" crushed	3+40 to 4+30, 13+25 to14+25, 34+00 to 35+25, 39+00 to 40+00, 54+25 to 55+50, 75+55 to 76+30, 79+10 to 80+20, 85+70 to 86+70, 92+50 to 93+50, 94+50 to 95+60, 109+00 to 110+00 115+75 to 117+00 131+60 to 133+15 141+50 to 142+90 147+20 to 148+40	N/A	TO	11	TO's	15	165
Culvert Bedding	1½"-0" crushed	18+35,	N/A	culvert	10	culverts	1	10
Surface rock at Culvert	1½"-0" crushed	18+35,	N/A	culvert	11	culverts	1	11
Culvert Dissipator Rock	24"-6" riprap	82+50, 88+00	N/A	load	11	loads	3	33
Riprap Rock	24"-6" riprap	16+75	N/A	repair	20	repairs	1	20
Total Rock for Road Segment:			I1-I2					1,157

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT Application	I3-I4 Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT I3-I4 Volume (CY) per		Sta. to Sta. 0+00 to 29+45 Number of		TOTAL VOLUME (CY)
Surface Rock	1½"-0" crushed	0+00 to 29+45	3	station	19	stations	29.45	560
Turnouts	4"-0" crushed	17+75 to 19+20	N/A	TO	22	TO's	1	22
Turnouts	1½"-0" crushed	1+65 to 2+45, 17+75 to 19+20, 22+55 to 23+75	N/a	TO	11	TO's	3	33
Culvert Bedding	1½"-0" crushed	9+77	N/A	culvert	20	culverts	1	20
Surface rock at culvert	1½"-0" crushed	9+77	N/A	culvert	11	culverts	1	11
Total Rock for Road Segment:			I3-I4					646

ROAD SEGMENT Application	I5 to I6 Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT I5 to I6 Volume (CY) per		Sta. to Sta. 0+00 to 184+50 Number of		TOTAL VOLUME (CY)
Subgrade Leveling	¾"-0" crushed	0+00 to 184+50	N/A	load	11	loads	40	440
Turnouts	¾"-0" crushed	8+40, 17+05, 32+80, 55+10, 72+50, 94+50, 114+10, 119+30, 121+40, 125+40, 128+90, 137+70, 139+30, 149+50, 156+40, 170+00, 179+10, 181+90	N/A	TO	11	TOs	18	198
Junctions	¾"-0" crushed	80+60, 132+30, 141+40, 145+40	N/A	junction	11	junctions	4	44
Traction Rock Surfacing	¾"-0" crushed	132+30 to 145+40	2	station	13	stations	13	170
Culvert Bedding/Backfill	1½"-0" crushed	26+40, 84+60, 152+40, 158+65	N/A	culvert	11	culverts	4	44
Fill Improvement/Armoring	6"-0" pit-run	24+60, 57+50	N/A	load	11	loads	9	99
Ditchline Armoring	6"-0" pit-run	83+05	N/A	load	11	loads	1	11
Catchbasin Armoring	6"-0" pit-run	84+60	N/A	load	11	loads	1	11
Culvert Dissipator Rock	24"-6" riprap	152+40	N/A	culvert	11	culverts	1	11
Total Rock for Road Segment:			I5 to I6					1,028

ROAD SEGMENT Application	I7 to I8 Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT I7 to I8 Volume (CY) per		Sta. to Sta. 0+00 to 86+20 Number of		TOTAL VOLUME (CY)
Subgrade Leveling	¾"-0" crushed	0+00 to 86+20	N/A	load	11	loads	25	275
Turnouts	¾"-0" crushed	6+10, 10+50, 12+20, 15+90, 25+40, 28+75, 36+90, 39+30, 51+30, 53+55, 61+35, 68+50, 79+00	N/A	TO	11	TOs	13	143

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT Application	I7 to I8 Rock Size and Type	(continued) Location	Depth of Rock (inches)	POINT TO POINT I7 to I8 Volume (CY) per		Sta. to Sta. 0+00 to 86+20 Number of		TOTAL VOLUME (CY)
Junctions	¾"-0" crushed		N/A	junction	12	junctions	2	24
Culvert Bedding/Backfill	1½"-0" crushed	48+75	N/A	culvert	11	culverts	1	11
Turnout Subgrade Improvement	4"-0" Crushed	12+20	N/A	TO	11	TOs	1	11
Culvert Dissipator Rock	24"-6" Riprap	14+05, 48+75	N/A	culvert	11	culverts	2	22
Total Rock for Road Segment:			I7 to I8					486
ROAD SEGMENT **Application**	**I9 to I10** **Rock Size and Type**	**Location**	**Depth of Rock (inches)**	**POINT TO POINT** I9 to I10 **Volume (CY) per**		**Sta. to Sta.** 0+00 to 51+00 **Number of**		**TOTAL VOLUME (CY)**
Traction Rock Surfacing	¾"-0" crushed	0+00 to 9+50, 20+60 to 22+95, 34+75 to 44+75	2	station	13	stations	22	284
Culvert Bedding/Backfill	1½"-0" crushed	7+00	N/A	culvert	11	culverts	1	11
Subgrade Leveling	4"-0" crushed	0+00 to 51+00	N/A	load	11	loads	6	66
Surfacing	4"-0" crushed	0+00 to 51+00	4	station	25	stations	51	1,275
Turnouts	4"-0" crushed	1+50, 11+15, 20+80, 24+20, 28+20,	4	TO	11	TOs	5	55
Junctions	4"-0" crushed	2+65, 9+50, 14+05, 34+75, 49+40	4	junction	11	junctions	5	55
Culvert Dissipator Rock	24"-6" riprap	25+50	N/A	culvert	11	culverts	1	11
Total Rock for Road Segment:			I9 to I10					1,757
ROAD SEGMENT **Application**	**I11 to I12** **Rock Size and Type**	**Location**	**Depth of Rock (inches)**	**POINT TO POINT** I11 to I12 **Volume (CY) per**		**Sta. to Sta.** 0+00 to 21+10 **Number of**		**TOTAL VOLUME (CY)**
Culvert Bedding/Backfill	1½"-0" crushed	6+80, 7+55	N/A	culvert	11	culverts	2	22
Additional Culvert Bedding/Backfill	1½"-0" crushed	6+80	N/A	load	11	loads	2	22
Subgrade Leveling	4"-0" crushed	0+00 to 21+10	N/A	load	11	loads	5	55
Surfacing	4"-0" crushed	0+00 to 21+10	4	station	25	stations	21	528
Road Surface Reconstruction	4"-0" crushed	6+60	N/A	load	11	loads	2	22
Turnouts	4"-0" crushed	2+45, 9+75, 13+40, 15+40,	4	TO	11	TOs	4	44
Junctions	4"-0" crushed	16+70	4	junction	11	junctions	1	11
Turnout Subgrade Improvement	4"-0" crushed	15+40	N/A	TO	11	TOs	1	11
Fill Improvement/Armoring	6"-0" pit-run	6+10, 11+30	N/A	load	11	loads	9	99
Fill Armoring	6"-0" pit-run	6+80	N/A	load	11	loads	6	66

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT Application	I11 to I12 Rock Size and Type	(continued) Location	Depth of Rock (inches)	POINT TO POINT I11 to I12 Volume (CY) per		Sta. to Sta. 0+00 to 21+10 Number of		TOTAL VOLUME (CY)
Road Base Reconstruction	6"-0" pit-run	6+60	N/A	load	11	loads	4	44
Additional Culvert Bedding/Backfill	6"-0" pit-run	6+80	N/A	load	11	loads	4	44
Culvert Dissipator Rock	24"-6" riprap	6+80, 7+55, 18+40, 19+30	N/A	culvert	11	culverts	4	44
Additional Culvert Dissipator Rock	24"-6" riprap	6+80	N/A	culvert	11	culverts	1	11
Total Rock for Road Segment:			I11 to I12					1,023
ROAD SEGMENT **Application**	**I13-I14** **Rock Size and Type**	**Location**	**Depth of Rock (inches)**	**POINT TO POINT** I13-I14 **Volume (CY) per**		**Sta. to Sta.** 0+00 to 108+60 **Number of**		**TOTAL VOLUME (CY)**
Leveling Rock	1½"-0" crushed	0+00 to 108+60	N/A	load	11	loads	6	66
Leveling Rock	4"-0" crushed	0+00 to 108+60	N/A	load	11	loads	4	44
Total Rock for Road Segment:			I13-I14					110

ROCK TOTALS (CY)	24"-6"	6"-0"	4"-0"	1½"-0"	3/4"-0"
14,786	212	8,231	2,265	2,409	1,669

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 600 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 15th of each month.

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

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

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

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All road segments that require rock surfacing.	1

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

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All road segments.	1, 2, or 3; and 4

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

Rock shall be compacted and processed during the same project period it is spread, unless otherwise approved in writing by STATE.

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

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All road segments requiring crushed rock.	1

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

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
Segments requiring pit-run rock	5, 6, or 7

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) Tampingfoot Compactors. Tampingfoot compactors shall exert a minimum pressure of 250 pounds per square inch on the ground area in contact with the tamping feet. The compactor shall cover a minimum width of 60 inches per pass and weigh a minimum of 16,000 pounds.

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

(5) 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.

(6) Grid Rollers. Pit-run rock shall be processed by grid roller fully equipped with 32,000 pounds or more of ballast weights. Twenty passes shall be made with a grid roller over the entire length and width of the road, unless STATE requires fewer passes. A grader weighing at least 20,000 pounds shall work the pit-run surface during grid rolling so that all pit-run rock comes in contact with the grid roller. Grid rolling shall be performed when the subgrade is dry and firm. Road surface shall be uniformly shaped and graded prior to and during grid rolling.

(7) Dozer. A dozer weighing 40,000 pounds or larger shall be operated over the entire layered road surface to break and compact the rock. All rock shall come in contact with the dozer.

EXHIBIT E

CULVERT SPECIFICATIONS

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

Culverts shall be constructed of corrugated double-walled polyethylene, corrugated aluminized (Type 2) steel, or corrugated galvanized steel.

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

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

Galvanized steel culverts shall meet the requirements of AASHTO M-36-03[1].

Polyethylene culverts shall not be used where required culvert diameter is over 24 inches.

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

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

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

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

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

A bedding of crushed rock, or rock crusher reject as specified shall be placed to provide a wide band of support and to transmit the load from above evenly over the entire length of the culvert for all culverts.

Backfill shall consist of, crushed rock, rock crusher reject, or job-excavated soil free of stumps, limbs, rocks, or other objects which would damage the culvert.

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

EXHIBIT E

CULVERT SPECIFICATIONS

Minimum height of cover over top of culvert to subgrade when road is to be rocked shall be as follows: 12" for culverts 18” to 36” and 18” for culverts 42” to 96” add 6" for roads which will not be rocked. Minimum vertical cover for other designs shall be as specified by STATE.

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

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

The outlet end of any culvert which would allow water to erode embankment soil shall be provided with an energy dissipator. Construct lead-off ditches away from culvert outlets where the slope gradients restrict the free flow of water.

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

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

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

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

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

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

	Steel Culvert	Thickness			Band Widths (")	
Dia.	Gauge	Uncoated	Coated	Band Gauges	Annular	Helical
12-15	16	(0.0598")	(0.064”)	16	7	12
18-24	16	(0.0598")	(0.064”)	16	12	12
30-36	16	(0.0598")	(0.064”)	16	12	12
42	14	(0.0747")	(0.079”)	16	12	12
48	14	(0.0747")	(0.079”)	16	24	24

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	GAUGE	ROAD SEGMENT POINT TO POINT	STATION
1	18	30	CPP		2A to 2B	6+25
2	18	35	CPP		2A to 2B	12+50
3	18	40	CPP		2C to 2D	1+50
4	18	30	CPP		2E to 2F	3+40
5	18	30	CPP		2E to 2F	6+60

EXHIBIT E

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	GAUGE	ROAD SEGMENT POINT TO POINT	STATION
6	18	40	CPP		2E to 2F	9+25
7	18	40	CPP		2E to 2F	14+45
8	18	30	CPP		2I to 2J	1+40
9	18	35	CPP		2I to 2J	6+85
10	18	30	CPP		2I to 2J	14+45
11	18	50	CPP		3A to 3B	0+30
12	18	30	CPP		3A to 3B	4+40
13	18	30	CPP		3A to 3B	9+40
14	18	50	CPP		3A to 3B	11+05
15	18	30	CPP		3A to 3B	13+30
16	18	40	CPP		3A to 3B	16+10
17	18	30	CPP		3C to 3D	6+00
18	18	30	CPP		3E to 3F	1+50
19	18	30	CPP		4C to 4D	1+50
20	18	30	CPP		4C to 4D	8+10
21 *	18	30	CPP		I1 to I2	18+35
22	18	60	CPP		I3 to I4	9+77
23 *	18	40	CPP		I5 to I6	26+40
24	18	30	CPP		I5 to I6	84+60
25 *	18	30	CPP		I5 to I6	152+40
26 *	18	30	CPP		I5 to I6	158+65
27 *	18	30	CPP		I7 to I8	48+75
28	18	40	CPP		I9 to I10	7+00
29	42	50	ACSP	16	I11 to I12	6+80
30 *	18	30	CPP		I11 to I12	7+55

ACSP = Aluminized, CPP = Polyethylene
* = Ditch Disconnect Culvert

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

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

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

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

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

4. All overburden and reject material shall be hauled to the designated waste area as directed by STATE.

5. 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.

6. Marbled Murrelet Management Area Seasonal Restriction: The use of explosives at Elk Mountain Quarry shall not be allowed from April 1 to September 15.

7. At the Elk Mountain Quarry, clear all material within the rock source area identified in the written development plan. All woody debris, including stumps and Slash shall be piled and burned and directed by STATE. PURCHASER shall obtain a FPA Burn Permit prior to debris pile burning for the Elk Mountain Quarry.

8. At the Simmons Ridge Quarry, clear all material within the rock source area identified in the written development plan. All woody debris, including stumps and Slash shall be piled and burned and directed by STATE. PURCHASER shall obtain a FPA Burn Permit prior to debris pile burning for the Elk Mountain Quarry.

9. Controlled blasting techniques shall be utilized for any blasting operations, and shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain as much material as possible within the quarry development area. PURCHASER shall maintain a comprehensive blasting log that contains all pertinent data for all blasting operations. The blasting log shall be submitted to the STATE after the completion of all blasting activity. The blasting log is intended for STATE record keeping purposes only.

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

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

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

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

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

14. 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.

15. Apply seed and mulch to the waste area, as specified in Exhibit M.

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

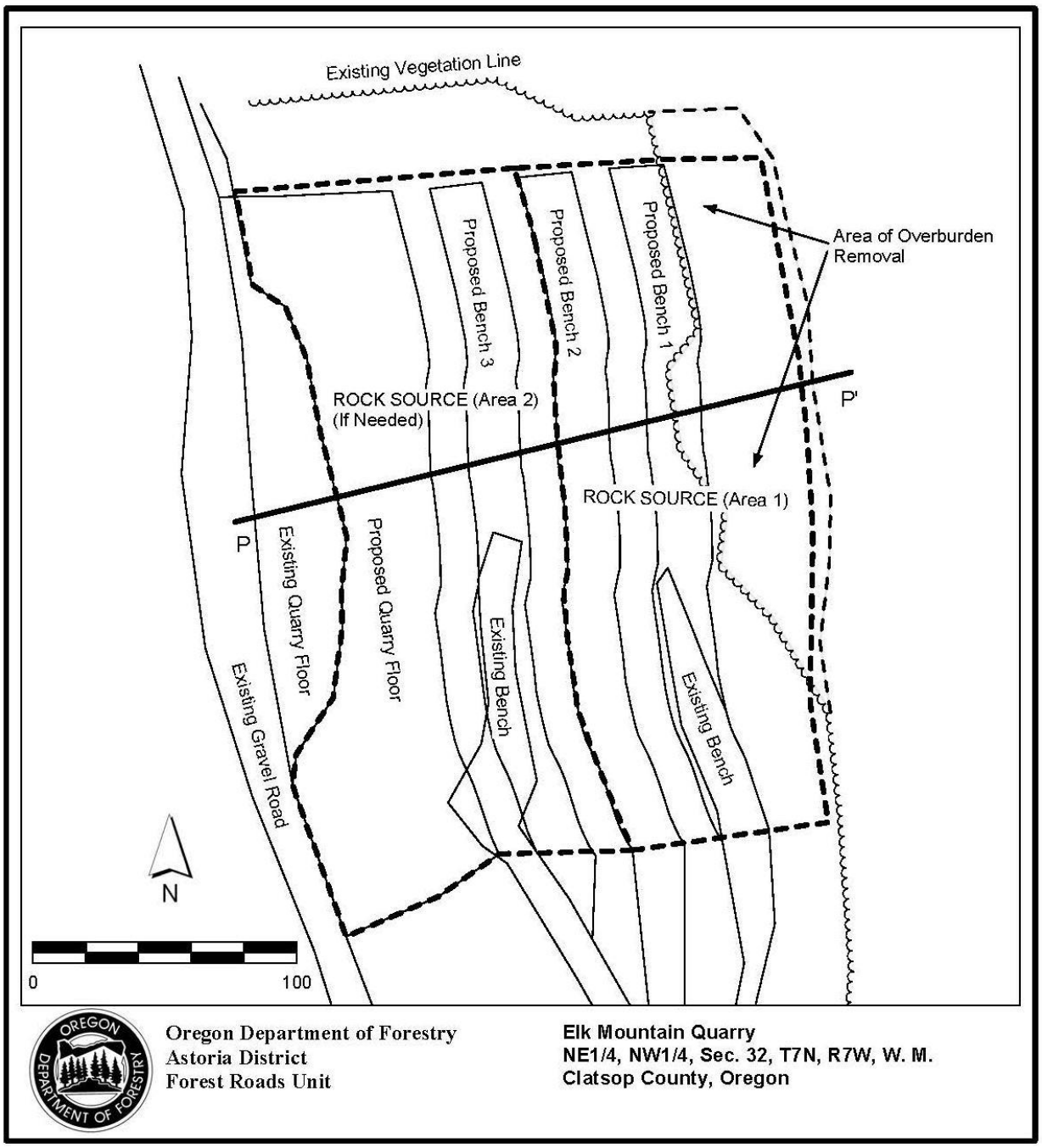


EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

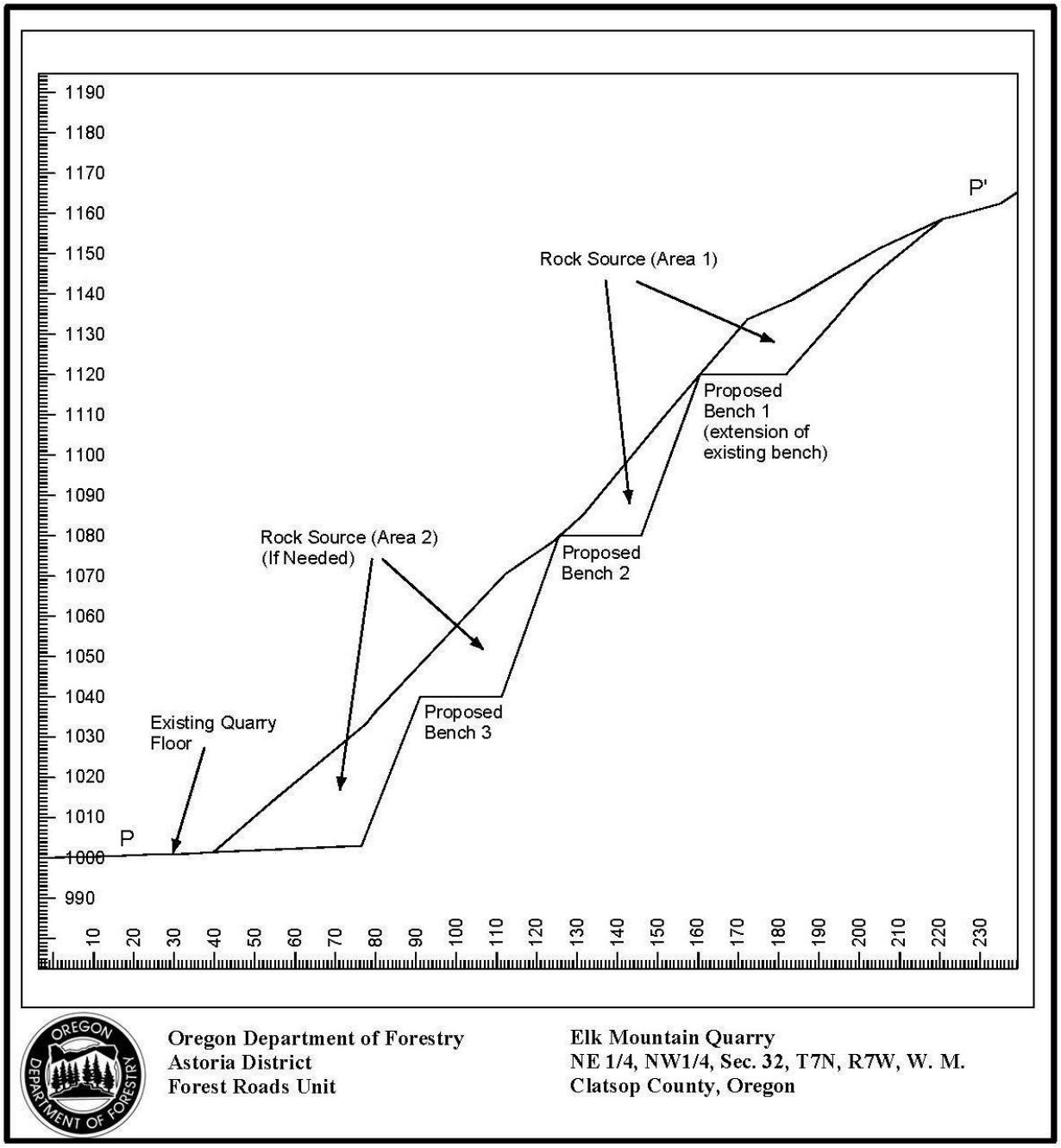


EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

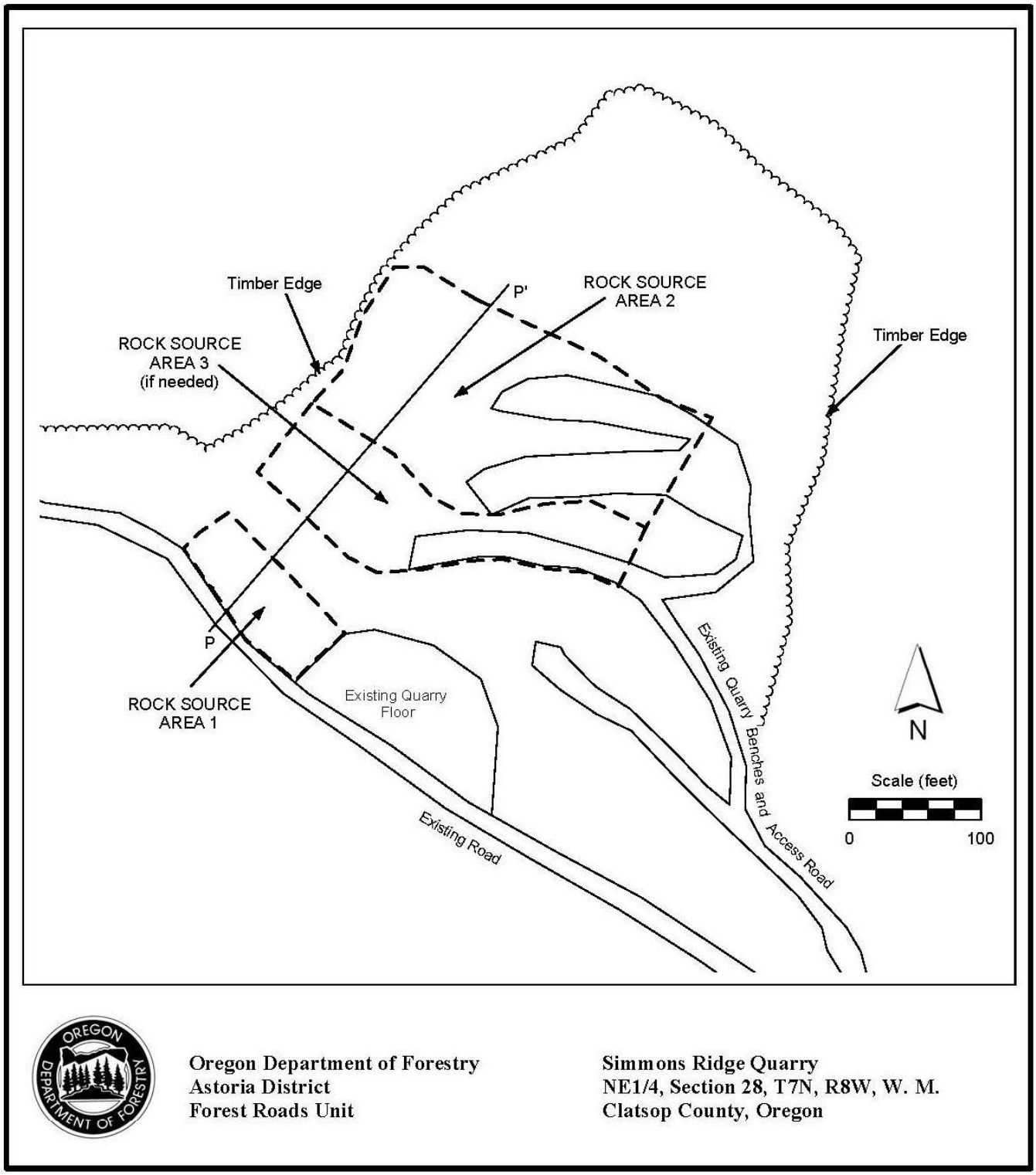


EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

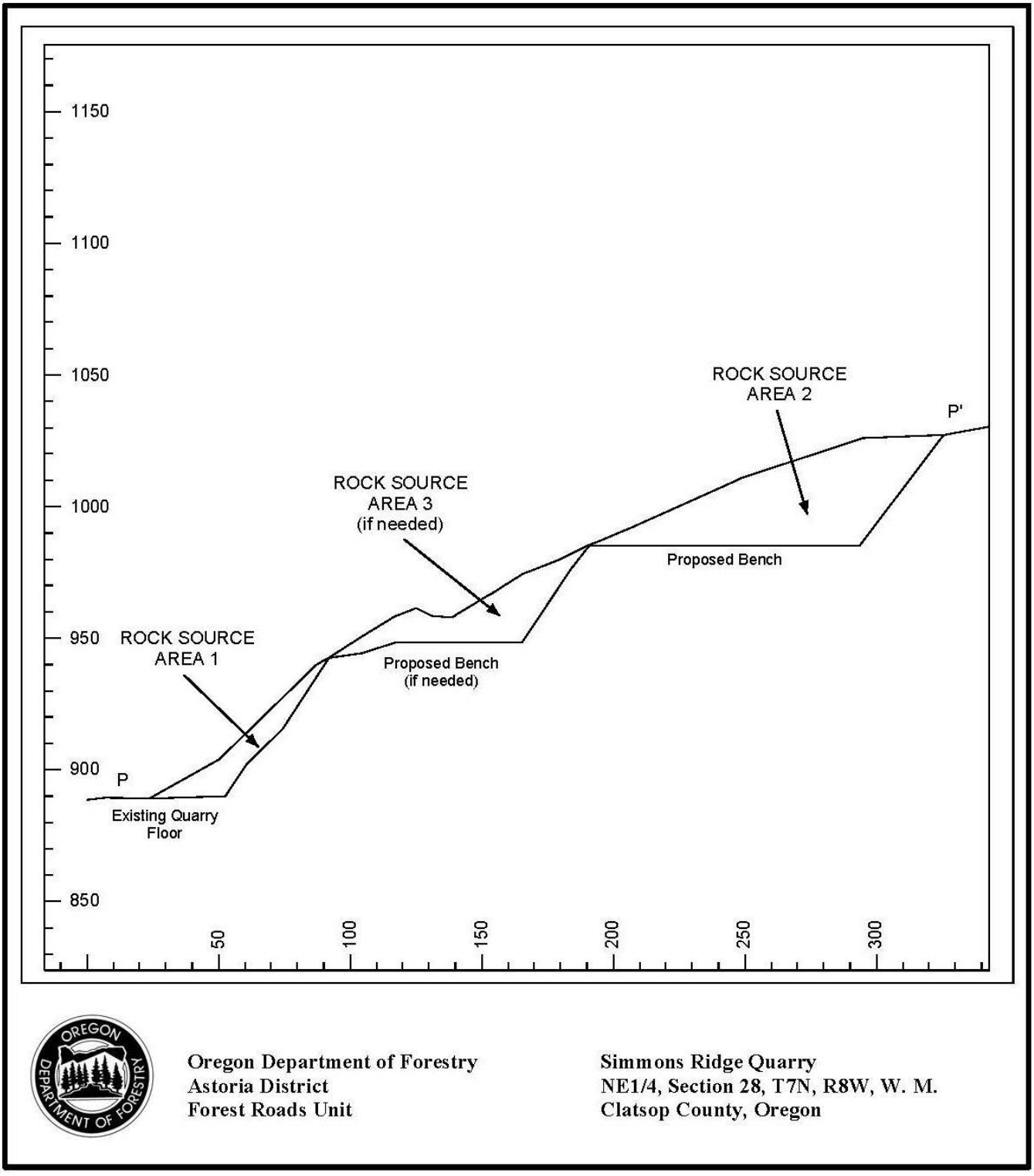


EXHIBIT G

CRUSHED ROCK SPECIFICATIONS

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

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

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

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

The rock crusher shall be calibrated to produce rock as specified in this exhibit. Prior to the commencement of production crushing, PURCHASER shall sample, test, and provide rock test results meeting STATE specifications. STATE may then sample and test crushed rock for approval to proceed. PURCHASER shall take one sample of each 2,000 cubic yards of crushed rock material produced thereafter, using approved AASHTO sampling procedures. PURCHASER shall submit samples to a certified laboratory or shall perform testing for 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 G

CRUSHED ROCK SPECIFICATIONS

Grading Requirements

For 3/4"-0"	Passing	1" sieve	100%
	Passing	3/4" sieve	90-100%
	Passing	3/8" sieve	55-75%
	Passing	1/4" sieve	40-60%
	Passing	No. 10 sieve	20-40%
	Passing	No. 40 sieve	8-16%
For 1½"-0"	Passing	2" sieve	100%
	Passing	1½" sieve	90-100%
	Passing	3/4" sieve	60-90%
	Passing	1/4" sieve	30-50%
	Passing	No. 10 sieve	15-30%
	Passing	No. 40 sieve	7-15%
For 4"-0"	Passing	5" sieve	100%
	Passing	4" sieve	90-100%
	Passing	2" sieve	60-90%
	Passing	3/4" sieve	35-60%
	Passing	1/4" sieve	15-35%
	Passing	No. 10 sieve	0-20%

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

PIT-RUN AND RIPRAP ROCK SPECIFICATIONS

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

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.

State Timber Sale Contract
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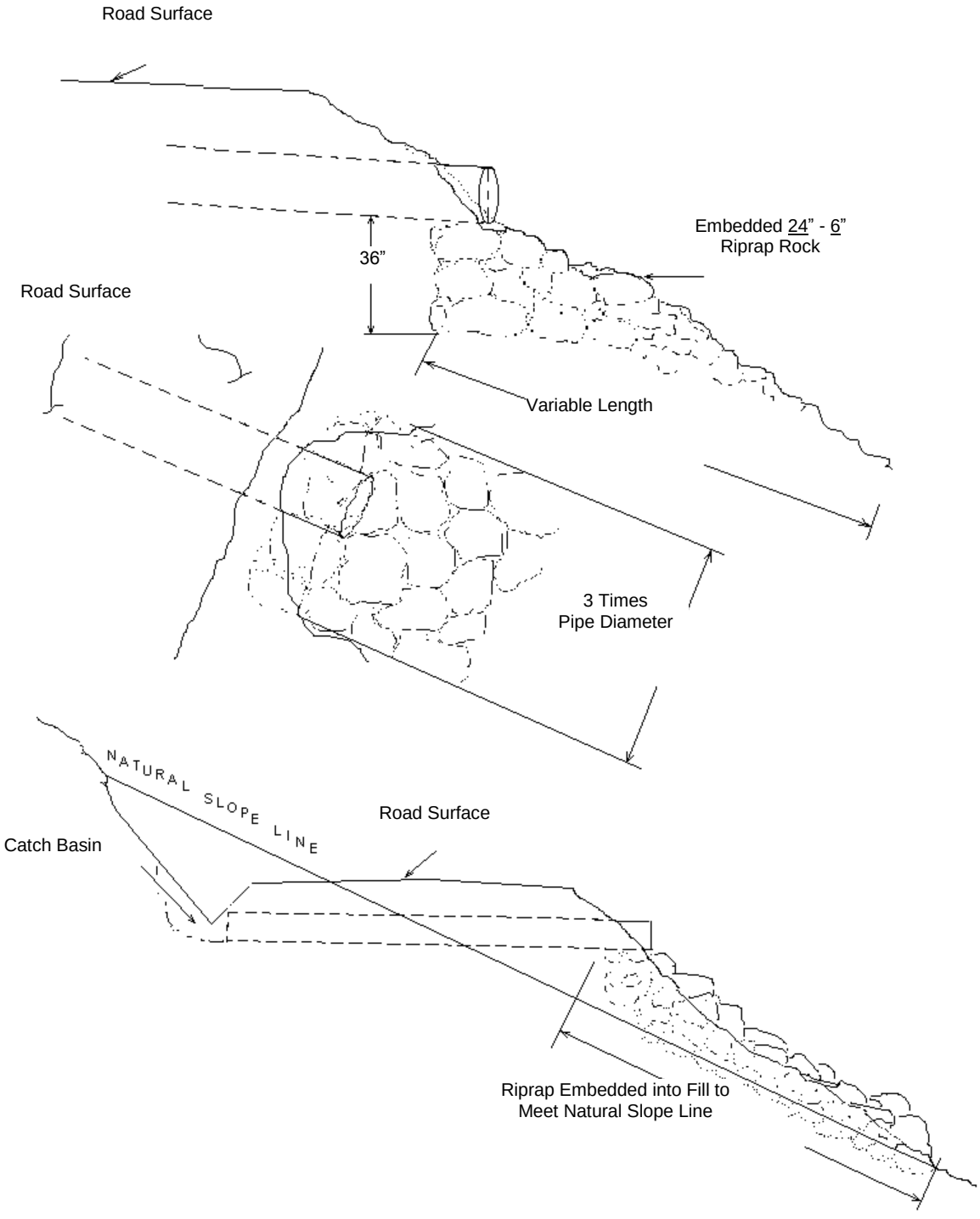
Klaskanine Ridge Combination

EXHIBIT H

TYPICAL EMBEDDED ENERGY DISSIPATOR



State Timber Sale Contract
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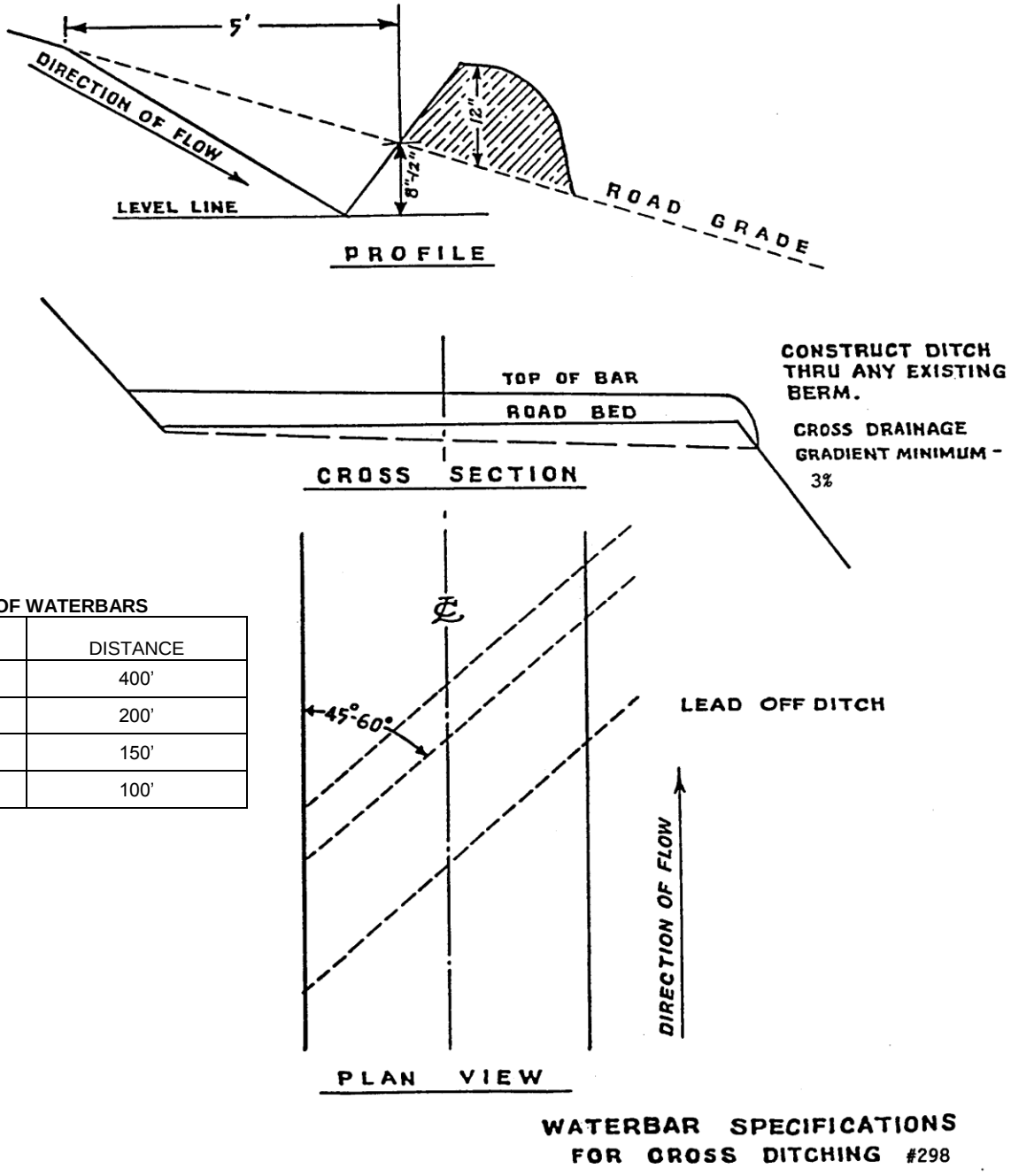
EXHIBIT I

WATERBAR SPECIFICATIONS



SPACING OF WATERBARS

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

EXHIBIT J

ROAD VACATING SPECIFICATIONS

PURCHASER shall vacate at the following Point: V7, and between the following points: V1 to V2, V3 to V4, V5 to V6, V8 to V9, V10 to V11, and V12 to V13. Specific objectives for this project include:

(a) Fill removal and stream channel development.
(b) Culvert removal.
(c) Sidecast pullback from 0+00 to 1+00 on V10 to V11.
(d) 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 levels. Stream channels shall be excavated/developed to specified widths. Developed stream banks shall be sloped at natural contours or no steeper than 1½:1, 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) Sidecast Pullback. Excavate/pullback previously sidecast materials below the road at designated locations. Developed slopes shall be pulled back to a 1½:1 slope or to natural ground contours. The beginning position for sidecast pullback shall be no greater than 20 feet vertical distance from the existing road surface, in accordance with Exhibit J. Sidecast material remaining greater than 20 feet below the road shall be tapered and sloped for drainage.

(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 cutslope to natural contours, or to a minimum 10 percent outsloped surface for drainage. Any excess material will be moved or 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, 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 M. Applied mulch shall be a minimum of 2 inches deep and provide a uniform cover.

(7) 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.

(8) Dry Conditions. All work shall be performed during dry conditions acceptable to STATE.

(9) 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.

EXHIBIT J

ROAD VACATING SPECIFICATIONS

SPECIFIC INSTRUCTIONS/SPECIFICATIONS :

Segment	Station	Work Description
V1 to V2	0+00	Begin fill removal. Develop 6 foot stream channel.
	0+47	Ridge.
	1+10	End fill removal.
V3 to V4	0+00	Begin fill removal. Develop 5 foot stream channel.
	0+35	End fill removal.
V5 to V6	0+00	Begin fill removal. Develop 6 foot stream channel.
	0+78	End fill removal.
V7		Open old Railroad grade and develop a 5 foot channel.
V8 to V9	0+00	Begin fill removal. Develop 6 foot stream channel.
	0+55	End fill removal.
V10 to V11	0+00	Begin sidecast pull back.
	0+90	End side cast pull back. Begin fill removal. Develop 5 foot stream channel.
	1+20	End fill removal.
V12 to V13	0+00	Begin fill removal. Develop 5 foot stream channel.
	0+66	End fill removal.

EXHIBIT J

TYPICAL CROSS SECTION VIEW OF ROAD VACATING SIDECAST PULLBACK

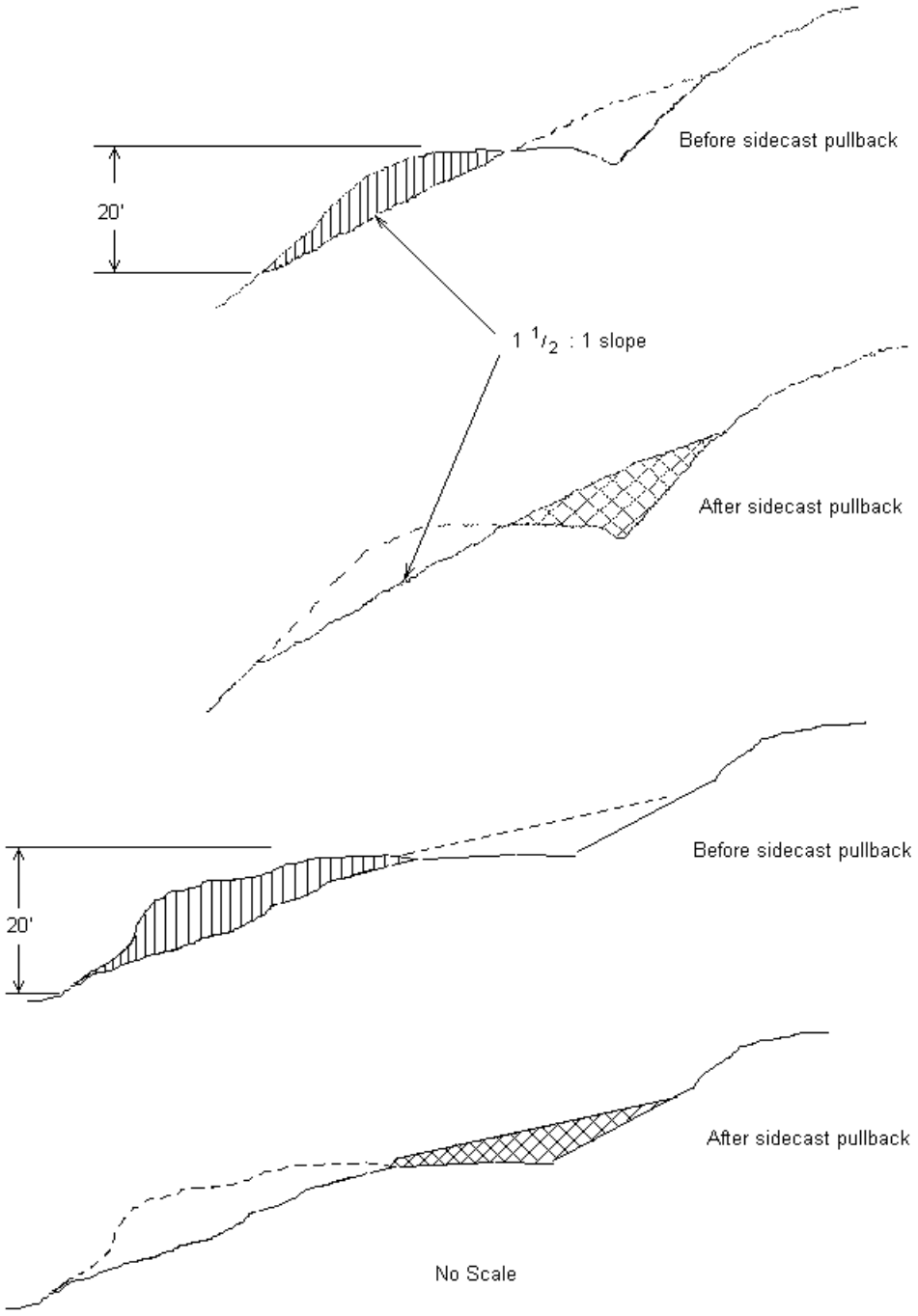


EXHIBIT K

FOREST ROAD GATE DESIGN, CONSTRUCTION, AND INSTALLATION
Hinged Swing Gate

PURCHASER shall design, construct, and install one hinged swing gate at the property line of road segment 3A to 3B, near station 12+60, as directed by STATE.

The project requires site visitation, preliminary design and approval, final design and approval, gate construction (including painting), and installation at the above locations.

PROJECT REQUIREMENTS AND MINIMUM SPECIFICATIONS

(a) Coordinate site visitation, preliminary designs, and final design, construction, and installation of gate with STATE.

(b) Site visitation to determine the direction of swing and width for gate.

(c) A preliminary detailed design proposal shall be submitted to STATE of the proposed gates to be installed and obtain written approval by STATE. STATE is responsible for timely review of preliminary design and giving approval to prepare a final design. The design shall meet the following specifications:

(1) The gate shall be a hinged swing gate. The structure shall have an underground cross-arm and stabilizers.

(2) The gate opening shall be a minimum of 16 feet, and no more than 20 feet. The total structure height shall be a minimum of 8 feet.

(3) The gate shall be constructed with steel component materials as shown on page 2 of this Exhibit, unless approved in writing by STATE. The Stabilizer shall be a minimum of 3 feet in length, extending from the posts; with a total minimum length of 6 feet.

(4) A blocking post shall be installed beside the road in the direction of the swing on the hinge side of the road; and have a three foot chain attached for securing the gate in the open position. The blocking post shall be constructed with a minimum of 6” SCH 40 steel pipe.

(5) The tops of all posts shall have 1/4” caps.

(6) The gate shall utilize a lock box capable of a minimum of two locks. The PURCHASER shall supply a minimum of 2 splitters and one pin. The pin shall be permanently connected to the lock box with chain.

(7) Prior to painting, gate and posts shall be cleaned and free of rust scale. Paint with a rust resistant primer coat and a topcoat of a rust resistant high visibility yellow paint.

(d) The final detailed design shall be submitted to STATE for written approval before construction. STATE is responsible of timely review of the final design and giving approval to proceed with construction.

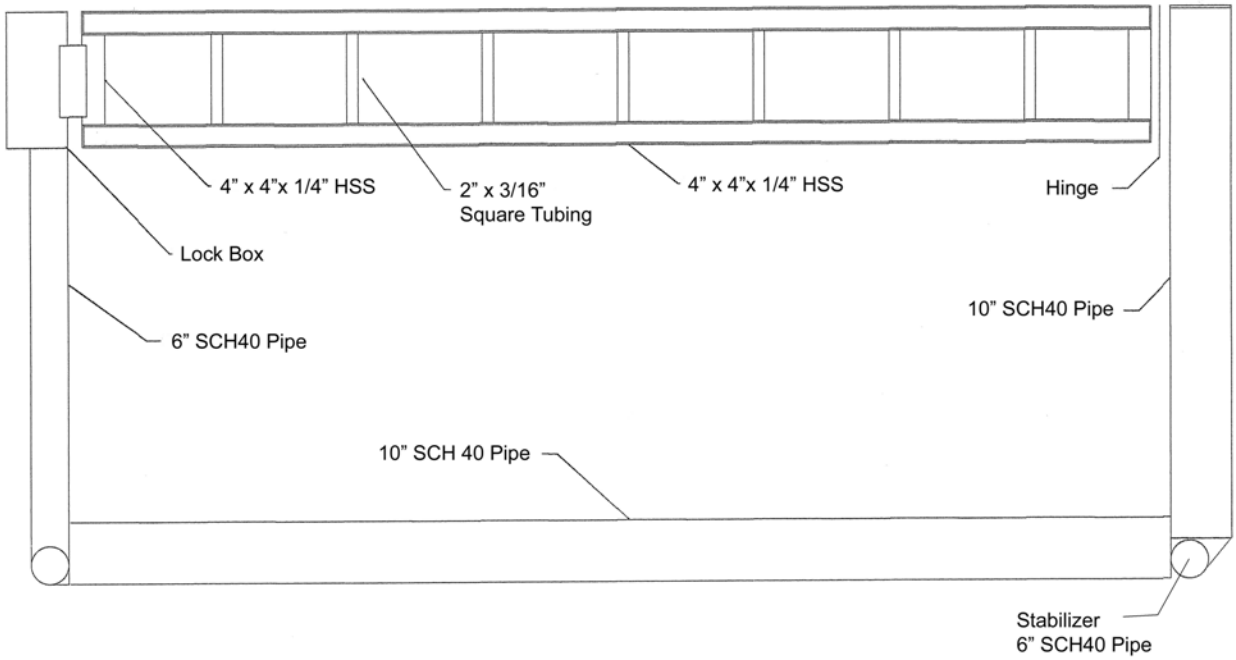
(e) Construct the gate as to the specifications above and to the approved final design.

(f) Install the gate at the proper location and as approved by STATE.

EXHIBIT K

FOREST ROAD GATE DESIGN, CONSTRUCTION, AND INSTALLATION

Hinged Swing Gate Design Example



State Timber Sale Contract
No. 341-15-29
Klaskanine Ridge Combination

EXHIBIT L

STREAM ENHANCEMENT INSTRUCTIONS

General Instructions:

(a) Work shall be conducted only during the in-water working period between July 1 and September 15, 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 will 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, or at other locations acceptable to STATE. 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, 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) Windthrown timber should be set aside during harvest operations and be utilized whenever possible.

(f) 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 to gain access shall be placed in the creek or used to block access trails.

(g) A minimum 1½ cubic-yard, track-mounted excavator shall be used for all placement.

(h) 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, as directed by STATE.

Specific Instructions:

Location	Work Description
SE1 to SE2	PURCHASER shall select 3 sites between SE1 to SE2. Each site will have 4 to 5 key logs at least 50 feet long and 20 inches in diameter with root wads attached (where available) and 4 to 5 additional pieces at least 30 feet long. Sites shall be at least 100 feet apart. Logs shall be placed as directed by STATE.
SE3 to SE4	PURCHASER shall select 6 sites between SE3 to SE4. Each site will have 4 to 5 key logs at least 50 feet long and 20 inches in diameter with root wads attached (where available) and 4 to 5 additional pieces at least 30 feet long. Sites shall be at least 150 feet apart. Logs shall be placed as directed by STATE.

State Timber Sale Contract
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Klaskanine Ridge Combination

EXHIBIT M

SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required seed, and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed, and straw mulch to all waste areas, and bare soils resulting from Project Nos. 1, 2, 3, 4, 6 and 7, and as designated by STATE.

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

APPLICATION METHODS FOR SEED 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 in the amounts and mixtures specified. Hand-operated seeding devices may be used when seed 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%

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:

(a) All waste areas.
(b) All vacate locations.
(c) All cut and fill slopes over 6 feet located on new construction roads.
(d) All road improvement fill replacement sites.

PART IV: OTHER INFORMATION

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

Portions of Section 30, of T7N, R7W, and Portions of Sections 24 and 25 of T7N, R78, W.M., Clatsop County, Oregon.

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

Protected Resources:
1. Middle Fork of the North Fork of the Klaskanine River.
2. Four unnamed tributaries of the Middle Fork of the North Fork of the Klaskanine River.
3. Boyington Creek.
4. An unnamed tributary to the North Fork of the Klaskanine River.

Specific Site Characteristics:
1. Middle Fork of the North Fork of the Klaskanine River (Small, Type F) – This stream flows along the western boundary and through the middle of Area 2 for approximately 2,940 feet, and then along the south boundary of Area 3 for 2,260 feet.

2. Tributary of the Middle Fork of the North Fork of the Klaskanine River (Small, Type F) – This stream flows along the south boundary of Area 2 and the north boundary of Area 1 for approximately 3,900 feet.

3. Tributary of the tributary to the Middle Fork of the North Fork of the Klaskanine River (Small, Type F) – This stream flows northerly into Area 2 for approximately 290 feet.

4. Tributary of the Middle Fork of the North Fork of the Klaskanine River (Small Type F) – This stream flows easterly into Area 2 for approximately 640 feet.

5. Tributary of the Middle Fork of the North Fork of the Klaskanine River (Small, Type F) – This stream flows northerly into Area 3 for approximately 775 feet.

6. Boyington Creek (Small, Type F) – This stream flows part way into Area 1 for approximately 520 feet before it becomes a Type N (non-fish perennial) stream.

7. Tributary to the North Fork of the Klaskanine River (Small, Type F) – This stream flows into the south end of Area 4 for approximately 450 feet before it becomes a Type N (non-fish perennial) stream.

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

All posted Type F buffers along or within all sale areas exceed 100 feet, except on Area 1. Area 1 is a first entry thinning in a Douglas-fir plantation and thinning will occur no closer than 25 feet of the stream to help move the stand toward a desired mature forest condition. If trees need to be felled within FPA defined stream buffers (RMA's) to allow for cable corridors, the trees cut will not be removed. Cable lines may extend over and/or through these buffers.

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

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

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

Submitted: _____ Date: _____
Purchaser/Operator Contract Representative

Original: Salem
cc: Operator, Purchaser, District file, Sunset Unit

State Timber Sale Contract
No. 341-15-29
Klaskanine Ridge Combination

FOREST PRACTICE ACT - "WRITTEN PLAN"

For Project 7, Stream Enhancement
Klaskanine Ridge Combination

Portions of Section 30, of T7N, R7W, and Portions of Sections 24 and 25 of T7N, R78, W.M., Clatsop County, Oregon.

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

Protected Resources:

1. Middle Fork of the North Fork of the Klaskanine River.

ODF and ODF&W Stream Biologists have plans for stream enhancement projects at 11 locations along the streams listed above which covers a distance of approximately 3,640 feet.

Specific Site Characteristics:
The streambeds range from approximately 8 to 10 feet in width, with low to moderate stream-bank slopes where operations will occur. Streamside vegetation is a mix of conifer with some alder, and salmonberry.

Tree and Vegetation Retention:
All logs for stream placement will be taken from the sale areas. Vegetation disturbance in the RMA's will be kept to a minimum. There will not be any harvesting permitted within the RMA.

Practices:
Three stream enhancement structures will be constructed using ground based equipment in segment SE1 – SE2. Two stream enhancement structures will be constructed using ground based equipment, and six stream enhancement structures will be placed using skyline equipment in segment SE3 – SE4.

Each structure will be created by placing eight to ten conifer logs (four or five approximately 20 inches DBH and 50 feet long with root wads attached and four or five tops approximately 30 feet long) in the Type F stream. The logs will be placed with a log loader or excavator or placed by skyline into the stream at locations specified by STATE, and with consultation from ODF&W fisheries staff. STATE shall be notified a minimum of 48 hours prior to beginning work. All conifer logs will be taken from locations within the Timber Sale Area. This work will take place during the instream work period (July 1 – September 15), unless otherwise approved in writing by STATE. No excavation will be conducted during the stream enhancement. The approximate locations are shown on the Exhibit "A."

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

Submitted: _____ Date: _____
Purchaser/Operator Contract Representative

Attachments:
Exhibit "A" page 3 of 3

Original: Salem,
Copies: Operator, Purchaser, District File, Sunset Unit

State Timber Sale Contract
No. 341-15-29
Klaskanine Ridge Combination

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 tee:

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 (2.38mm) 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 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:

Bernie Kepshire, Oregon Department of Fish and Wildlife,
7118 NE Vandenberg Avenue, Corvallis, OR 97330-9446 (541) 757-4186 x 255

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 St. 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: (____) _____

bmk
3/11/99
PUMPCERT.doc

NB: ODFW logo is 129% of logo on HQ mail label

State Timber Sale Contract
No. 341-15-29
Klaskanine Ridge Combination

NOTICE OF TRANSFER OF STATE TIMBER

Instructions **629:-Form-301-010**

Complete Section 1. Mark the box which applies to you/your company in Section 2. Complete Section 3 and obtain signatures.

SECTION 1

On _____, state timber sale purchaser (Transferor)

_____, sold, exchanged or otherwise transferred to

_____, (Transferee) state timber originating from State

Timber Sale Contract No. _____.

Transferee hereby certifies that they:

(a) Will not export the unprocessed state timber which is the subject of this transaction;

(b) Will not sell, transfer, exchange or otherwise convey the unprocessed timber which is the subject of this transaction to any other person without first obtaining a like certification from that person; and

(c) Are not prohibited by OAR's 629-31-005 through 045 from purchasing state timber or logs directly from the State Forester, or this is a sale of Western Red Cedar for domestic processing.

SECTION 2

Have not exported unprocessed timber originating from private lands in Oregon in the last 24 months.

☐ This is a sale of hardwood logs for domestic processing.

☐ This is a sale of Western Red Cedar for domestic processing.

☐ This is a sale of pulp logs or cull logs processed at domestic pulp mills, domestic chip plants or other domestic operations for the purpose of conversion of the logs into chips.

SECTION 3

The parties understand that falsely entering into this certification, or failure to comply with the terms of this certification is a violation of the Forest Conservation and Shortage Relief Act of 1990 and OAR Chapter 629, Division 31, and is subject to any and all penalties contained therein.

Transferor:	Transferee:
_____	_____
Signed	Signed
_____	_____
Title	Title
_____	_____
Dated	Dated

[Note: For the purpose of this form, the definition of unprocessed timber is the same as in OAR 629-31-005]

Mail To: State Forester
2600 State Street
Salem, OR 97310