



Oregon Department of Forestry
2600 State St Salem OR 97310
PART III: EXHIBITS
EXHIBIT B
TIMBER SALE OPERATIONS PLAN
(See page 2 for instructions)

Date Received by State: _____

(5) State Brand Information (Complete)

(1) Contract Number: NC-341-2024-W01101-01

(2) Sale Name: Mad Merrill

(3) Contract Expiration Date: 10/31/2025

(4) Purchaser Name: _____

(6) State Representatives:

<u>Name</u>	<u>Circle One</u>	<u>Phone No.</u>	<u>Cell No.</u>	<u>Alt Phone</u>
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			

(7) Purchaser Representatives:

<u>Name</u>	<u>Circle One</u>	<u>Phone No.</u>	<u>Cell No.</u>	<u>Alt Phone</u>
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			

(8) Name of Subcontractors and Start Dates:

<u>Project No.</u>	<u>Subcontractor Name.</u>	<u>Start Date</u>	<u>Completion Date</u>	<u>Cell No.</u>	<u>Alt Phone</u>

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

(9) Comments:

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



Oregon Department of Forestry

2600 State St Salem OR 97310

PART III: EXHIBITS

EXHIBIT B

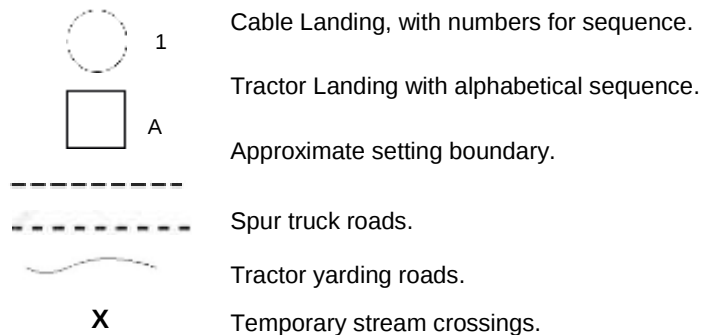
INSTRUCTION SHEET FOR OPERATIONS PLAN

SUBMIT ONE COPY OF PLAN STATE

Operations shall be limited to the work shown in the plan until a revised plan or supplemental plan is submitted covering additional work. Compliance with this plan is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act including without limitation PURCHASER'S independent obligation to avoid take of a T&E species and PURCHASER'S obligation to comply with terms and conditions of any incidental take Permit(s) that include required minimization and mitigation measures in any applicable Habitat Conservation Plan. If STATE has prepared a required Forest Practices Act (FPA) "Written Plan" for operations, PURCHASER shall comply with all provisions of the Written Plan.

Explanation of Item No.(from Page 1)

- (5) All sales require you to use a brand furnished by STATE. If the State brand has not been assigned when the plan is submitted, it will be furnished and assigned later. Complete drawing. If more than one brand is assigned to the sale, complete both drawings.
- (6) The contract requires you to have a designated representative available on the sale area or work location who is authorized to receive in your behalf any notice or instruction given by STATE and to take action in regard to performance under the contract. If logging and project work is widely separated, a representative is required for each.
- (7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.
- (8) Show names of subcontractors to be used for any or all phases of the operations. If subcontractors are not Known, or are changed later, give notification to the STATE representative prior to commencement of work by subcontractor.
- (9) Show projected dates for commencement of both projects and logging. If projected dates need to be changed at a later date, notification must be given to the STATE representative by supplemental plan or otherwise, prior to commencement of such operations.
- (10) The STATE representative will furnish extra copies of Exhibit A of the contract for your use in preparing the operations map. The map shall use the following legend and show:
 1. Landing locations, approximate setting boundaries, and probable sequence of logging the settings. Number the settings in sequence.
 2. Locations of spur roads planned for construction, other than required by the timber sale contract. Provide spur road specifications
 3. Locations of proposed tractor yarding roads. Show if and how marked on the ground.
 4. Locations of temporary stream crossings.
 5. List the sequence of performing project work.
 6. Location of rock sources - attach pit development plans.





Oregon Department of Forestry

2600 State St Salem OR 97310

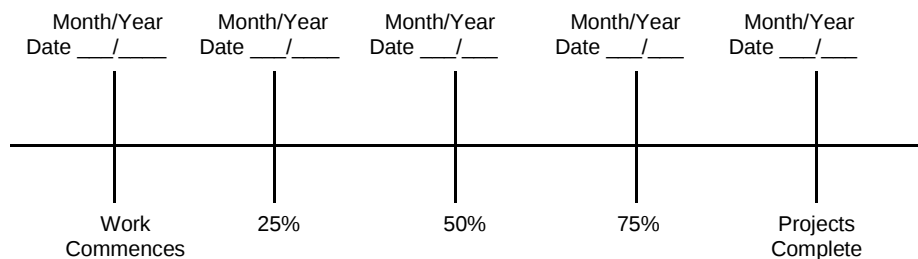
PART III: EXHIBITS

EXHIBIT B OPERATIONS PLAN

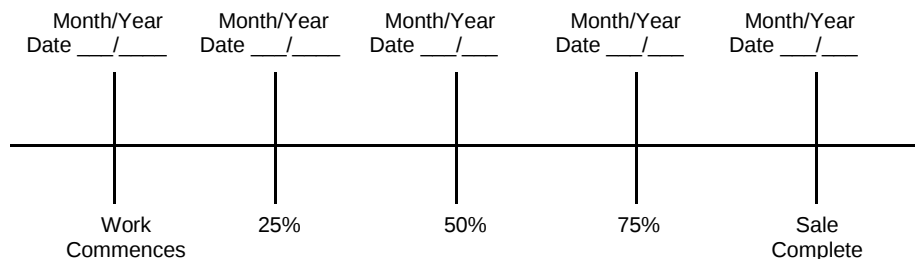
Completion Timeline

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

Projects



Harvest & Other Requirements



The Federal Endangered Species Act (ESA) prohibits a person from taking any federally listed threatened or endangered species. Taking under the federal ESA may include alteration of habitat. STATE's approval of this plan does not certify that PURCHASER's operation under the plan is lawful under the federal ESA or that the plan is consistent with the terms and conditions of any applicable incidental take Permit(s) including any required minimization and mitigation measures proposed in the applicable Habitat Conservation Plan. As provided in the timber sale contract, PURCHASER's must comply with all applicable state, federal, and local laws, including without limitation any Permit(s) issued thereunder.

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

APPROVED; Date: _____

SUBMITTED BY:
PURCHASER

STATE OF OREGON - DEPARTMENT OF
FORESTRY

Title _____

Title _____



Oregon Department of Forestry
EXHIBIT C - SAWMILL GRADE (WESTSIDE SCALE)
SCALING INSTRUCTIONS - LOCATION APPROVAL - BRAND INFORMATION
North Cascade - NWOA

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

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

(3) FROM: North Phone (503) 859-2151
Cascade
(State Forestry District)
Address: 930 W WASHINGTON ST. SUITE 20
STAYTON, OR 97383

(4) PURCHASER: _____
Mailing Address: _____
Phone Number: _____

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

*Apply minimum volume test to whole logs over 40' Westside

(6) WESTSIDE SCALE:
Use Region 6 actual taper rule. Logs over 40'.

(7) Weight Scale Sample ☐ YES ☒ NO

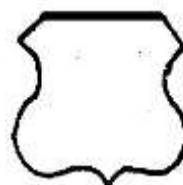
(8) APPROVED SCALING LOCATIONS (as shown on the ODF Approved Locations web-site)	Species	Yard	Truck	Weight

(9) SALE NAME: Mad Merrill
COUNTY: Linn

(10) STATE CONTRACT NUMBER:
NC-341-2024-W01101-01

(11) STATE BRAND REGISTRATION NUMBER:

(12) STATE BRAND INFORMATION:



(13) PAINT REQUIRED: YES ☒
COLOR: Orange

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

(15) REMARKS:
"Mule Trains"
1. Loads are required to have load tickets for each set of bunks.
2. If truck and pup are to be weighed, weigh and process separately for gross and tare weights.

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

(16) SIGNATURES:

Purchaser or Authorized Representative Date

State Forester Representative Date

State Forester Representative PRINT NAME



Oregon Department of Forestry
EXHIBIT C - SAWMILL GRADE
INSTRUCTIONS FOR EXHIBIT C
North Cascade - NWOA

- (1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires logging and hauling to be complete, recall branding hammers.

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

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

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

Northwest Log Scalpers Inc.
6137 NE 63rd St, Vancouver, WA, 98661
Phone: (360) 553-7212 ext. 4 Fax: (360) 553-7213
Email: info@nwlogscalpers.com

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

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

- (3) State District office, address and phone.
- (4) Enter Purchaser's business name, address, and phone number as it appears on the Contract.
- (5) Minimum Scaling Specifications.
- (6) Westside - Region 6 actual taper segment scale. Check Yes or No. Special Service Rules on file with TPSO. See: Segment Scaling and Grading of Long Logs - All Species - State Forestry Department Scaling Practices (Westside).
- (7) Weight Scale Sample - Check box if sale is to be a Weight Scale Sample. All specifics for handling, scaling and processing will be attached or explained in the Remarks section item (15).
- (8) Show scaling locations only applicable to TPSO. Location name should appear as it does on the ODF Approved Scaling Location web site: https://apps.odf.oregon.gov/Divisions/management/asset_management/scalinglocation.asp Locations with scaling and processing directions specific to their location should be on a separate form. Species should be identified if not capable of receiving "all" species. Check appropriate box for either: yard, truck scale, or weight. Refer to the web site listed above for the locations approval status.
- (9) Enter sale name and county.
- (10) Enter sale Contract number.
- (11) Enter Oregon's State Brand Registry Number **(REQUIRED)**.
- (12) Show brand assigned to timber sale. One brand only. If more than one brand is assigned to the sale: (1) make a separate form for each brand and (2) on each form, explain and show other brand(s) in the Remarks section item (15).
- (13) Check yes for Paint Required and designate "Orange" for color. Non required removal volumes may sometimes require blue paint.
- (14) Special Requests. These are requests that will be applied to ODF timber sales. All boxes applicable to the timber sales designated in the Exhibit C form must be "marked". If "Other" is indicated, it must contain a description and any necessary comments.
- (15) Use this space to designate any weight scale sample instructions or any other explanations to clarify scaling, processing and/or mailing requirements. If additional scaling locations are approved, revise original or current form showing all (old and new) locations. Check REVISION box at top of form and explain under remarks. Route as indicated.
- (16) Require purchaser to sign and date completed form in addition to State Forester Representative, sign and print name on the form. Signatures not required on revisions.



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

North Cascade, NWOA

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

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

(3) FROM: North Cascade Phone (503) 859-2151
(State Forestry District)
Address: 930 W WASHINGTON ST. SUITE 20
STAYTON, OR 97383

(4) PURCHASER: _____

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

Mailing Address: _____

Phone Number: _____

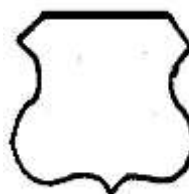
(9) SALE NAME: Mad Merrill

COUNTY: Linn

(10) STATE CONTRACT NUMBER:
NC-341-2024-W01101-01

(11) STATE BRAND REGISTRATION NUMBER: _____

(12) STATE BRAND INFORMATION:



(13) REMARKS:

"Mule Trains"

1. Loads are required to have load tickets for each set of bunks.
2. Truck and pup are to be weighed and processed separately for gross and tare weights.

Operator's Name (Optional inclusion by District):

(14) SIGNATURES:

Purchaser or Authorized Representative _____ Date _____

State Forester Representative _____ Date _____

State Forester Representative PRINT NAME

(6) STATE Definition of Approved Pulp Sort:

- Top portion of the tree (tops).
- All logs with a diameter (Big End) greater than 7 inches marked with blue paint.

(7) PULP FACILITY PROCESSING INSTRUCTIONS:

- Pulp loads shall be weighed in lieu of scaling.
- One Ton = 2000 lbs (Short Ton).
- Pulp loads shall have a yellow Log Load Receipt attached.
- Gross weight and truck tare weight for each load shall be machine printed on the weight receipt.
- Weigher shall sign the weight receipt.
- Weigher shall record the Log Load Receipt number on the weight receipt.
- Weigher shall attach the Weight receipt to the Log Load Receipt and mail them weekly to the TPSO processing the Weight receipt.

(8) TPSO PROCESSING INSTRUCTIONS

- Submit data files daily (or each day of activity).
- Mail or deliver scale tickets weekly to ODF Headquarters in Salem.

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

General Distribution: TPSO, Approved Scaling Locations and Purchaser.



Oregon Department of Forestry EXHIBIT C - PULP SORT INSTRUCTIONS FOR EXHIBIT C

North Cascade, NWOA

- (1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires logging and hauling to be complete, recall branding hammers.
- (2) Approved Pulp Processing Facility. Write in as written in the Approved Log Delivery Location
https://apps.odf.oregon.gov/Divisions/management/asset_management/scalinglocation.asp
- (3) State District office, address and phone.
- (4) Enter Purchaser's business name, address, and phone number as it appears on the Contract.
- (5) Third Party Scaling Organization that will be processing the weight tickets, mailing address, and phone number.

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

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

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

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

Northwest Log Scalpers Inc.
 6137 NE 63rd St, Vancouver, WA, 98661
 Phone: (360) 553-7212 ext. 4 Fax: (360) 553-7213
 Email: info@nwlogscalpers.com

- (6) Big end of log is not to exceed 2 inches greater than the minimum removal specifications in the contract. Example: Minimum removal specifications 6 inches and 20 board feet, then the Big end of log not to exceed 8 inches. When conifer and hardwood removal specifications are different, use the smaller removal diameter to determine this specification.
- (9) Enter sale name and county.
- (10) Enter sale Contract number.
- (11) Enter Oregon's State Brand Registry Number **(REQUIRED)**.
- (12) Show brand assigned to timber sale. One brand only, if more than one brand is assigned to the sale: (1) make a separate form for each brand and (2) on each form, explain and show other brand(s) in the Remarks section Item (13).
- (13) Use this section to list any special instructions or the reason for any revisions in section item (1).
- (14) Require purchaser to sign and date completed form in addition to State Forester Representative, sign and print name on the form. Signatures not required on revisions.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

POINT TO POINT	STATION TO STATION	SUBGRADE WIDTH	BASE ROCK WIDTH	TOP ROCK WIDTH	DRAINAGE
G2 to G3	0+00 to 1+61	16 feet	13 feet	12 feet	Outsloped
A to A1	0+00 to 1+24	16 feet	13 feet	12 feet	Crowned
G to G1	0+00 to 6+95	Existing	Existing	Existing	Crowned
H to H1	0+00 to 4+69	Existing	Existing	Existing	Crowned
J to J1	0+00 to 12+60	Existing	Existing	Existing	Crowned
K to K1	0+00 to 98+25	Existing	Existing	Existing	Crowned
L to L1	0+00 to 34+04	Existing	Existing	Existing	Crowned
L2 to L3	0+00 to 15+05	Existing	Existing	Existing	Crowned
L4 to L5	0+00 to 3+15	Existing	Existing	Existing	Outsloped
M to M1	0+00 to 310+91	Existing	Existing	Existing	Crowned
N to N1	0+00 to 116+43	Existing	Existing	Existing	Crowned
N2 to N3	0+00 to 11+49	Existing	Existing	Existing	Outsloped

CLEARING. This work shall consist of clearing, removing, and disposing of all trees, Snags, Down Timber, brush, surface objects, and protruding obstructions within the clearing limits. All danger trees, leaners, and Snags outside the clearing limits which could fall and hit the road shall be felled.

CLEARING CLASSIFICATION.

New Construction and Road Improvement - 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.

GRUBBING. This work shall consist of the removal or digging out of stumps and protruding objects. All stumps shall be completely removed within the limits of required grubbing. Stumps overhanging cut slopes shall be removed. Grubbing debris shall not be placed or permitted to remain in or under any road embankment sections.

GRUBBING CLASSIFICATION.

New construction - from the top of the cut slope to the toe of the fill.

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

CLEARING AND GRUBBING DISPOSAL. Clearing and grubbing debris shall not be placed or permitted to remain in or under any road embankment sections and shall be left in a stable location, and not left lodged against standing trees. Debris may be scattered through openings in the timber outside of the cleared right-of-way, except for the following areas where debris shall be fully contained and hauled to a designated waste area.

- Where end-haul is required
- On side slopes exceeding 50 percent
- On unstable areas
- In any stream channel (Type F, N or D) or where material may enter the stream channel.

Clearing, grubbing, and associated disposal shall be completed prior to subgrade approval.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

EXCAVATION. Excavation and grading shall not be done when weather and/or ground conditions are such that damage will result to existing subgrade or cause excessive erosion. Excavation shall conform to STATE-specified lines, grades, dimensions, and plans when provided. Unless road plans show otherwise, all roads shall be on a balanced cross section, except when the slope is over (50) percent, then road shall be on full bench as specified.

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

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

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

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

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

DRAINAGE

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

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

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

TURNOUTS. Increase roadbed width an additional (12) 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. 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%

Cut Slopes

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

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

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

1 :1

Fill Slopes

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

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

(Top of cut slope shall be rounded.)

LANDINGS. Landings shall be constructed as posted in the field, no less than (50) feet wide and no more than (70) feet wide unless otherwise approved by STATE. Surface is to be outsloped or 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 30 feet at locations marked in the field.

SEASONAL WINTERIZATION. All unsurfaced roads or unfinished subgrades shall be waterbarred in accordance with the specifications in Exhibit G, and blocked from vehicular traffic prior to November 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 and hauled in where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with this Exhibit. Excess excavated material not used for embankment shall be sidecast on slopes up to 50 percent and 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) Culvert Installation. Fill construction backfill shall consist of select materials and may be obtained from borrow pits or, as approved and directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit. STATE may require the use of crushed rock for culvert bedding according to the Specific Road Construction Instructions.
- (5) Fill Armor and Energy Dissipator Construction. Where rock is specified for fill armor, rock shall be machine placed and tamped at a 1½:1 slope, beginning at the toe of the fill. Where rock is used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with this Exhibit.
- (6) Controlled Blasting. Controlled blasting techniques shall be utilized for any blasting operations, and shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain material within the road prism.
- (7) Subgrade Preparation and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, ditchouts, fill construction, and other specified work prior to the application of surfacing rock.
 - (b) Subgrade shall be crowned, outsloped, or insloped at 4 to 6 percent as described in project narrative.
 - (c) Upon completion of above required work, apply, process, and compact surfacing rock in accordance with specifications in the "Compaction and Processing Requirements" in this Exhibit. Final road surface shall be crowned, outsloped, or insloped at 4 to 6 percent.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
G2 to G3	0+00	Junction left off the Spur G to G1 (2+60) and begin new road construction for a 16' wide outsloped subgrade road. Begin to end push the excavated material ahead to Landing G3. Begin to spread 6"- 0" jaw run rock 13' wide with a 9" compacted depth. Then top with 1½"-0" crushed rock 12' wide with a 3" compacted depth.
	1+61	Construct a 60' x 60' landing labeled G3. Daylight to the right 30' and endpush left 30' to make landing. Spread 6" jaw run 28' wide by 60' long with a 9" compacted depth and top with 1 ½"-0 crushed rock 12' wide with a 3" compacted depth.

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

- (1) Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include, skewing the culvert and/or installing the culvert at gradients equal to or exceeding the drainage (or ditch) gradient. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. All woody debris encountered during fill excavation shall be removed. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Unsuitable backfill material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit.
- (2) Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. Re-establish or construct culvert sediment basins as directed by STATE. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be end hauled to pre-approved waste areas.
- (3) Settling Ponds and Ditch Armoring. Construct settling ponds as directed by STATE. Excavated material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A. Waste materials shall be sloped and compacted for drainage. Settling pond dimensions shall be a finished top diameter of 5 feet, bottom diameter of 3 feet and 3 feet in depth, to the top of the pond armor rock or as directed by STATE. Backslopes shall be ¾:1.
- (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.
- (5) Sod Removal. Remove/separate sod from crushed rock surfacing as directed by STATE. Sod material shall be scattered in stable locations through openings in the timber outside of the cleared right-of-way. In areas where sod cannot be scattered in a stable location, material shall be end hauled to preapproved designated waste areas as shown on Exhibit A, or other stable locations as directed by STATE.
- (6) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic yard, track-mounted excavator.
- (7) Waste areas shall be uniformly sloped and compacted for drainage. Designated Waste materials shall be seeded and mulched with straw in accordance with specifications in Exhibit K.
- (8) Subgrade Preparation and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, fill reconstruction, ditchouts, and other specified work prior to the application of new surfacing rock.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS: (continued)

- (b) Cut out all potholes and/or washboard sections from the existing road surfacing.
- (c) Apply required patching and leveling rock, as directed by STATE.
- (d) Process (grade and mix) the existing surface and added base rock. Provide for a crown, outslope, or inslope road of 4 to 6 percent as described in the project narrative and compact in accordance with the "Compaction and Processing Requirements" in this Exhibit.
- (e) Upon completion of the above required work, apply, process, and compact surfacing rock in accordance with this Exhibit.

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
MC 400	0+00	Junction left off the Mad Creek Mainline Road station 176+04 and begin stationing.
	11+29	Junction left for Spur A station 0+00.
	29+65	Widen the road on the right ~20' into cutbank and place the excavated material (~250 cy) on the left side of the to make a 50' x 50' landing labeled B. Place 6" jaw run 20' wide by 50' long with a 9" compacted depth on the right side of the road.
	34+85	Widen the road on the right ~20' into cutbank and place the excavated material (~350 cy) on the left side of the to make a 50' x 50' landing labeled C. Place 6" jaw run 20' wide by 50' long with a 9" compacted depth on the right side of the road.
	39+98	Widen the road on the right ~20' into cutbank and place the excavated material (~250 cy) on the left side of the to make a 50' x 50' landing labeled D. Place 6" jaw run 20' wide by 50' long with a 9" compacted depth on the right side of the road.
	46+54	Widen the road on the right ~20' into cutbank and place the excavated material (~250 cy) on the left side of the to make a 50' x 50' landing labeled E. Place 6" jaw run 20' wide by 50' long with a 9" compacted depth on the right side of the road.
	53+56	Junction left for Spur G to G1 station 0+00.
	57+84	Junction to the left for Spur H to H1 station 0+00, and junction right for the MC440 continue station ahead.
	77+56	Widen the road on the left ~20' into cutbank and place the excavated material (~250 cy) on the right side of the to make a 50' x 50' landing labeled F. Place 6" jaw run 20' wide by 50' long with a 9" compacted depth on the left side of the road.
	83+06	Begin Spur J to J1 station 0+00.
A to A1	0+00	Junction left off the MC 400 Road station 11+29 and begin road improvement by reshaping for a crowned road and compacting the existing road rock. Spread 1 ½" - 0 crushed rock 12' wide with a 3" compacted depth over the base rock to the center of the landing A1.
	1+24	Reconstruct a 100' x 100' landing labeled A1. Spread an additional 6" jaw run rock 50' wide x 100' long with a 9" compacted depth.

EXHIBIT D

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS (continued)

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
G to G1	0+00	Junction left off MC500 Road and begin road improvement by roadside brushing the road and clean the culvert inlets and outlets.
	6+95	End road improvement.
H to H1	0+00	Junction left off the MC400 Road and begin stationing.
	4+69	Replace the burned plastic culvert with an 18" x 30' culvert #1.
J to J1	0+00	Point J, begin road improvement by cleaning the inside ditches, culvert inlets and outlets and grading the existing road surface rock for a crowned 12' wide running surface.
	12+60	End road improvement
K to K1	0+00	Begin roadside brushing, cleaning culvert inlets/outlets and inside ditches and the end of pavement on the Potato Hill Road.
	1+27	Replace Farmer Gate.
	25+44	Install an 18" x 30' culvert #2 with outlet dissipator.
	28+99	Repair existing metal culvert inlet and clean outlet.
	53+00	Junction left to continue Spur K and Junction right for Spur L to L1 station 0+00.
	68+33	ODF property line and yellow gate.
	73+39	Install an 18" x 30' culvert #3 with outlet dissipator.
	87+81	Stay left at junction for Spur K.
	98+25	Point K1 and end road improvement.
L to L1	0+00	Begin at the end of pavement roadside brushing, cleaning culvert inlets/outlets and inside ditches on the Potato Hill Road (Wilson's road easement to ODF).
	28+43	Junction left for Spur L2 to L3 station 0+00.
	34+04	Point L1 and end road improvement.
L2 to L3	0+00	Junction left off Spur L to L1 station 28+43 and begin roadside brushing, cleaning culvert inlets/outlets and inside ditches.
	15+05	Point L3 and end of road improvement.
L4 to L5	0+00	Junction right off Spur L2 to L3 station 28+43 and begin roadside brushing ahead.
	3+15	Point L5 and end road improvement.
M to M1 (MC mainline)	0+00	Junction right off Green Mountain Road (2-mile). Begin roadside brushing, cleaning culvert inlets/outlets, inside ditches and grade out the potholes. If patch rock is needed, use from the Potato Hill Stockpile. Maintain crowned road.
	90+63	Stay left at the junction for Spur M to M1. The Potato Hill Stockpile is on the right side of the road.
	135+81	Install an 18" x 30' culvert #4 with an outlet dissipator.
	147+89	Junction left for the MC 500 Road station 0+00.
	149+21	The MC 500 Rock Pit is on the left side of the road.

EXHIBIT D

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS (continued)

Segment	Station	Work Description
	163+70	Install an 18" x 30' culvert #5 with an outlet dissipator.
	170+04	Junction left for the MC 400 Road station 0+00.
	281+48	Replace the old damaged metal culvert with a 24" x 30' culvert #6 with an outlet dissipator.
	310+91	Point M1 and end road improvement.
N to N1 (MC 500)	0+00	Junction left off the Mad Creek Mainline Roads station 147+89. Begin roadside brushing, cleaning culvert inlets/outlets, inside ditches and grade out the potholes. Begin to spread 1 ½"- 0" crushed rock 12' wide with a 3" compacted depth. Rock can be obtained from the MC 500 Pit or Potato Hill Stockpile.
	23+66	Junction left for Spur N2 to N3 station 0+00.
	116+43	End road improvement at Point N1.
N2 to N3	0+00	Junction left off the MC 500 Road station 23+66. Begin roadside brushing, cleaning culvert inlets/outlets, inside ditches and grade out the potholes.
	11+49	End road improvement at Point N3.

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 backward over that same section.

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

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

ROAD SEGMENT	SUBGRADE COMPACTION OPTIONS
G2 to G3, Landings B, C, D, E, F, and I	(1) (4) (5)

Fills. Embankments and fills shall be placed in (approximately) horizontal layers not more than 12 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 layer's 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 the approved equipment options listed below:

ROAD SEGMENT	FILLS COMPACTION OPTIONS
G2 to G3, Landings B, C, D, E, F, and I	(1) (4) (5) (6)

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS (continued)

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

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

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

ROAD SEGMENT	CRUSHED COMPACTION OPTIONS
G2 to G3, Landings B, C, D, E, F, I, N to N1 and MC 500 Road	(1)

6"-0 Jaw-Run or Borrow On-site The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of road 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:

ROAD SEGMENT	PIT-RUN and/or 6"- 0" COMPACTION OPTIONS
G2 to G3, Landings B, C, D, E, F, I, N to N1 and MC 500 Road	(1) (4) (5)

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) 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.
- (3) 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 D

COMPACTION EQUIPMENT OPTIONS

- (4) Vibratory Grid Compactors. The roller shall have a grid surface and have an operating weight of 32,000 pounds or more. The rock shall be worked with a grader weighing at least 20,000 pounds during the grid rolling process. All rock shall come in contact with the vibratory grid compactor.
- (5) Grid Rollers. Pit-run rock shall be processed by grid roller fully equipped with 32,000 pounds or more of ballast weights. Twenty passes shall be made with a grid roller over the entire length and width of the road. A grader weighing at least 20,000 pounds shall work the pit-run surface. Grid rolling shall be performed when the subgrade is dry and firm. Road surface shall be uniformly shaped and graded prior to and during grid rolling.
- (6) Dozer. A dozer/track-type tractor weighing a minimum of 45,000 pounds as directed by STATE shall be operated over the pit-run or jaw-run rock so that the entire surface comes in contact with the tracks.

ROCK ACCOUNTABILITY

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

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

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

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

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.

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

EXHIBIT E

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) Timelines for rock quarry use.
 - (d) Erosion Control measures.
2. PURCHASER shall notify STATE 5 days prior to the start of quarry development activities.
3. 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.
4. The STATE shall be notified 24 hours prior to the beginning of blasting operations.
5. PURCHASER shall identify a Blaster in Charge (BIC) for all blasting operations. The BIC will be qualified by experience to oversee all phases of the blasting operations. The BIC shall provide direct supervision at all times when blasting and explosives handling activities are occurring on STATE LANDS.
6. Controlled blasting techniques shall be utilized for any blasting operations, and shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain as much material as possible within the quarry development area. Each shot shall also have a "tattle-tale" end cap so that it is known if all charges were detonated. The CONTRACTOR shall detonate or remove all non-detonated explosives from STATE LANDS. PURCHASER shall maintain a comprehensive blasting log that contains all pertinent data for all blasting operations. The blasting log shall be submitted to the STATE after the completion of all blasting activity. The blasting log is intended for STATE record keeping purposes only.
7. 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.
8. Quarry face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.
9. Oversized material that is produced or encountered during development shall be broken down and utilized for crushing.
10. The quarry site shall be left in a condition free from overburden and debris. Access roads to the quarry, and the quarry floor, shall be cleared at the termination of use. Unused shot rock material that is produced shall be piled in the vicinity of the rock pit as directed by STATE. Dirt, overburden, and reject material shall be hauled to designated waste area approved by STATE.
11. The quarry floor shall be developed to provide for drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained. Ditches, culverts, water bars and other direct conveyances of water from the quarry or stockpile site(s) shall be constructed to drain to the forest floor in locations that will provide filtration. Quarry access roads shall be cleared and blocked upon completion of quarry use as directed by STATE. Storm water utilization of filter bales, mulching and/or blocking access to protect watershed.

EXHIBIT E

CRUSHED ROCK SPECIFICATIONS

Materials. The material shall be fragments of rock crushed to the required size. The material shall be free from vegetation and lumps of clay. STATE may require screening and/or rejecting of materials utilized for production of crushed rock for the purpose of removing excess fine material. Rock crushing shall be limited to periods when weather conditions are acceptable to STATE.

Quality and Grading Requirements. The base material shall be rock. Crushed rock shall meet the grading requirements that follow:

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.

CRUSHED ROCK SPECIFICATIONS

For 1½"-0"	Passing	2" sieve	100%
	Passing	1½" sieve	90-100%
	Passing	¾" sieve	60-90%
	Passing	¼" sieve	30-50%
	Passing	No. 10 sieve	15-30%
	Passing	No. 40 sieve	7-15%

For 6"-0 Jaw Run

Control of gradation shall be by visual inspection by STATE.

EXHIBIT E
ROCKING TABLE

Mad Merrill Timber Sale											
Rock Summary Table											
Road Segment: G2 to G3				Point to Point		Sta. to Sta.		Total Volume (CY)			
Application	Rock Size and Type	Location	Depth of Rock (in)	G2	to	G3	0+00			to	1+61
				Volume (CY)		Number of					
Road Base Rock	Pit Run (MC 440)	0+00 to 1+61	9	Station		54	Stations		1.61		
Road Top Rock	1.5"- 0" Crushed Rock	0+00 to 1+61	3	Station		17	Stations		1.61		
Landing G3	Pit Run (MC 440 Pit)	11+76 to 12+76	9	Station		50	Landing		1		
Total Rock for Road Segment: G2 to G3:									164		
Road Segment: A to A1				Point to Point		Sta. to Sta.		Total Volume (CY)			
Application	Rock Size and Type	Location	Depth of Rock (in)	A	to	A1	0+00			to	1+24
				Volume (CY)		Number of					
Base Rock Landing A1	Pit Run (MC 440 Pit)	Outside edge of landing	9	Station		48	Stations		1		
Two-way Junction	1.5"- 0" Crushed Rock	0+00 to 0+50	3	Station		17	Stations		0.6		
Road Top Rock	1.5"- 0" Crushed Rock	0+00 to 1+24	3	Station		17	Stations		1.24		
Total Rock for Road Segment: A to A1:									58		
Road Segment: Roadside Landings (B, C, D, E, F and I)				Point to Point		Sta. to Sta.		Total Volume (CY)			
Application	Rock Size and Type	Location	Depth of Rock (in)	B	to	B1	0+00			to	116+16
				Volume (CY)		Number of					
Landing Top Rock	1.5"- 0" Crushed Rock	6 - Landings	3	Station		17	Each		6		
Landing Base Rock	Pit Run (MC 440 Pit)	6 - Landings	9	Each		30	Each		6		
Total Rock for Landings:									282		
Road Segment: K to K1				Point to Point		Sta. to Sta.		Total Volume (CY)			
Application	Rock Size and Type	Location	Depth of Rock (in)	K	to	K1	0+00			to	38+25
				Volume (CY)		Number of					
Culvert Bedding Rock	1.5"- 0" Crushed Rock	25+44, 73+39	Varies	Station		24	Each		2		
Culvert Outlet Dissipator	Borrow from On-site	25+44, 73+39	Varies	Station		3	Each		2		
Total Rock for Road Segment:									54		
Road Segment: M to M1				Point to Point		Sta. to Sta.		Total Volume (CY)			
Application	Rock Size and Type	Location	Depth of Rock (in)	M	to	M1	0+00			to	310+31
				Volume (CY)		Number of					
Culvert Bedding Rock	1.5"- 0" Crushed Rock	135+81, 163+70, 281+48	Varies	Station		24	Each		3		
Culvert Outlet Dissipator	Borrow from On-site	135+81, 163+70, 281+48	Varies	Station		3	Each		3		
Total Rock for Road Segment:									81		
Road Segment: N to N1				Point to Point		Sta. to Sta.		Total Volume (CY)			
Application	Rock Size and Type	Location	Depth of Rock (in)	N	to	N1	0+00			to	116+43
				Volume (CY)		Number of					
Road Top Rock	1.5"- 0" Crushed Rock	0+00 to 116+43	3	Station		17	Each		116		
Total Rock for Landings:									1,379		
Crushed Rock for Stockpile								Total Volume (CY)			
Application	Rock Size and Type	Location	Depth of Rock (in)	Volume (CY)		Number of					
MC 500 Stockpile	1.5"-0" Crushed Rock	0.5-mile Mad Creek Road	Uniform Pile	Site		3500	Each		1		
Potato Hill Stockpile	1.5"-0" Crushed Rock	1.7-mile Mad Creek Road	Uniform Pile	Site		2000	Each		1		
MC 500 Stockpile	6"-0" Jaw Run	MC 500 Pit	Uniform Pile	Site		1500	Each		1		
Rock Summary Table											
Location		Size of Rock	Needed for Roads	Total to Crush							
MC 500 Pit		1.5"- 0" Crushed	2,260 cy	2,260 cy							
MC 500 Pit		6"- 0" Jaw Run		1,500 cy							
Potatoe Hill Stockpile		1.5"- 0" Crushed		2,000 cy							
Half Mile Mad Creek Stockpile		1.5"- 0" Crushed		3,500 cy							
MC 440 Pit Stockpile		Pit Run	365 cy								
On Site Borrow Pits		8" + for outlet dissipators	15 cy								
			Total =	3,260 cy							

EXHIBIT F

CULVERT SPECIFICATIONS

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

All culverts shall be constructed of corrugated aluminized Type 2 steel. Aluminized (Type 2) steel culverts shall meet the requirements of AASHTO M-36-03¹.

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

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

Cross Drain Culverts

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

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

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

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

Backfill shall consist of smaller than or equal to 2"-0 crushed rock on improvement segments or job-excavated soil free of stumps, limbs, rocks, or other objects which would damage the culvert on new construction segments with STATE approval.

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 rocked shall be as follows: (12") for culverts 18" to 36" and (18") for culverts 42" to 96" [add 6" for roads which will not be rocked]. Minimum vertical cover for other designs shall be as specified by STATE.

Lengths of individual culvert sections shall be not less than 10 feet, unless otherwise provided for in special instructions. The shortest culvert section length shall be placed at the inlet end.

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

The intake end of cross drain and disconnect culverts shall be provided with a sediment catching basin 3 feet in diameter at the bottom. The outlet end of any culvert which would allow water to erode embankment soil shall be provided with an energy dissipator, half round, or other approved slope protection device. Construct lead-off ditches away from culvert outlets where the slope gradients restrict the free flow of water. Culverts (36) inches in diameter or larger shall have 1:1 beveled inlets.

EXHIBIT F

CULVERT SPECIFICATIONS

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 in the same project period in which replacement occurred. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels.

The intake ends of culverts in fills less than 3 feet to the top of the culvert shall be marked with 6' long steel "T" posts. Drive the spade end of post 2 feet into the ground. Install a culvert marker at each existing culvert that is missing a marker as well as all newly installed culverts.

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

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

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

<u>Dia.</u>	<u>Steel Culvert</u>	<u>Thickness</u>		<u>Band Gauges</u>	<u>Band Widths ("")</u>	
	<u>Gauge</u>	<u>Uncoated</u>	<u>Coated</u>		<u>Annular</u>	<u>Helical</u>
18-36	16	(0.0598")	(0.064")	16	12	12

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	GAUGE	ROAD SEGMENT POINT TO POINT	STATION
1	18	30	ACSP	16	H to H1	4+69
2	18	30	ACSP	16	K to K1	25+44
3	18	30	ACSP	16	K to K1	73+39
4	18	30	ACSP	16	M to M1	135+81
5	18	30	ACSP	16	M to M1	163+70
6	24	30	ACSP	16	M to M1	281+48

ACSP = Aluminized

EXHIBIT G
TYPICAL EMBEDDED ENERGY DISSIPATOR

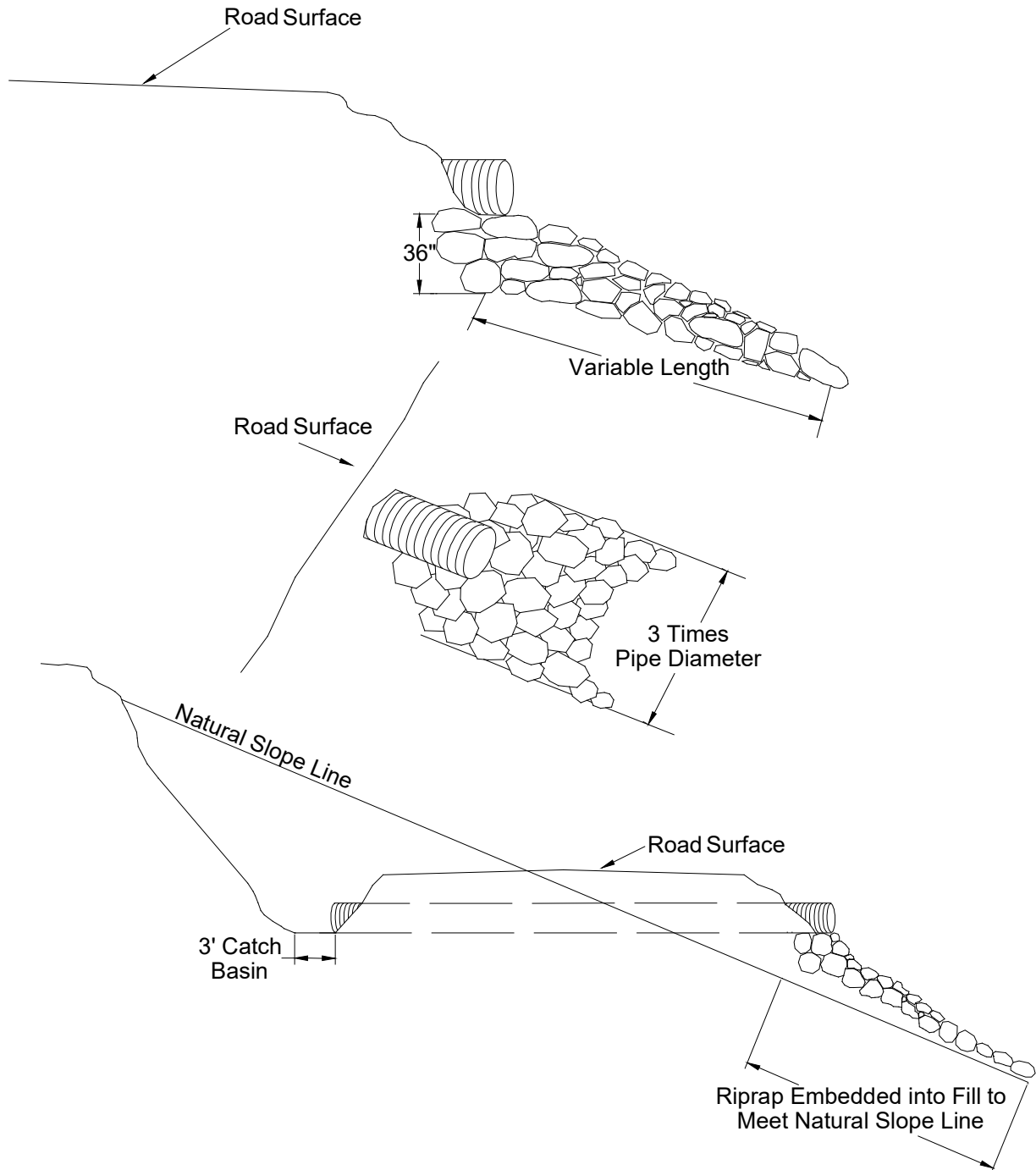
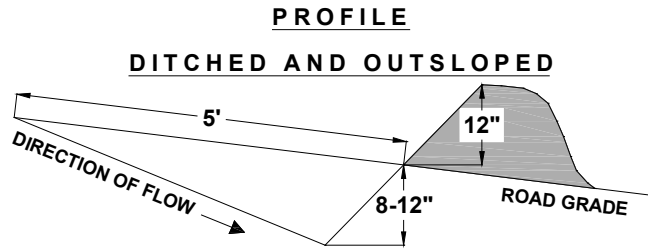
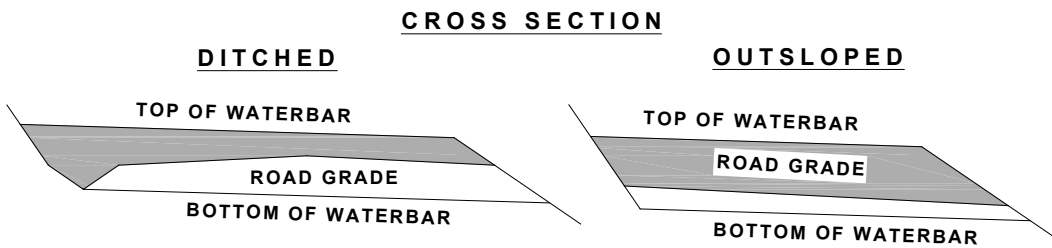


EXHIBIT H

WATERBAR SPECIFICATIONS



SPACING OF WATERBARS	
ROAD GRADE	DISTANCE
< 6 %	400'
6 - 10 %	200'
11 - 15 %	150'
> 15 %	100'



CONSTRUCT DITCHOUT THRU ANY EXISTING BERM.
CROSS DRAINAGE GRADIENT MINIMUM 3%.

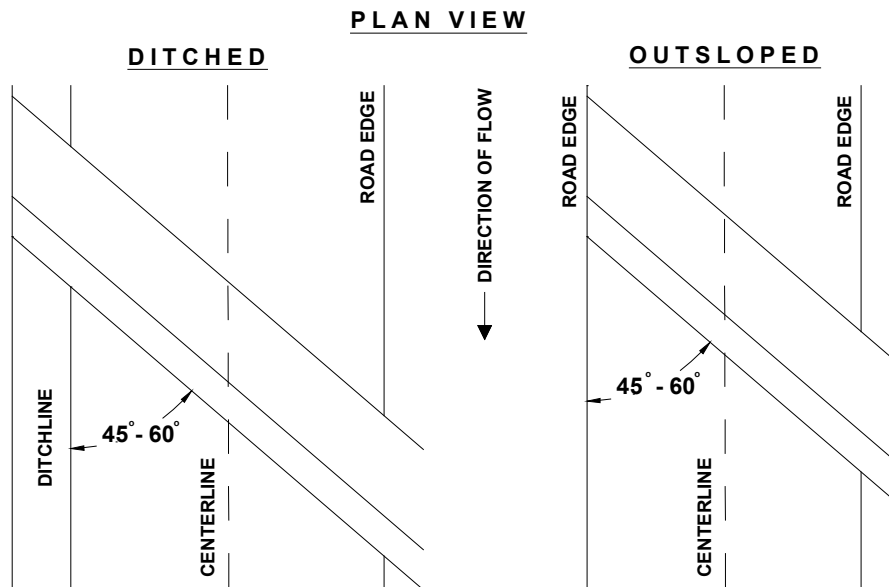
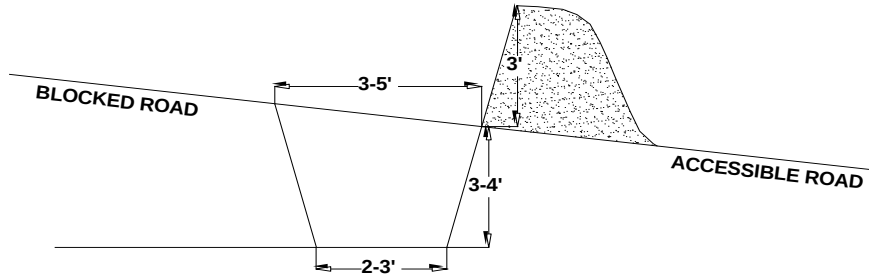


EXHIBIT I

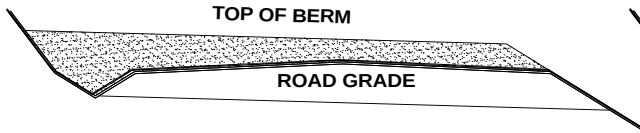
TANK TRAP SPECIFICATIONS

PROFILE DITCHED AND OUTSLOPED

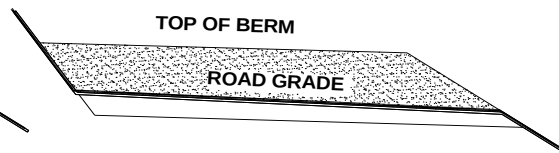


CROSS SECTION

DITCHED



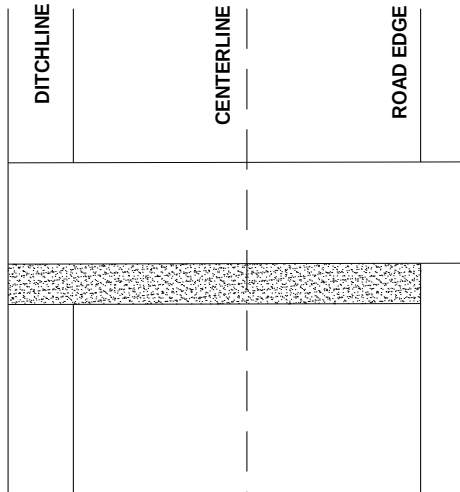
OUTSLOPED



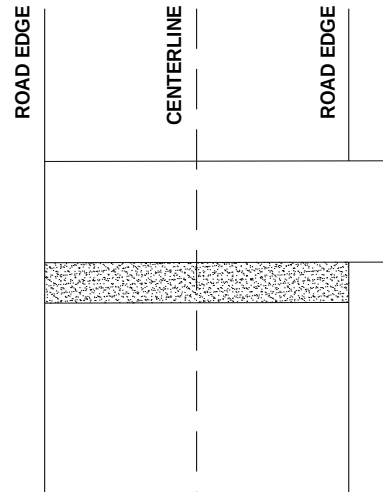
CONSTRUCT DITCHOUT THRU ANY EXISTING BERM.
CROSS DRAINAGE GRADIENT MINIMUM 3%

PLAN VIEW

DITCHED



OUTSLOPED



DIRECTION OF FLOW
↓

It should be sloped to drain with a relief ditch through the down slope edge of the road. The trench shall be behind the berm for approaching traffic.

EXHIBIT J

WATERSHED REGULATIONS

PURCHASER shall take precautions necessary to protect the watershed from damage and to prevent pollution to the water supply. Precautions shall include, but not be limited to, the following regulations.

Laws, Rules, and Regulations. Comply with Oregon laws and with the rules and regulations of the Oregon State Board of Health relative to protection of watersheds and sanitation of public water supply.

Debris in Streams. Prevent, insofar as possible, logs, chunks, and other debris, resulting from logging and road building Operations, from being deposited in streams. If such material should become deposited in streams, immediately remove the material to restore normal stream flow, using necessary care to prevent unnecessary damage to the stream channel and banks.

General Sanitary Conditions. Do not create any conditions which may permit breeding of flies or mosquitoes. Machinery, equipment, soil, and fuel storage shall not be located near streams. Waste oil shall be removed from the watershed. Camping shall not be permitted.

Personnel. Persons with a history of typhoid fever, amoebic dysentery, or infectious hepatitis shall not be employed on the watershed. PURCHASER shall verbally instruct all personnel employed on the watershed in the required sanitary precautions to be observed and shall give each such person a copy of these regulations.

Over-night Camping Prohibited. No person shall remain on the watershed overnight, unless authorized in writing by STATE.

EXHIBIT K

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Description of Work to be Done

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

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

Piles

- Piles shall be located inside the project area designated for piling and shall be more than 50 feet from any edge or standing conifer tree.
- Piles shall be made as large as possible.
- Piles shall be covered to prevent water from reaching the Slash. PURCHASER shall supply the materials used for covering the Slash.
- Plastic shall be placed on **TOP** of pile and additional woody debris shall be piled on top of the covered piles to complete the piling, as directed by STATE.
- Logs and chunks which are suitable for firewood shall be piled separately from Slash, near roads and Landings and alongside the road in locations designated by STATE.

Pile Covering Material- Piles shall be covered with a sheet of **4-6 mil Black** plastic measuring at least 10'x20'.

Skid Trails - shall be ripped to a depth of 12 inches.

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

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

EXHIBIT K

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Equipment Type, Equipment Operation, and Conduct of Work

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

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

- Excavator-shovel: Bucket shall be a hydraulically controlled, 4- to 5-foot wide, "clamshell-style bucket with rake arms," with a 360-degree continuous rotation, and tooth length on rake arm shall be greater than 14 inches long, unless otherwise approved in writing by STATE. "Clamshell-style bucket with rake arms" shall be hydraulically controlled to operate bucket in a horizontal position (**fixed position: positive control**) for piling Slash.
- Log Loader – shovel: Bucket shall be a hydraulically controlled, 4- to 5-foot wide, "clamshell-style bucket with rake arms," with a 360-degree continuous rotation, and tooth length on rake arm shall be greater than 14 inches long, unless otherwise approved in writing by STATE. "Clamshell-style bucket with rake arms" shall be hydraulically controlled to operate bucket in a vertical position (**free swinging**) for piling Slash.

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

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

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

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

EXHIBIT L

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 1 and 2.

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

APPLICATION METHODS FOR SEED

Dry Method. Mechanical seeders, seed drills, landscape seeders, cultipacker seeders, fertilizer spreaders, or other approved mechanical seeding equipment shall be used to apply the seed in the amounts and mixtures specified. Hand-operated seeding devices may be used when seed 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: All new culvert installations and waste areas generated by road project as directed by STATE.

EXHIBIT M

ROAD BRUSHING SPECIFICATIONS

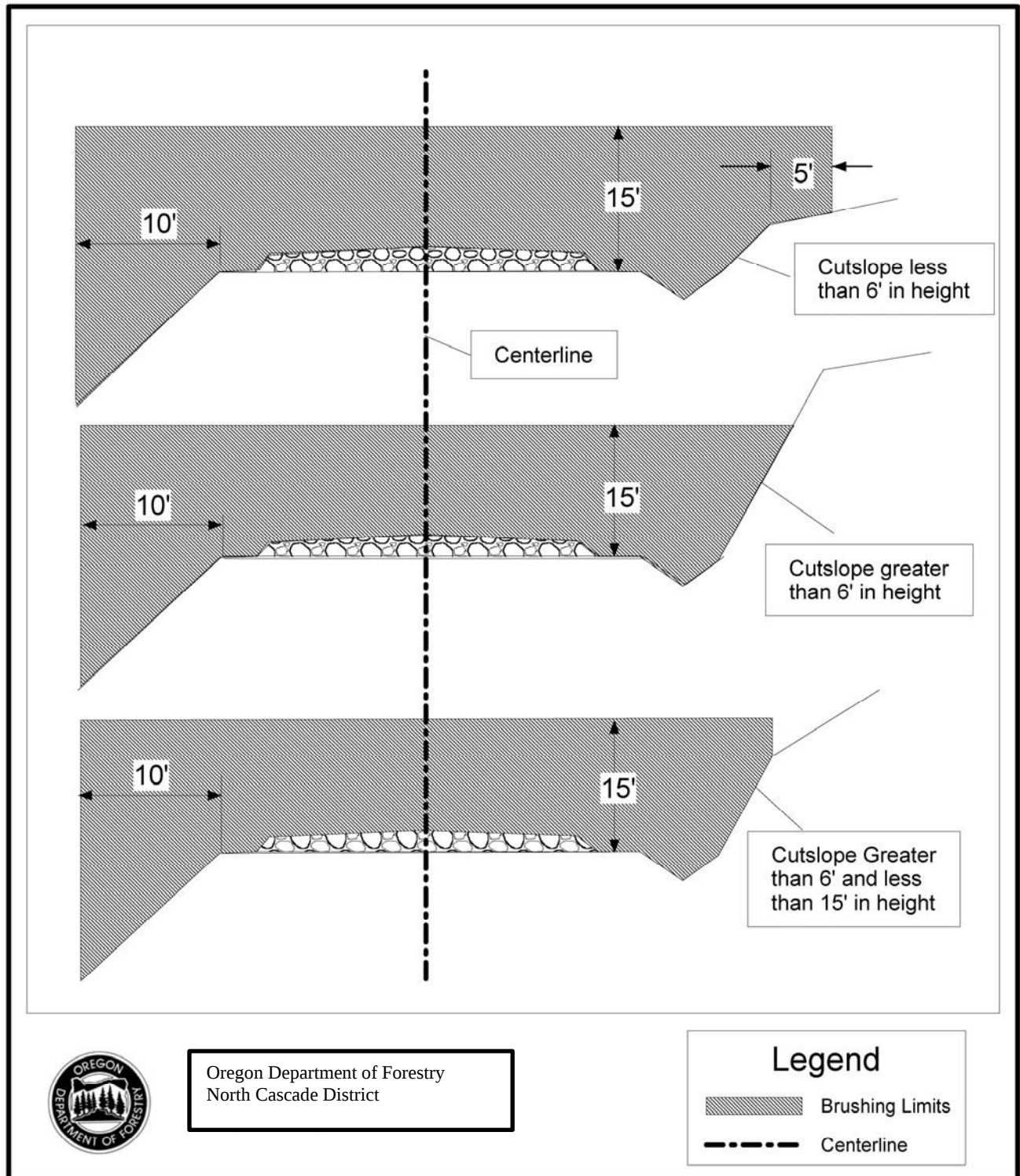


EXHIBIT M

ROAD BRUSHING SPECIFICATIONS (continued)

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 or existing debris 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 ditch line or shoulder, shall not be cut down, but shall be limbed for road visibility.

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 existing landing area 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.