

PART III: EXHIBITS

State Timber Sale Contract
No. 341-14-32
Thor's Hammer

EXHIBIT B

Page 1 of 3
629-Form 341-203
Revised 06/97

OREGON DEPARTMENT OF FORESTRY

TIMBER SALE OPERATIONS PLAN

(See Page 2 for instructions)

Date Received by STATE: _____

(5) State Brand Information (complete):



(1) Contract No.: 341-14-32

(2) Sale Name: Thor's Hammer

(3) Contract Expiration Date: October 31, 2016

Project Completion Dates: 1, 2, 3, 4(a), 5 October 31, 2014;

(4) Purchaser: _____

4(b) August 15, 2016

(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.



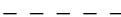



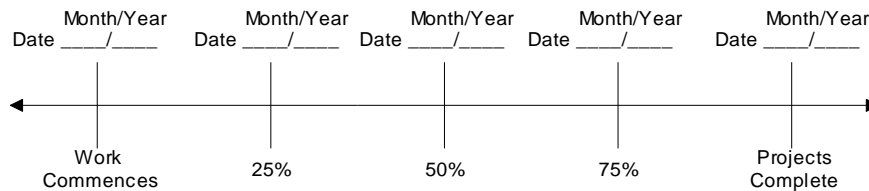
	Cable Landing, with numbers for sequence.
	Tractor Landing with alphabetical sequence.
	Approximate setting boundary.
	Spur truck roads.
	Tractor yarding roads.
	Temporary stream crossings.

EXHIBIT B
OPERATIONS PLAN

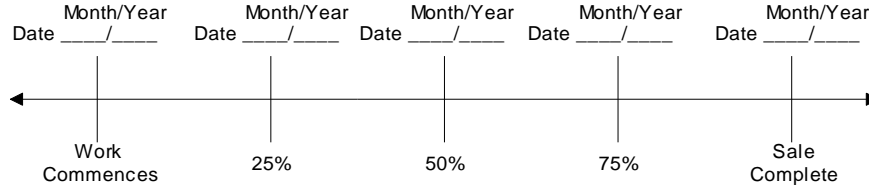
Completion Timeline

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: _____

SUBMITTED BY:
PURCHASER

STATE OF OREGON - DEPARTMENT OF FORESTRY

Title _____

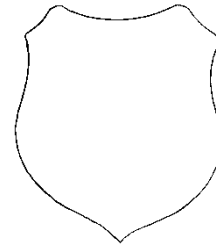
Title _____

Original: Salem
cc: District File
Purchaser

SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

- (9) SALE NAME: Thor's Hammer
COUNTY: Astoria
- (10) STATE CONTRACT NUMBER: 341-14-32
- (11) STATE BRAND REGISTRATION NUMBER:

- (12) STATE BRAND INFORMATION (COMPLETE):



- | (5) MINIMUM SCALING SPECIFICATIONS | |
|------------------------------------|--------------------|
| SPECIES | MINIMUM NET VOLUME |
| Conifers | 10 |
| Hardwoods | 10 |
| | |

		YES	NO
(6)	WESTSIDE SCALE: Use Region 6 actual taper rule. Logs over 40".	<input type="checkbox"/>	<input type="checkbox"/>
(7)	Weight Scale Sample	<input type="checkbox"/>	<input type="checkbox"/>

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

- (15) **REMARKS**_____
- _____
- _____
- _____

(16) SIGNATURES:

State Forester Representative PRINT NAME

[illegible]

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

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

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

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

Pacific Log Scaling & Grading Bureau, Inc.
P.O. Box 23939, Portland, OR 97281
Phone: (503) 684-5599 Fax: (503) 639-4880
Email: PacLogScale@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 <\\WPODFILL01\Transfer\ScalingInstructions> or e-mailed directly to scaling@odf.state.or.us. Scaling instructions for each brand should be scanned separately, for each approved TPSO.

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

EXHIBIT C – PULP SORT

PROCESSING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

COUNTY: Astoria

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

(10) STATE CONTRACT NUMBER: 341-14-32

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

(11) STATE BRAND REGISTRATION NUMBER _____

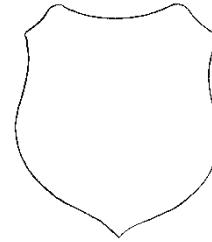
(4) PURCHASER: _____

(12) STATE BRAND INFORMATION: (COMPLETE BELOW)

(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.

(13) REMARKS: _____

(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.

Operator's Name (Optional inclusion by District):

(8) TPSO PROCESSING INSTRUCTIONS

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

(9) SALE NAME: Thor's Hammer

(14) 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

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

Yamhill Log Scaling & Grading Bureau
P.O. Box 709, Forest Grove, OR 97116
Phone: (503) 359-4474 Fax: (503) 359-4476
Email: 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 _____ 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 1+00	Crowned/Ditch
16 feet	12 feet	1C to 1D	0+00 to 2+50	Crowned/Ditch
16 feet	12 feet	2A to 2B	0+00 to 3+80	Crowned/Ditch
16 feet	12 feet	3A to 3B	0+00 to 5+50	Crowned/Ditch
16 feet	12 feet	3C to 3D	0+00 to 4+70	Crowned/Ditch
16 feet	12 feet	I1 to I2	0+00 to 102+00	Crowned/Ditch
16 feet	12 feet	I2 to I3	0+00 to 173+00	Crowned/Ditch
16 feet	12 feet	I4 to I5	0+00 to 78+50	Crowned/Ditch
16 feet	12 feet	I6 to I7	0+00 to 10+00	Crowned/Ditch
16 feet	12 feet	I8 to I9	0+00 to 40+00	Crowned/Ditch
16 feet	12 feet	I10 to I11	0+00 to 13+50	Crowned/Ditch
16 feet	12 feet	I12 to I13	0+00 to 45+70	Crowned/Ditch
16 feet	12 feet	I14 to I15	0+00 to 40+50	Crowned/Ditch

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

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

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

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

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

GRUBBING CLASSIFICATION.

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

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

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

EXCAVATION. Excavation and grading shall not be done when weather and/or ground conditions are such that damage will result to existing subgrade or cause excessive erosion.

Excavation shall conform to STATE-specified lines, grades, dimensions, and plans when provided.

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

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

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

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

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

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

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

DRAINAGE

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

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

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

TURNOUTS. Increase roadbed width an additional 8 feet for both subgrade and surfacing. Length shall be at least 50 feet, or as staked on the ground, plus 25-foot approaches at each end.

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

SLOPES

Solid Rock

Fractured Rock

Soil - side slopes 50% and over

Soil - side slopes less than 50%

Back Slopes

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

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

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

1 :1

Fill Slopes

1½:1

1½:1

Top of cutslope shall be rounded.

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

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

SEASONAL WINTERIZATION. All unsurfaced roads or unfinished subgrades shall be waterbarred in accordance with the specifications in Exhibit L, and blocked from vehicular traffic prior to October 1, annually and as directed by STATE.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

1. Timber Removal. Remove all trees within posted right-of-way boundary as specified in Section 2210, "Designated Timber."
2. Excavated Materials. Excavated materials shall be utilized for road construction. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with this Exhibit. Excess excavated material not used for embankment shall be end hauled or pushed to waste areas as shown on Exhibit A and marked in the field.
3. Drainage Ditches. Construct ditchlines, including ditchouts, as directed by STATE. Cut slopes of ditchlines and ditchouts shall not exceed a 1:1 slope. Construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE.
4. Fill Armor and Energy Dissipator Construction. Where rock is specified for fill armor, rock shall be machine placed and tamped at a 1½:1 slope, beginning at the toe of the fill. Where rock is used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with Exhibit I.
5. Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic-yard, track-mounted excavator.
6. Subgrade Preparation and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, ditchouts, fill construction, and other specified work prior to the application of surfacing rock.
 - (b) Subgrade shall be crowned at 4 to 6 percent.
 - (c) Upon completion of above required work, apply, process, and compact surfacing rock in accordance with specifications in the "Compaction and Processing Requirements" in this Exhibit. Final road surface shall be crowned at 4 to 6 percent.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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. Non-merchantable timber and pulp logs shall be processed and decked in stable locations, as directed by STATE. All slash generated from timber removal shall be removed from the road prism and scattered, or end-hauled to stable locations. Any slash to be piled shall be approved by STATE.
2. Roadside Brushing and Spraying. Conduct roadside brushing and spraying as specified in Exhibit J and K.
3. Sod Removal. Remove sod from the crushed rock road surface. Separate sod from crushed rock surfacing as directed by STATE. Sod may be scattered in stable locations, however, if necessary, the sod shall be loaded and hauled to a designated waste area as directed by STATE.
3. Excavated Materials. Excavated materials shall be utilized for road construction. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with this Exhibit. Excess excavated material not used for embankment shall be end hauled to waste areas as shown on Exhibit A and marked in the field.
4. 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 O.
5. Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include, skewing the culvert and/or installing the culvert at gradients equal to or exceeding the drainage (or ditch) gradient. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. 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 O. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit. Crushed rock shall be used for backfilling excavation trenches less than 3 feet deep. STATE may require the use of crushed rock for culvert bedding. Removed culverts shall be hauled to an approved refuse site off of STATE land.
6. Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Cut slopes of ditchlines and ditchouts shall not exceed a 1:1 slope. Clean out all culvert inlets and outlets for a 10-foot radius. Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels. Install a culvert marker at each newly installed culvert and at each existing culvert that is missing a marker that could be reached by a grader blade.
7. Fill Armor and Energy Dissipator Construction. Where rock is specified for fill armor, rock shall be machine placed and tamped at a 1½:1 slope, beginning at the toe of the fill. Where rock is used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with Exhibit I.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

8. Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic yard, track-mounted excavator.
9. Subgrade Preparation and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, fill reconstruction, ditchouts, and other specified work (except spraying) prior to the application of new surfacing rock.
 - (b) Cut out all potholes and/or washboard sections from the existing surfacing.
 - (c) Apply required patching and leveling rock, as directed by STATE.
 - (d) Process (grade and mix) the existing surface and added base rock. Provide for a crown of 4 to 6 percent, and compact in accordance to the "Compaction and Processing Requirements" in this Exhibit.
 - (e) Upon completion of above required work, apply, process, and compact surfacing rock in accordance to this Exhibit.

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description:</u>
I1 to I2	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Conduct Daylighting as specified in Timber Removal Instructions above. Utilize 1½"-0" stockpile rock for leveling.
	7+50	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill.
	18+50	Begin road base reinforcement and ditch reconstruction. Windrow existing rock surfacing. Install geotextile fabric and begin application of 4"-0" crushed rock. Blend in windrowed rock and utilize 1½"-0" surfacing course upon base rock application. Ditchline shall be reconstructed to drain to existing culvert near station 18+50. End haul excavation to an approved waste area.
	20+90	End road base reinforcement and ditch reconstruction. Install new culvert with dissipator.
	21+90	Waste area right.
	23+10	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill. Utilize 24"-6" riprap to construct dissipator.
	23+70 to 24+50	Utilize excavator to reconstruct ditchlines. Cutslope shall be resloped and excavated material hauled to an approved waste area. Remove trees necessary to construct a 1:1 cutslope.
	33+40	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description:</u>
I1 to I2	43+50	Begin road base reinforcement. Windrow existing rock surfacing. Begin application of 4"-0" crushed rock. Blend in windrowed rock and utilize 1½"-0" surfacing course upon base rock application.
	44+50	End road base reinforcement.
	49+70	Improve ditchout.
	50+00	Begin road base reinforcement. Windrow existing rock surfacing. Begin application of 4"-0" crushed rock. Blend in windrowed rock and utilize 1½"-0" surfacing course upon base rock application.
	51+50	End road base reinforcement.
	58+30	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill. Utilize 24"-6" riprap to construct dissipator.
	73+50	Repair inlet by jacking or cutting open.
	90+00	Begin road base reinforcement. Windrow existing rock surfacing. Begin application of 4"-0" crushed rock. Blend in windrowed rock and utilize 1½"-0" surfacing course upon base rock application.
	92+00	End road base reinforcement.
I2 to I3	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Conduct Daylighting as specified in Timber Removal Instructions above.
	0+00 to 173+00	Windrow existing ¾"-0" and 1½"-0" surfacing course where feasible. Apply 6 inch lift of 4"-0" crushed rock. After processing and compaction of 4"-0" crushed rock, pull back windrowed rock as a surfacing course. Windrowed rock shall be processed and compacted.
	11+60 to 13+60	Utilize excavator to reconstruct ditchlines. Cutslope shall be resloped and excavated material hauled to an approved waste area. Remove trees necessary to construct a 1:1 cutslope.
	39+30	Begin road widening. Widen road 6 feet, plus ditch within the posted right of way limits. Cutslope shall be resloped and excavated material hauled to an approved waste area.
	41+10	End road widening.
	45+20	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill. Utilize 24"-6" riprap to construct dissipator.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description:</u>
I2 to I3	46+90	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill. Utilize 24"-6" riprap to construct dissipator.
	52+55	Replace existing culvert. New culvert shall be installed a minimum of 2 feet deeper than the existing culvert. Reconstruct ditchlines draining into the new culvert.
	54+50	Daylighting is not marked on left side through the timber sale area. Remove alders that overhang the road with timber sale operations.
	58+10	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill.
	66+00	Daylighting is not marked on the right side through the timber sale area. Remove alders that overhang the road with timber sale operations.
	67+45	Deepen ditchline to existing culvert to improve drainage.
	69+40	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill. Utilize 24"-6" riprap to construct dissipator.
	73+80	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill. Utilize 24"-6" riprap to construct dissipator.
	79+00	Armor fill slope utilizing 24"-6" riprap.
	83+50	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill.
	109+50	Armor fill slope utilizing 24"-6" riprap.
	146+70	Install culvert marker.
	165+50	Install culvert marker. Unplug culvert outlet.
	170+10	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill. Utilize 24"-6" riprap to construct dissipator.
	170+70	Improve ditchout. Waste area located forward of ditchout location.
	170+70 to 173+00	Utilize excavator to widen road and ditchline 3 feet on right side of existing thru cut. Cutslope shall be resloped and excavated material hauled to an approved waste area.
I4 to I5	0+00 to 78+50	Conduct light grading and sod removal. Open ditchlines and culverts as necessary for positive drainage. This road segment does not require processing and compaction.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description:</u>
I6 to I7	0+00 to 10+00	Conduct light grading and sod removal. Open ditchlines and culverts as necessary for positive drainage. This road segment does not require processing and compaction.
I8 to I9	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize 4"-0" crushed rock for leveling.
	5+50	Begin 2 inch lift of 1½"-0" stockpile rock.
	19+00	End 2 inch lift of 1½"-0" stockpile rock.
	33+90	Replace existing culvert. Utilize 1½"-0" stockpile rock for bedding and backfill.
	38+25	Install culvert marker.
I10 to I11	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize 4"-0" crushed rock for leveling.
I12 to I13	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize 4"-0" crushed rock for leveling. Begin 3 inch lift of 1½"-0" stockpile rock.
	10+80	Install culvert marker.
	20+20	End 3 inch lift of 1½"-0" stockpile rock.
	34+70	End use of 4"-0" crushed rock for leveling. Begin utilization of 1½"-0" stockpile rock for leveling.
	34+70 to 41+10	Utilize excavator to reconstruct ditchlines. Cutslopes shall be resloped and excavated material hauled to an approved waste area.
I14 to I15	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Begin 6 inch lift of 4"-0" crushed rock and 2 inch lift of 1½"-0" stockpile rock.
	8+30	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill. Utilize 24"-6" riprap to construct dissipator.
	12+30	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill. Utilize 24"-6" riprap to construct dissipator.
	14+40	Begin excavation and end haul of bank slough. End haul material to an approved waste area. Road may be insloped through this section.
	15+60	Armor fill slopes utilizing 24"-6" riprap.
	16+25	End excavation and end haul of bank slough.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description:</u>
I14 to I15	18+60	End 2 inch lift of 1½"-0" stockpile rock.
	19+60	Construct ditch left.
	20+80	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill. Utilize 24"-6" riprap to construct dissipator.
	22+70	Install new culvert. Utilize 1½"-0" stockpile rock for bedding and backfill. Utilize 24"-6" riprap to construct dissipator.
	35+40	Install culvert marker.
	38+00	End 6 inch lift of 4"-0" crushed rock.

EXHIBIT D

FULL BENCH AND END-HAUL REQUIREMENTS

POINT TO POINT	STA. TO STA.	CONTAINMENT - SIDECAST
I1 to I2	18+50 to 20+90	2
I1 to I2	23+70 to 24+50	2
I2 to I3	11+60 to 13+60	2
I2 to I3	39+30 to 41+10	2
I2 to I3	170+70 to 173+00	2
I12 to I13	34+70 to 41+10	2
I14 to I15	14+40 to 16+25	2

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.

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.

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 O.

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: 1A to 1B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A to 1B		0+00 to 1+00		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	1A to 1B	8	Station	50	Stations	1.0	50
Landings	6"-0" Pit-run	1B	N/A	Landing	70	Landings	1	70
Total Rock for Road Segment:			1A to 1B					120
ROAD SEGMENT: 1C to 1D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1C to 1D		0+00 to 2+50		
				Volume (CY) Per		Number Of		
Base Rock	4"-0" Crushed	1C to 1D	8	Station	50	Stations	2.5	125
Surface Rock	1½"-0" Stockpile	0+00 to 1+50	3	Station	50	Stations	1.5	75
Landings	6"-0" Pit-run	1D	N/A	Landing	70	Landings	1	70
Total Rock for Road Segment:			1C to 1D					270
ROAD SEGMENT: 2A to 2B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B		0+00 to 3+80		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	2A to 2B	8	Station	50	Stations	3.8	190
Landings	6"-0" Pit-run	2B	N/A	Landing	70	Landings	1	70
Total Rock for Road Segment:			2A to 2B					260
ROAD SEGMENT: 3A to 3B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	3A to 3B		0+00 to 5+50		
				Volume (CY) Per		Number Of		
Base Rock	4"-0" Crushed	3A to 3B	8	Station	50	Stations	5.5	275
Surface Rock	1½"-0" Stockpile	0+00 to 1+50, 3+90 to 5+50	3	Station	19	Stations	3.1	59
Turnarounds	4"-0" Crushed	5+50	8	TA	11	TAs	1	11
Landings	6"-0" Pit-run	3+90	N/A	Landing	70	Landings	1	70
Total Rock for Road Segment:			3A to 3B					415
ROAD SEGMENT: 3C to 3D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	3C to 3D		0+00 to 4+70		
				Volume (CY) Per		Number Of		
Base Rock	4"-0" Crushed	3C to 3D	8	Station	50	Stations	4.7	235
Turnouts	4"-0" Crushed	1+20	8	Turnout	22	Turnouts	1	22
Surface Rock	1½"-0" Stockpile	3C to 3D	3	Station	19	Stations	4.7	89
Landings	6"-0" Pit-run	3C, 4+00	N/A	Landing	70	Landings	2	140
Total Rock for Road Segment:			3C to 3D					486

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: I1 to I2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	I1 to I2		0+00 to 102+00		
				Volume (CY) Per		Number Of		
Base Rock	4"-0" Crushed	18+50 to 21+00, 43+50 to 44+50, 50+00 to 51+50	6	Station	38	Stations	5.0	190
Leveling Rock	1½"-0" Stockpile		N/A	Load	11	Loads	34	374
Surface Rock	1½"-0" Stockpile		3	Station	19	Stations	5.0	95
Culvert Bedding/Backfill	1½"-0" Stockpile		N/A	Culvert	22	Culverts	5	110
Dissipator	24"-6" Riprap	7+50, 20+90, 23+10, 58+30	N/A	Dissipator	22	Dissipators	4	88
Total Rock for Road Segment:			I1 to I2					857
ROAD SEGMENT: I2 to I3				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	I2 to I3		0+00 to 173+00		
				Volume (CY) Per		Number Of		
Base Rock	4"-0" Crushed	I2 to I3	6	Station	38	Stations	173.0	6,574
Curve Widening	4"-0" Crushed		10	Station	38	Stations	5.0	190
Turnouts	4"-0" Crushed		6	Turnout	22	Turnouts	29	638
Junctions	4"-0" Crushed		6	Junction	11	Junctions	15	165
Culvert Bedding/Backfill	1½"-0" Stockpile		N/A	Culvert	22	Culverts	7	154
Dissipator	24"-6" Riprap	45+20, 46+90, 69+40, 73+80, 170+10	N/A	Dissipator	22	Dissipators	5	110
Fill Armor	24"-6" Riprap	79+00, 109+50	N/A	N/A		N/A		88
Total Rock for Road Segment:			I2 to I3					7,919
ROAD SEGMENT: I8 to I9				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	I8 to I9		0+00 to 40+00		
				Volume (CY) Per		Number Of		
Base Rock	4"-0" Crushed		N/A	Load	11	Loads	11	121
Surface Rock	1½"-0" Stockpile	5+50 to 19+00	2	Station	13	Stations	14	176
Turnouts	1½"-0" Stockpile	14+50	2	Turnout	11	Turnouts	1	11
Culvert Bedding/Backfill	1½"-0" Stockpile		N/A	Culvert	22	Culverts	1	22
Total Rock for Road Segment:			I8 to I9					330
ROAD SEGMENT: I10 to I11				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	I10 to I11		0+00 to 13+50		
				Volume (CY) Per		Number Of		
Leveling Rock	4"-0" Crushed		N/A	Load	11	Loads	9	99
Total Rock for Road Segment:			I10 to I11					99

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: I12 to I13				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	I12 to I13		0+00 to 45+70		
				Volume (CY) Per		Number Of		
Leveling Rock	4"-0" Crushed	0+00 to 34+70	N/A	Load	11	Loads	10	110
Leveling Rock	1½"-0" Stockpile	34+70 to 45+70	N/A	Load	11	Loads	5	55
Surface Rock	1½"-0" Stockpile	0+00 to 20+20	3	Station	19	Stations	20.2	384
Turnouts	1½"-0" Stockpile	2+80, 6+50, 15+40, 19+20	3	Turnout	11	Turnouts	4	44
Junctions	1½"-0" Stockpile	4+00, 10+80, 11+80, 20+20, 45+65	3	Junction	11	Junctions	5	55
Total Rock for Road Segment:			I12 to I13					648
ROAD SEGMENT: I14 to I15				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	I14 to I15		0+00 to 40+50		
				Volume (CY) Per		Number Of		
Base Rock	4"-0" Crushed	0+00 to 38+00	6	Station	38	Stations	38.0	1,444
Turnouts	4"-0" Crushed	6+00, 13+32, 14+40, 19+60, 24+50, 34+00	6	Turnout	22	Turnouts	6	132
Surface Rock	1½"-0" Stockpile	0+00 to 18+60	2	Stations	13	Stations	19	242
Culvert Bedding/Backfill	1½"-0" Stockpile		N/A	Culvert	22	Culverts	4	88
Dissipator	24"-6" Riprap	12+30, 20+80, 22+70, 8+30	N/A	Dissipator	22	Dissipators	4	88
Fill Armor	24"-6" Riprap		N/A	N/A		N/A		66
Total Rock for Road Segment:			to					2,060

ROCK TOTALS (CY)	24"-6" Riprap	6"-0" Pit-run	4"-0" Crushed	1½"-0" Stockpile	TOTAL
	440	420	10,571	2,033	13,464

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

EXHIBIT D

ROCK ACCOUNTABILITY

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

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

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

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

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

Load Records. Notify STATE before spreading the rock and maintain a record of all rock delivered for spreading. Make the record available for STATE inspection. A report listing the amount of rock delivered the prior month must be submitted no later than the 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, 3, or 4

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

Crushed Rock. The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of crushed rock shall be moistened or dried to uniform moisture content suitable for maximum compaction and compacted in layers not to exceed 6 inches in depth. When more than 1 layer is required, each shall be shaped and compacted 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.

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.

EXHIBIT D

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.

EXHIBIT E
CULVERT SPECIFICATIONS

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

Culverts shall be constructed of corrugated double-walled polyethylene.

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

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

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

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

A bedding of crushed rock as specified shall be placed to provide a wide band of support and to transmit the load from above evenly over the entire length of the culvert for culverts on road improvement segments.

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

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

Minimum height of cover over top of culvert to subgrade when road is to be rockered shall be as follows: 12" for culverts 18" to 36" and 18" for culverts 42" to 96". 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 intake end of relief culverts shall be provided with a sediment catching basin 3 feet in diameter at the bottom. The outlet end of any culvert which would allow water to erode embankment soil shall be provided with an energy dissipator, half round, or other approved slope protection device. Construct lead-off ditches away from culvert outlets where the slope gradients restrict the free flow of water.

EXHIBIT E
CULVERT SPECIFICATIONS

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

EXHIBIT E
CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
1*	18	30	CPP	I1 to I2	7+50
2	18	30	CPP	I1 to I2	20+90
3	18	30	CPP	I1 to I2	23+10
4	18	30	CPP	I1 to I2	33+40
5	18	30	CPP	I1 to I2	58+30
6	18	30	CPP	I2 to I3	45+20
7	18	30	CPP	I2 to I3	46+90
8	18	30	CPP	I2 to I3	52+55
9	18	30	CPP	I2 to I3	58+10
10	18	30	CPP	I2 to I3	69+40
11	18	30	CPP	I2 to I3	73+80
12	18	30	CPP	I2 to I3	83+50
13	18	40	CPP	I2 to I3	170+10
14	18	30	CPP	I8 to I9	33+90
15	18	30	CPP	I14 to I15	8+30
16	18	40	CPP	I14 to I15	12+30
17*	18	40	CPP	I14 to I15	20+80
18*	18	40	CPP	I14 to I15	22+70

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. At the Green Mountain No. 2 Quarry, fall all timber within the posted right-of-way boundary and remove all merchantable timber. All woody debris, including stumps and Slash shall be hauled to the designated disposal areas, piled and disposed of by burning as directed by STATE.
7. Construct a new bench along the top of the quarry a minimum of 20 feet in width. The new bench shall extend off of the top existing bench in the quarry. The bench shall be cleared, stripped, and overburden removed and hauled to the designated waste area.
8. PURCHASER shall obtain a FPA Burn Permit prior to debris disposal for the Green Mountain No. 2 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.
12. Oversized material that is produced or encountered during development shall be broken down and utilized for crushing.

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

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.

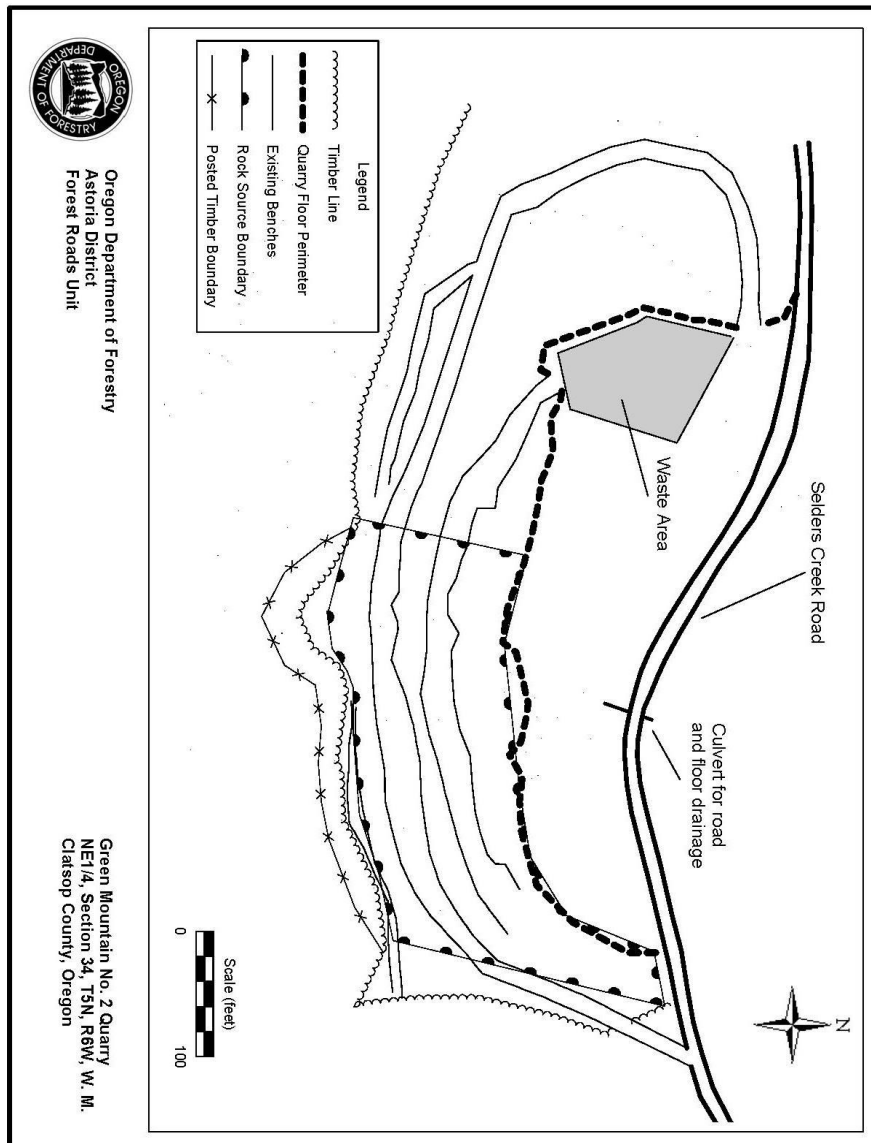


EXHIBIT F
ROCK QUARRY DEVELOPMENT AND USE

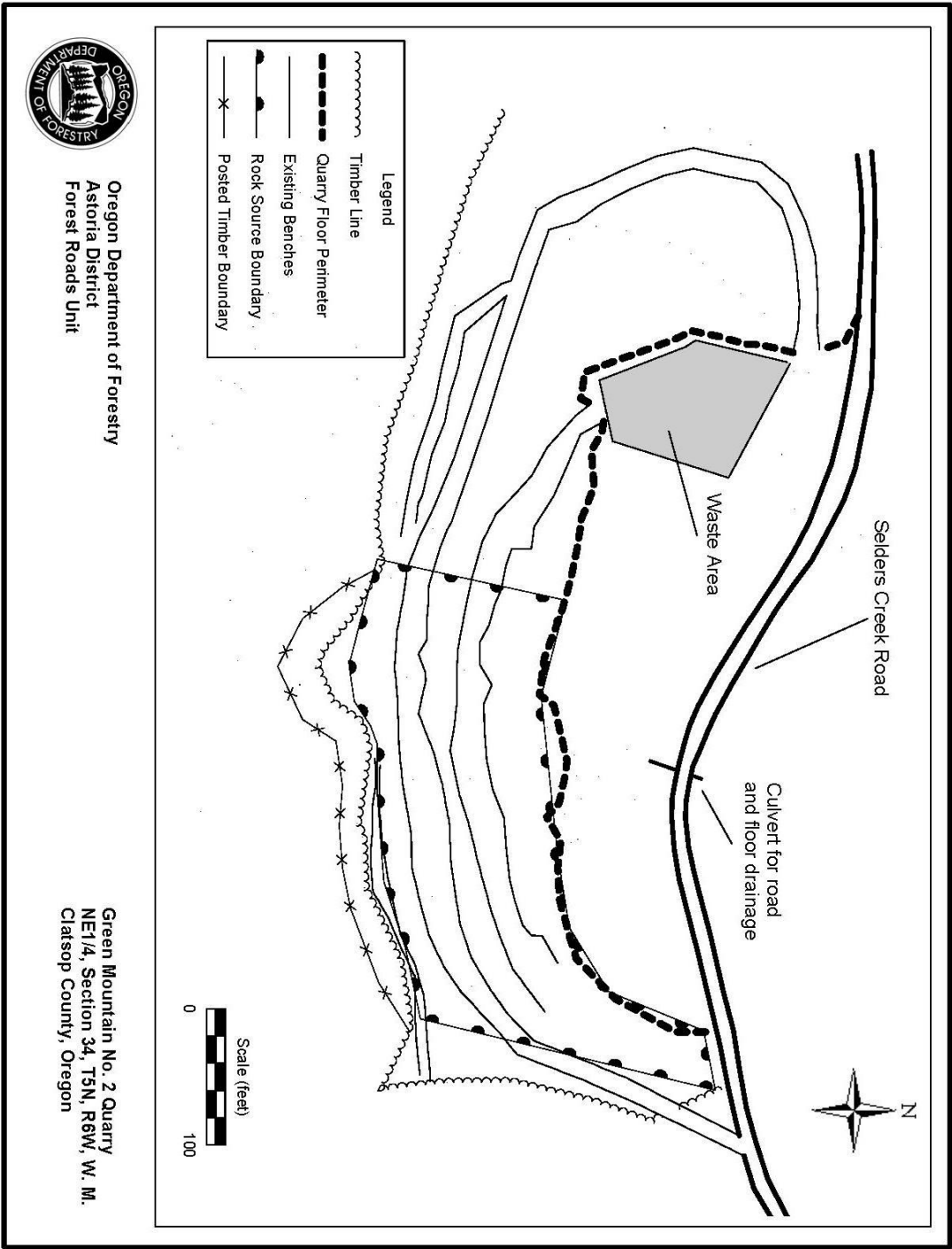


EXHIBIT G

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 will 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

<u>For 4"-0"</u>	Passing	5" sieve	100%
	Passing	4" sieve	90-100%
	Passing	2" sieve	50-80%
	Passing	3/4" sieve	25-50%
	Passing	1/4" sieve	0-25%

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

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

For 24"-6" Riprap A minimum of 50 percent of the material shall measure a minimum of 24 inches, measured in one dimension. Material shall be clean, well graded, and free of 2"-0" fines.

Control of gradation shall be by visual inspection by STATE.

EXHIBIT H

GEOTEXTILE SPECIFICATIONS

GEOTEXTILE SPECIFICATIONS - shall be woven geotextile fabric designed for forest road subgrade surfacing purposes and shall meet or exceed the following requirements, unless otherwise approved in writing by STATE:

1. Grab Tensile	300 lbs.	ASTM D4623
2. Puncture strength	110 lbs.	ASTM D4833
3. Mullen Burst	600 lbs.	ASTM D3786
4. Width – 12.5 feet		

INSTALLATION REQUIREMENTS - fabric shall be installed according to the following requirements:

1. Subgrade surface shall be leveled and smoothed to remove humps and depressions which exceed 6 inches in height and depth. Small pieces of woody debris shall be removed. Light vegetation grass, weeds, leaves, and fine woody debris may be left in place.
2. Fabric shall be installed directly on the prepared surface. Longitudinal and traverse joints shall be overlapped at least 3 feet.
3. Surfacing course material shall be placed to the designated thickness in one lift and spread in the direction of fabric overlap. Hauling and spreading equipment shall not be operated on the fabric until the total thickness of surfacing course material is placed.
4. Torn, punctured, or separated sections of the fabric shall be repaired by installing a fabric patch over the break prior to placing the surfacing course material. The patch shall be at least 4 feet larger in horizontal dimensions than the break to be repaired.
5. Fabric failures resulting after rock placement and as evidenced by subgrade pumping or roadbed distortion shall be corrected. Correction measures shall consist of: (1) removing at least three-quarters the depth of surfacing course material in the affected area, (2) placing a fabric patch over the affected area with a minimum 4-foot overlap around the circumference of the area, and (3) replacing enough rock to cover the patch and blend in with the rest of the road.
6. Should STATE determine that installation of woven fabric on roads or portions of roads is not necessary, PURCHASER shall deliver an equivalent amount of woven road fabric to STATE.
7. Fabric locations:

Road Segment	Location
I1 to I2	18+50 to 20+90

EXHIBIT I
TYPICAL EMBEDDED ENERGY DISSIPATOR

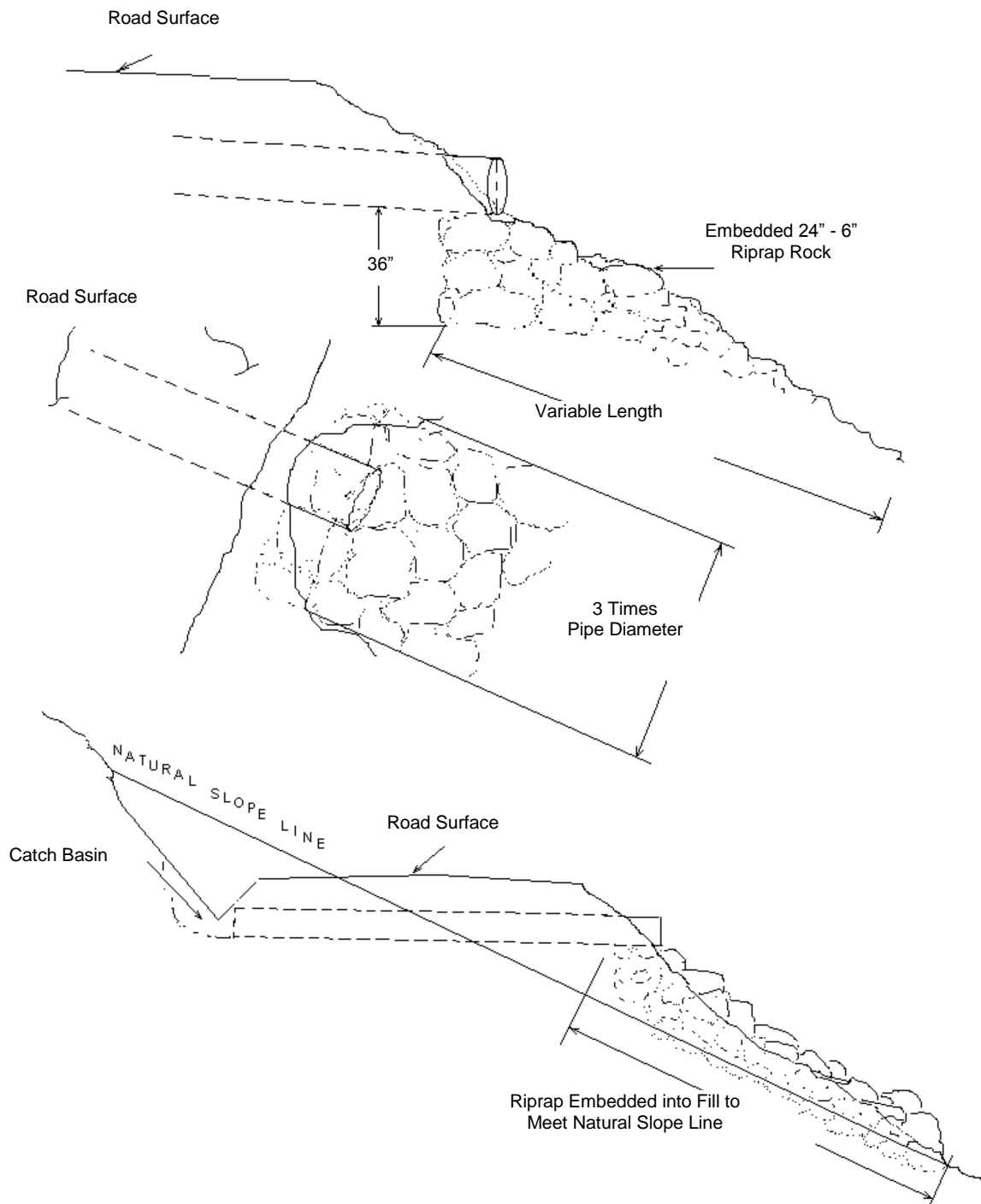


EXHIBIT J
ROAD BRUSHING SPECIFICATIONS

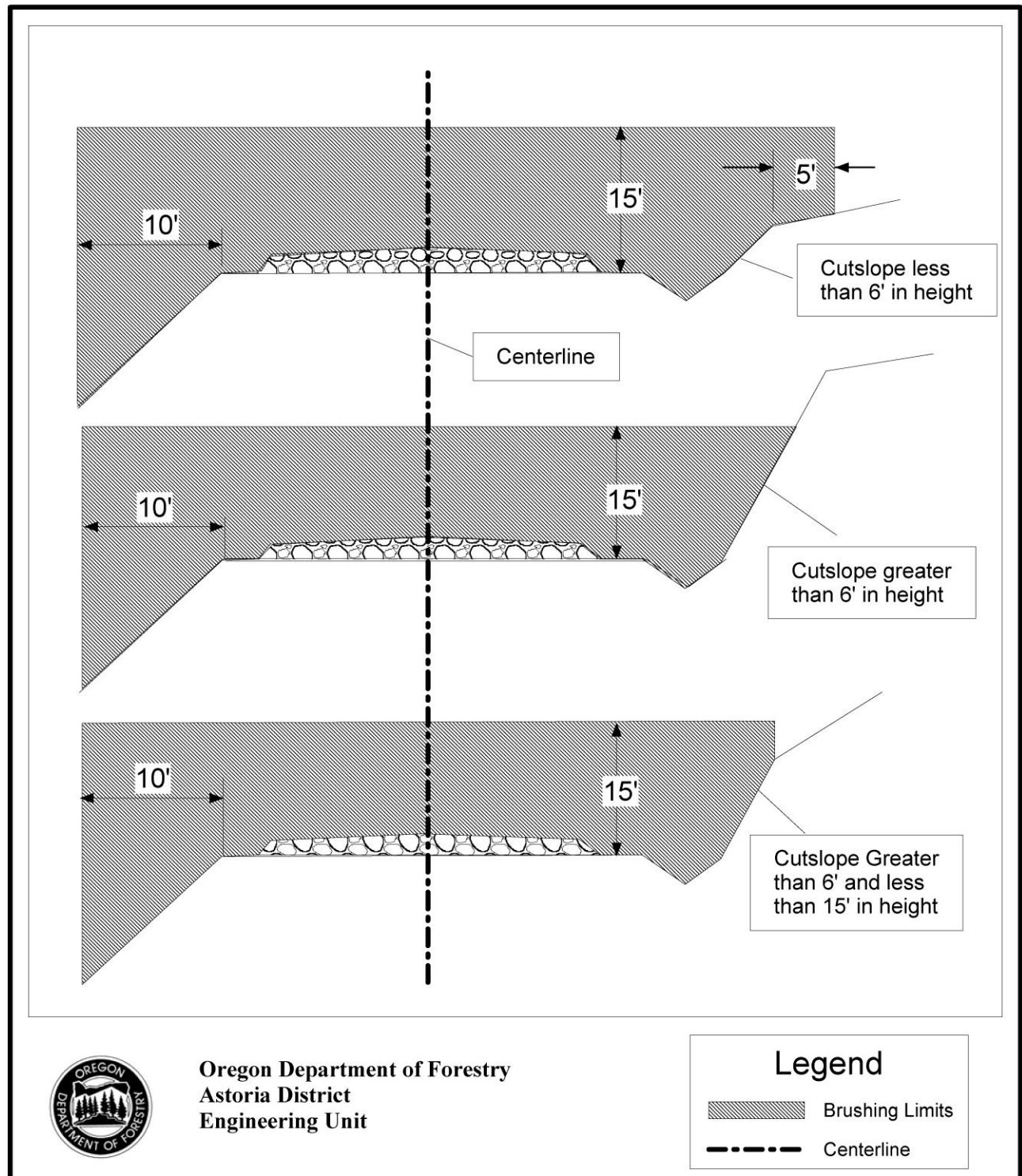


EXHIBIT J

ROAD BRUSHING SPECIFICATIONS

REQUIREMENTS

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

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

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

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

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

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

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

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

EXHIBIT K

ROADSIDE SPRAYING SPECIFICATIONS

REQUIREMENTS

The PURCHASER shall conduct roadside spray treatments on the roads shown on the Exhibit A, for an estimated 57 miles (276 acres) to be treated. As directed by STATE representative, PURCHASER shall apply the prescribed herbicide mix to all foliage/vegetation on the road surface and within twenty (20) horizontal feet from the road edge, vehicle turnouts, and landings. The application shall be made to wet all the foliage, but not to the point of significant runoff.

PURCHASER shall provide one (1) Application Truck with an applicator, licensed in the State of Oregon; driver; support; required chemicals; ground personnel; and all facilitating equipment for roadside spray treatments on forest roads. Additional equipment and support personnel may be utilized with written approval from STATE.

During the last year of this Timber Sale Contract, spraying is to be conducted between June 1, 2016 and August 15, 2016, during dry weather periods, unless otherwise approved by STATE.

Buffer Zones. A buffer strip ten (10) feet wide shall be left unsprayed along each side of all live streams and open water or in other areas as directed by STATE. A buffer strip sixty (60) feet wide shall be left unsprayed along ESA listed streams as directed by STATE.

INSPECTION. Satisfactory work shall be determined from visual reconnaissance by STATE, once die-off has begun. If greater than 10 untreated plants per mile of road side are identified then the work is deemed unsatisfactory. PURCHASER shall be required, without cost to STATE, to re-treat areas that are not treated according to specifications in this exhibit.

SPRAY EQUIPMENT. PURCHASER shall furnish one application truck with a metered injection sprayer. The sprayer must have at minimum two injection units and a water supply tank that has a minimum 50 gallon capacity. The application truck shall have at least one spray gun or wand connected to a minimum of 50 feet of hose. All vehicles shall have the power to negotiate roads in the contract area with a full load. PURCHASER shall furnish all equipment necessary to prepare the specified chemical mixtures. Quantities shall be measured as accurately as possible using calibrated dip sticks or other approved means of measuring liquids. The application truck shall be equipped with an agitation system capable of keeping the herbicide evenly distributed in the tank. Each application truck shall be equipped with a pump capable of rapid filling and mixing. Any deviation from the above specifications must be approved by STATE in writing.

- a. The spraying equipment shall be capable of disseminating the liquid chemical mixture at a measured rate.
- b. Handgun, wand type, or any other spray systems shall be designed to receive spray nozzles with changeable orifices and shall operate under controllable pressure to the spray nozzle. The system must be leak proof with the nozzles equipped with diaphragm check valves or equivalent to assure positive shutoff.
- c. Nozzles shall be maintained free of plugs to assure a uniform application of sprayed mixture. Replacement nozzles and diaphragms shall be kept with each application truck for use whenever a nozzle is determined to be leaking.
- d. The spraying equipment shall be capable of operating at an even nozzle pressure. The lowest nozzle pressure recommended by the nozzle manufacturer shall be used to reduce the potential of off-target drift.
- e. Equipment shall be maintained to operate efficiently and to prevent leakage of chemicals, carriers, or spray mixture.

EXHIBIT K

ROADSIDE SPRAYING SPECIFICATIONS

- f. Contractor shall furnish portable pumps with necessary suction hose and feed hoses to supply the application truck with water from streams. This unit will be used for water only. An air gap separation or suitable back-flow preventer shall be provided where mixing water is obtained by direct connection to a domestic water supply or where water is taken from streams or ponds. Portable pumps shall be equipped with a fish screen that complies with Section 2415, Protection of Watershed, of this contract and the Oregon Department of Fish and Wildlife Small Pump Screen Self-Certification Form.
- g. Equipment shall be maintained to operate efficiently and to prevent leakage of chemicals, carriers, or spray mixture.

WEATHER RECORDS. PURCHASER's applicator is required to maintain hourly weather records when spraying. PURCHASER's applicator must have equipment available to accurately determine wind speed, direction, temperature and relative humidity. Documentation of hourly weather condition will be on a form provided by STATE. Weather records shall be readily available for inspection by STATE's representative.

TRACKING RECORDS.

- a. PURCHASER's applicator is required to record start and stop points/coordinates using the aid of a GPS (Global Positioning System) on the areas of herbicide application. The points/coordinates shall be recorded in longitude and latitude expressed in decimal degrees and decimal places shall be carried out to achieve at least 35 feet accuracy. WGS84 shall be the datum used for the coordinates. The data shall be submitted in the form of a layer compatible to ArcGIS10 or other format as specified by STATE.
- b. The PURCHASER's applicator is required to record on an ODF map, areas of herbicide application.

CHEMICALS.

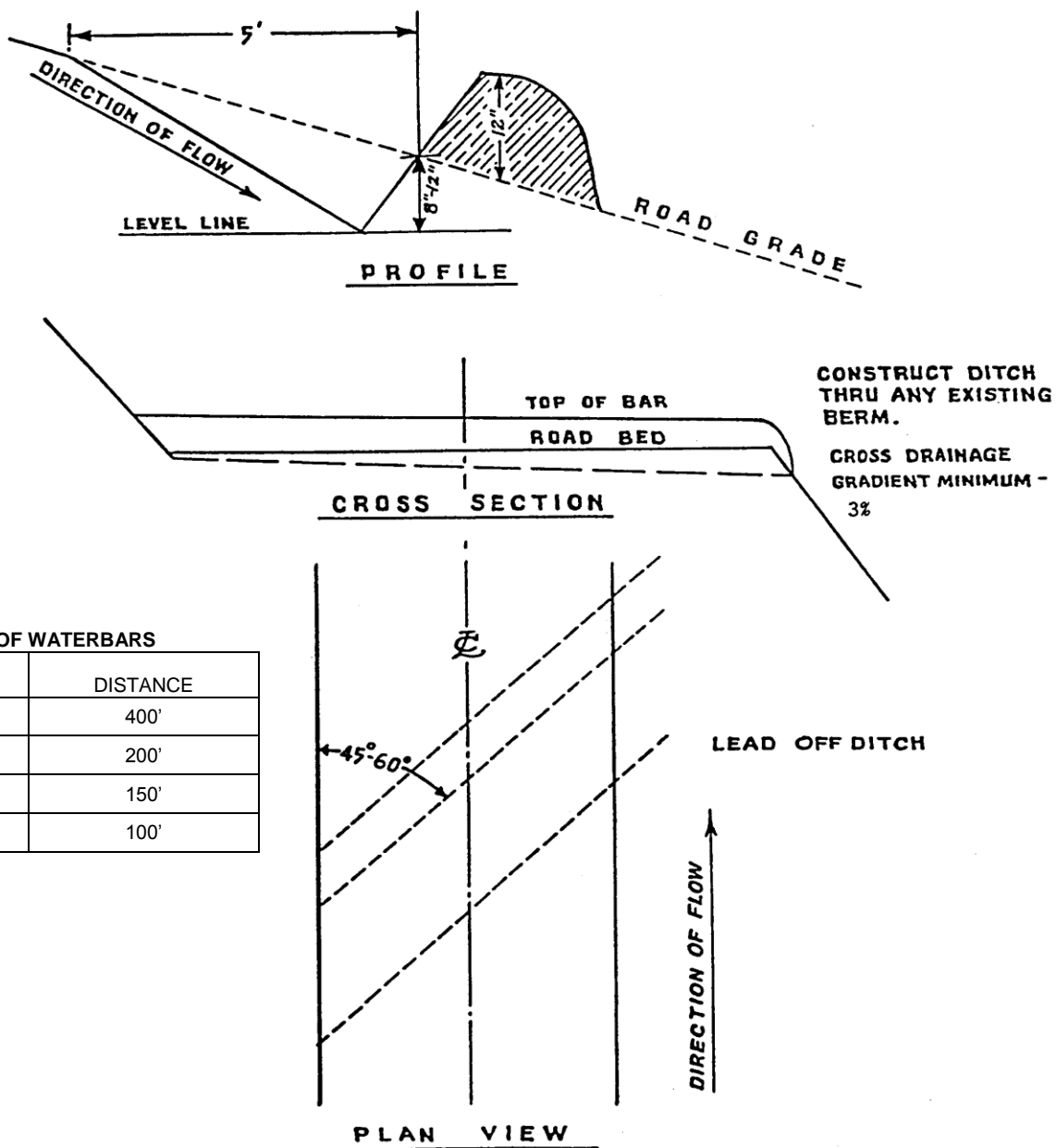
- a. PURCHASER shall furnish the herbicide chemicals listed in the Spray Mixture Table. All chemicals shall be registered and applicable for forest and right-of-way uses.
- b. STATE reserves the right to add surfactants or drift control chemicals to enhance spray and brush contact or protect streams and private property. All chemicals shall be registered and applicable for forest and right-of-way uses.
- c. Water shall be the basic carrier.
- d. All chemicals and carriers shall be transported to mixing or project site by PURCHASER. Mixtures shall be transported from mixing sites to project sites and from area to area by PURCHASER.
- e. PURCHASER shall be responsible for chemical storage, decontamination treatment, and transportation of empty chemical containers to an authorized disposal site.
- f. **SPRAY MIXTURES.** Refer to Exhibit A for location of application areas and Spray Mixture Table for spray mixtures.

Spray Mixture Table

Area Description	Herbicide	Application/Acre
Area Shown on Exhibit A	Element 4	2 quarts
	Milestone	5 ounces
	Syl-Tac	4 ounces

EXHIBIT L

WATERBAR SPECIFICATIONS



SPACING OF WATERBARS

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

WATERBAR SPECIFICATIONS
FOR CROSS DITCHING #298

EXHIBIT M

ROAD VACATING SPECIFICATIONS

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

- (a) Culvert removal.
 - (b) Sidecast pullback.
 - (c) 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) Culvert Removal. Remove drainage structures and culverts. Removed culverts shall be hauled to an approved refuse site off of STATE land.
 - (3) 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 N. Sidecast material remaining greater than 20 feet below the road shall be tapered and sloped for drainage.
 - (4) 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 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.
 - (5) Erosion Control. Erosion control shall be completed in a progressive manner. Grass seed and straw mulch shall be applied for every 500 feet of road vacated, prior to continuing work.

All excavated material and bare soil shall utilize grass seed and straw mulch approved by STATE and in accordance with the specifications in Exhibit O. Applied mulch shall be a minimum of 2 inches deep and provide a uniform cover.
 - (6) Construct Waterbars as directed by STATE. Construct waterbars according to the specifications in Exhibit L.
 - (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.

EXHIBIT M

ROAD VACATING SPECIFICATIONS

- (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.

SPECIFIC INSTRUCTIONS/SPECIFICATIONS :

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
V1 to V2	0+00	Block road. Begin sidecast pullback.
	1+10	Remove culvert.
	1+60	End sidecast pullback. Construct waterbar.
V2 to V3	0+00 to 2+20	Waterbar and block existing road upon completion of new road construction.

EXHIBIT N

TYPICAL CROSS SECTION VIEW OF ROAD VACATING SIDECAST PULLBACK

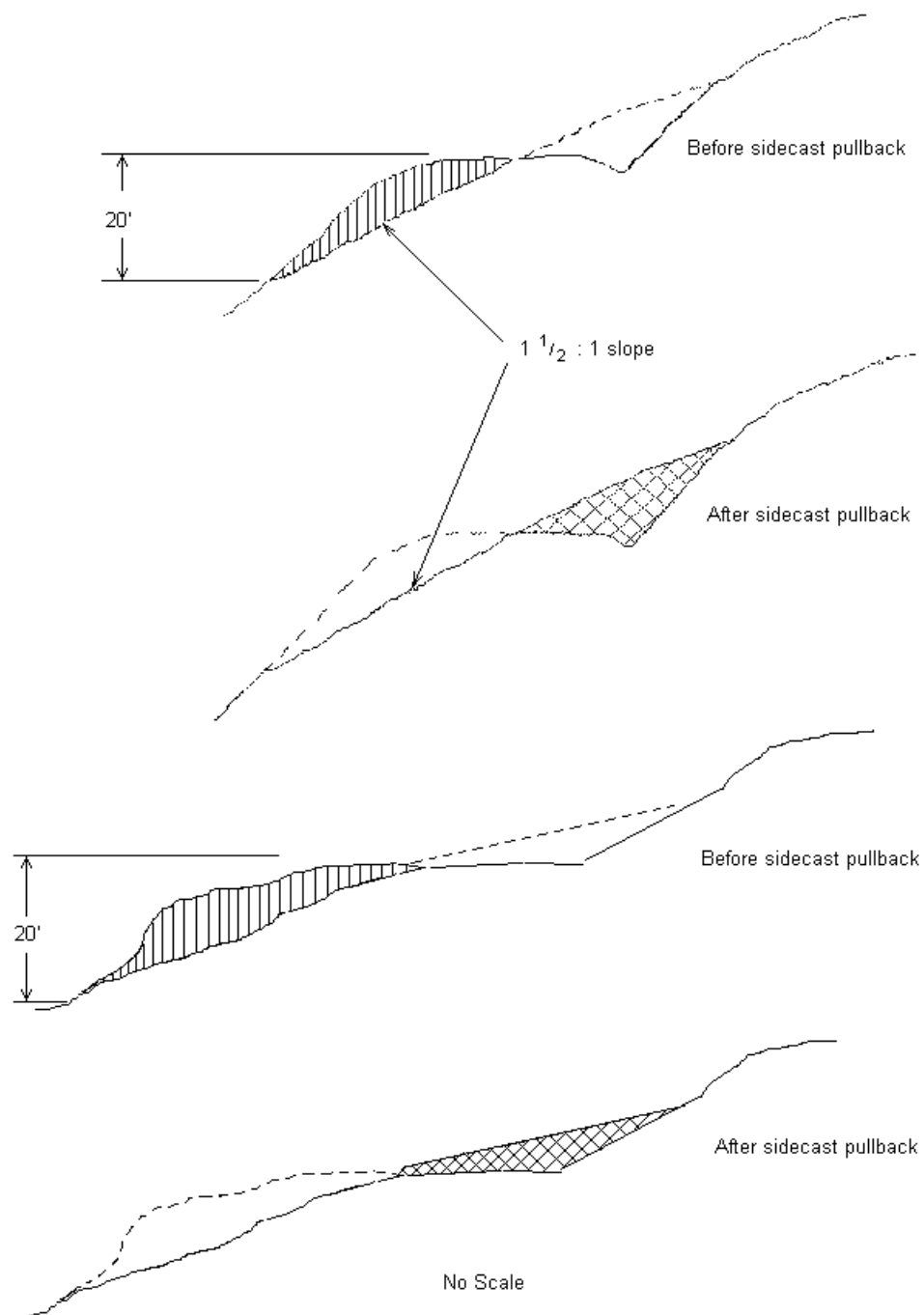


EXHIBIT O
SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required seed and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed and straw mulch to all waste areas, and bare soils resulting from Project No. 2 and any skid trails within posted stream buffers.

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

APPLICATION METHODS FOR SEED

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

APPLICATION RATES FOR SEED

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

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

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

APPLICATION RATES FOR MULCH

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

Application Locations:

Road Segment	Location
Project No. 2	Waste Areas

PART IV: OTHER INFORMATION

State Timber Sale Contract
No. 341-14-32
Thor's Hammer

Page 1 of 2

Forest Practices Act "WRITTEN PLAN" Operating within 100 feet of a Type F or Type D stream Roadside Spraying

Landowner:

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

Protected Resources:

The Type F streams located in portions of Sections 22, 23, 25, 26, 27, 34, 35, and 36, T6N, R6W and portions of Sections 1, 2, 3, 7, 8, 9, 10, 11, 12, 13, 14, 17, 18, 20, 21, 22, 23, and 24, T5N, R6W, W.M., Clatsop County, Oregon. See attached map (page 2 of 2).

Specific Site Characteristics:

Roadside spray treatment of foliage will be performed on approximately 57 miles of forest road in the area listed above. The treatment shall be applied to all foliage/vegetation on the road surface and within twenty (20) horizontal feet from the road edge, vehicle turnouts, and landings. No Type D streams are present in the treatment area.

Practices:

Along the Type F streams in the area listed above, as well as all other perennial Type N streams and other open water not listed, the following practices are required under the timber sale contract:

- The application will be made to avoid significant runoff.
- The application will be made during dry weather periods, unless otherwise approved by STATE.
- A buffer strip ten (10) feet wide shall be left unsprayed along each side of all live streams and open water or in other areas as directed by STATE. A buffer strip sixty (60) feet wide shall be left unsprayed along streams classified as Type F or Type D or as directed by STATE.
- The application will be made in a direction away from all streams or other open water.
- All chemical mixing will be performed on a road or landing at least 250 feet away from open water.
- All equipment will be kept in a leak proof condition.
- Equipment will be cleaned in a location that will protect all streams and other open water.
- A separate portable pump with filler and suction hose will be used to withdraw water from streams and other open water. This pump will be used for water only. An air gap or suitable back-flow preventer will be used where mixing water is obtained by direct contact to a domestic water supply of where water is taken from streams or other open water.
- The application will be made by a licensed commercial applicator and supervised by an individual who has a public pesticide applicator's license.

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 or Type D streams. I agree to the protection measures listed on this plan:

Submitted: _____
Purchaser/Operator Contract Representative

Date: _____

Original: Salem, copies: Operator, Purchaser, District File, and Jewell Unit

Forest Practices Act
"WRITTEN PLAN"
For Harvest of the Thor's Hammer Timber Sale

Landowner:

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

Protected Resources:

The following streams are located in Sections 10, 11, 14 and 15 T5N, R6W W.M., Clatsop County, Oregon.

Areas 1 and 3: Two upper tributaries to Deep Creek, both are small un named Type F streams, is adjacent to the northern boundary of Area 1 and the western boundary of Area 3 for a total distance of approximately 2800 ft.

Specific Site Characteristics:

Upper Tributaries of Deep Creek: The streambeds are approximately 5 to 10 feet wide with subtle to moderate stream-bank slopes. Streamside vegetation is dominated by mature red alder, with some conifer beginning approximately 60 feet from the channel.

Tree and Vegetation Retention:

There will not be any harvesting permitted within the posted buffers. The boundaries of both Areas 1 and 3 are posted a minimum of 100 ft. from the Type F stream.

Practices:

Along the above mentioned Type F streams that are adjacent to Areas 1 and 3, as well as all other perennial Type N streams not listed, the following practices are required under the timber sale contract:

- Cable corridors will utilize natural openings to the maximum extent possible.
- No trees will be felled within stream buffers (RMA's), except in cable corridors, and felled trees will be left in the RMA where felled.
- Trees adjacent to the stream buffers (RMA's) will be felled away from or parallel to the streams to prevent trees from entering the aquatic areas.
- No ground based logging equipment will be permitted within the RMA's.

It is anticipated that the only activity conducted within 100 feet of these Type F streams will be hanging logging lines through the riparian area. 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.

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

Submitted: _____

Purchaser/Operator Contract Representative

Date: _____

OREGON DEPARTMENT of FISH and WILDLIFE

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: (____) _____

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. 314-14-32.

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