


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: WO-341-2023-W00996-01

(2) Sale Name: Mahrvelous

(3) Contract Expiration Date: 10/31/2024

(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

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PART III: EXHIBITS

EXHIBIT B

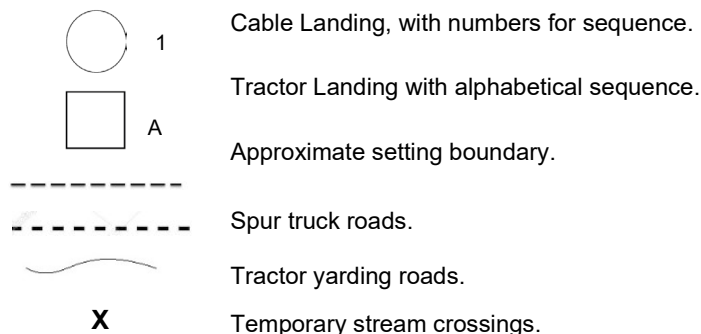
INSTRUCTION SHEET FOR OPERATIONS PLAN

SUBMIT ONE COPY OF PLAN STATE

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

Explanation of Item No.(from Page 1)

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




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

Month/Year Date ____/____	Month/Year Date ____/____	Month/Year Date ____/____	Month/Year Date ____/____	Month/Year Date ____/____
_____	_____	_____	_____	_____
Work Commences	25%	50%	75%	Projects Complete

Harvest & Other Requirements

Month/Year Date ____/____	Month/Year Date ____/____	Month/Year Date ____/____	Month/Year Date ____/____	Month/Year Date ____/____
_____	_____	_____	_____	_____
Work Commences	25%	50%	75%	Sale Complete

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

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

APPROVED; Date: _____

 SUBMITTED BY:
PURCHASER

 STATE OF OREGON - DEPARTMENT OF
FORESTRY

Title _____

Title _____



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

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

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

(3) FROM: West Oregon Phone (541) 929-3266
(State Forestry District)
Address: 24533 ALSEA HWY
PHILOMATH, OR 97370

(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'.

YES NO

(7) Weight Scale Sample ☐ ☒

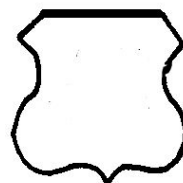
(8) APPROVED SCALING LOCATIONS (as shown on the ODF Approved Locations web-site)	Species	Yard	Truck	Weight

(9) SALE NAME: Mahrvelous
COUNTY: Benton

(10) STATE CONTRACT NUMBER:
WO-341-2023-W00996-01

(11) STATE BRAND REGISTRATION NUMBER:

(12) STATE BRAND INFORMATION:



(13) PAINT REQUIRED: YES ☒
COLOR: Orange

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

(15) REMARKS: "Mule Train" loads require a ticket for each set of bunks.

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

(16) SIGNATURES:

Purchaser or Authorized Representative Date

State Forester Representative Date

State Forester Representative PRINT NAME

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



Oregon Department of Forestry
EXHIBIT C - SAWMILL GRADE
INSTRUCTIONS FOR EXHIBIT C
West Oregon - 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**

West Oregon, NWOA

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

(9) **SALE NAME:** Mahrvelous

COUNTY: Benton

(10) **STATE CONTRACT NUMBER:**

WO-341-2023-W00996-01

(2) TO: _____

(Approved Pulp Processing Facility)

(3) FROM: West Oregon Phone (541) 929-3266

(State Forestry District)

Address: 24533 ALSEA HWY

PHILOMATH, OR 97370

(4) PURCHASER: _____

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

Mailing Address: _____

Phone Number: _____

(6) **STATE Definition of Approved Pulp Sort:**

- Top portion of the tree (tops).
- All logs with a diameter (Big End) greater than 8 inches marked with blue paint.

(7) **PULP FACILITY PROCESSING INSTRUCTIONS:**

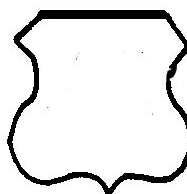
- Pulp loads shall be weighed in lieu of scaling.
- One Ton = 2000 lbs (Short Ton).
- Pulp loads shall have a yellow Log Load Receipt attached.
- Gross weight and truck tare weight for each load shall be machine printed on the weight receipt.
- Weigher shall sign the weight receipt.
- Weigher shall record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

(8) **TPSO PROCESSING INSTRUCTIONS**

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

(11) STATE BRAND REGISTRATION NUMBER: _____

(12) STATE BRAND INFORMATION:



(13) **REMARKS:** "Mule Train" loads require a ticket for each set of bunks.

Operator's Name (Optional inclusion by District):

(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.

General Distribution: TPSO, Approved Scaling Locations and Purchaser.



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

West Oregon, 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

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DRAINAGE
14 feet	12 feet	A to B	0+00 to 4+90	Crowned
14 feet	12 feet	C to D	0+00 to 1+30	Crowned
14 feet	12 feet	E to F	0+00 to 2+50	Crowned
14 feet	12 feet	G to H	0+00 to 1+30	Crowned
16 feet	12 feet	1 to 2	0+00 to 183+20	Crowned
14 feet	12 feet	2 to 3	0+00 to 156+70	Crowned
14 feet	12 feet	4 to 5	0+00 to 37+50	Crowned
14 feet	12 feet	6 to 7	0+00 to 14+90	Crowned
14 feet	12 feet	8 to 9	0+00 to 18+42	Crowned
14 feet	12 feet	10 to 11	0+00 to 20+52	Crowned
14 feet	12 feet	12 to 13	0+00 to 18+00	Crowned
14 feet	12 feet	14 to 15	0+00 to 3+20	Crowned
14 feet	12 feet	16 to 17	0+00 to 1+75	Crowned
14 feet	12 feet	18 to 19	0+00 to 1+60	Crowned
14 feet	12 feet	20 to 21	0+00 to 91+40	Crowned
14 feet	12 feet	22 to 23	0+00 to 11+00	Crowned

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

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

CLEARING CLASSIFICATION.

New Construction - Where clearing limits have not been marked, the clearing limits shall extend 5 feet back of the top of the cutslope and 5 feet out from the toe of the fill slope, or as directed by STATE.

Improvement - the "Road Brushing Specifications" in Exhibit E shall apply. 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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GRUBBING CLASSIFICATION.

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

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

CLEARING AND GRUBBING DISPOSAL. Clearing and grubbing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing and grubbing debris shall be left in a stable location, and not left lodged against standing trees. Clearing and grubbing debris may be scattered through openings in the timber outside of the cleared right-of-way.

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

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

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

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

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

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

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

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

DRAINAGE

Subgrade. Subgrade shall be crowned at 4 to 6 percent or outsloped at 3 to 4 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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

1½:1

1½:1

Top of cut slope shall be rounded.

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

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

SEASONAL WINTERIZATION. All unsurfaced roads or unfinished subgrades shall be waterbarred in accordance with the specifications in these Exhibits, 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 and hauled in where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with this Exhibit.
- (3) Drainage Ditches. Construct ditchlines, including ditchouts, as directed by STATE. Cut slopes of ditchlines and ditchouts shall not exceed a 1:1 slope. Construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE.
- (4) Culvert Installation. Culverts in live streams shall be installed with the inlet and outlet on grade with the stream bottom, unless otherwise specified in writing. Fill construction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit. STATE may require the use of crushed rock for culvert bedding.
- (5) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic-yard, track-mounted excavator.
- (6) Subgrade Preparation and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, ditchouts, fill construction, and other specified work prior to the application of surfacing rock.
 - (b) Subgrade shall be crowned at 4 to 6 percent or outsloped at 3 to 4 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 or outsloped at 3 to 4 percent.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS (Project No.1)

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
A to B	0+00 to 4+90	<p>Construct new crowned surfaced road from Point A to Point B.</p> <p>Subgrade width = 14 feet. Surfaced width = 12 feet. Crown at 4% to 6%.</p> <p>Install 18" x 30' cross drain culvert at Point A following the existing ditchline and using excavated soil as backfill.</p> <p>Endhaul excess material to Point G (approximately 100 CY).</p> <p>Shape subgrade with road grader.</p> <p>Construct Landing at Point B.</p> <p>Compact road subgrade and Landing with vibratory roller.</p> <p>Apply an 8-inch lift of Jaw-Run rock (220 CY). Apply 50 CY of Jaw-Run rock to the Landing and 20 CY of 3"-0" rock to the junction. Utilize 30 CY of Jaw-Run rock to widen inside of the curve (Sta.0+25 to 0+75). Spread and compact rock with grader and vibratory roller.</p>
C to D	0+00 to 1+30	<p>Construct new crowned surfaced road from Point C to Point D.</p> <p>Subgrade width = 14 feet. Surfaced width = 12 feet. Crown at 4% to 6%.</p> <p>Shape subgrade with road grader.</p> <p>Construct Landing at Point D.</p> <p>Compact road subgrade and Landing with vibratory roller.</p> <p>Apply an 8-inch lift of Jaw-Run rock (60 CY). Apply 40 CY of Jaw-Run rock to the Landing and 10 CY of 3"-0" rock to the junction. Spread and compact rock with grader and vibratory roller.</p>
E to F	0+00 to 2+50	<p>Construct new crowned surfaced road from Point E to Point F.</p> <p>Subgrade width = 14 feet. Surfaced width = 12 feet. Crown at 4% to 6%.</p> <p>Shape subgrade with road grader.</p> <p>Construct Landing at Point F.</p> <p>Compact road subgrade and Landing with vibratory roller.</p> <p>Apply an 8-inch lift of Jaw-Run rock (110 CY). Apply 40 CY of Jaw-Run rock to the Landing and 10 CY of 3"-0" rock to the junction. Spread and compact rock with grader and vibratory roller.</p>
G to H	0+00 to 1+30	<p>Construct new crowned surfaced road from Point G to Point H.</p> <p>Subgrade width = 14 feet. Surfaced width = 12 feet. Crown at 4% to 6%.</p> <p>Shape subgrade with road grader.</p> <p>Construct Landing at Point H.</p> <p>Compact road subgrade and Landing with vibratory roller.</p> <p>Apply an 8-inch lift of Jaw-Run rock (60 CY). Apply 30 CY of Jaw-Run rock to the Landing and 10 CY of 3"-0" rock to the junction. Spread and compact rock with grader and vibratory roller.</p>

EXHIBIT D
FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

- (1) Timber Removal. Remove all trees within posted Right-of-Way Boundary as specified in Section 2210, Designated Timber.
- (2) Roadside Brushing. Conduct roadside brushing as specified in Exhibit E.
- (3) Excavated Materials. Excavated materials shall be utilized for road and fill construction and hauled in where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with this Exhibit.
- (4) Bank Slough Removal. Excavate all bank slough. Bank slough material shall not be pulled across existing surfacing rock. Excavated material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A.
- (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. 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.
- (6) Culvert Cleaning and Repairs. Remove all debris from inside all existing culverts on the road improvement segment, as directed by STATE. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels.
- (7) Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas.
- (8) Sod Removal. Remove sod from crushed rock surfacing as directed by STATE. Sod material shall be scattered in stable locations through openings in the timber outside of the cleared right-of-way. In areas where sod cannot be scattered in a stable location, material shall be end hauled to designated waste areas as shown on Exhibit A, or other stable locations as directed by STATE.
- (9) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic yard, track-mounted excavator.
- (10) Waste areas shall be uniformly sloped and compacted for drainage.
- (11) Subgrade Preparation and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, fill reconstruction, ditchouts, and other specified work prior to the application of new surfacing rock.
 - (b) Cut out all potholes and/or washboard sections from the existing surfacing.
 - (c) Apply required patching and leveling rock, as directed by STATE.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

- (d) Process (grade and mix) the existing surface and added base rock. Provide for a crown of 4 to 6 percent or outslope of 3 to 4 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 (Project No.2)

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
1 to 2	0+00 to 183+20	Brush Road according to Exhibit E and remove brushing debris with road grader. Apply 100 CY of 1½"-0" spot rock as directed by STATE. Spot grade and compact surface (30 stations) with road grader and vibratory roller as directed by STATE.
2 to 3	0+00 (Pt. 2)	Brush road according to Exhibit E and remove sod and brushing debris with road grader. Clean out culverts (6), and repair culvert inlets and outlets (4). Apply 300 CY of 1½"-0" spot rock as directed by STATE. Apply 10 CY of 3"-0" rock to each marked Turnout (4).
	5+27	Begin ditch re-establishment.
	16+32	Utilize 20 CY of 1½"-0" rock for curve widening. End ditch re-establishment.
	34+79	Begin ditch re-establishment.
	39+55	Install an 18"x 35' CPP Cross Drain Culvert, utilize 15 CY of 1½"-0" rock for bedding and backfill, and compact.
	68+95	End ditch re-establishment.
	79+92	Install an 18"x 35' CPP Cross Drain Culvert, utilize 15 CY of 1½"-0" rock for bedding and backfill, and compact. Remove old culvert and dispose of off State lands. Begin ditch re-establishment.
	90+38	End ditch re-establishment.
	97+50 (WA)	Construct waste area using dozer, and compact all project work endhaul (80 CY) with vibratory roller.
	103+36 (Pt. 20)	Begin ditch re-establishment.
	137+86	Clean out culvert (1).

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS CONT. (Project No.2)

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
2 to 3 (CONT.)	145+37	Repair culvert (1).
	156+70 (Pt. 3)	End ditch re-establishment.
		Endhaul all waste material that cannot be scattered to waste area (60 CY).
		Process and compact road surface and turnouts with grader and vibratory roller.
4 to 5	0+00 to 37+50	Brush road according to Exhibit E and remove sod and brushing debris with road grader.
6 to 7	0+00 to 14+90	Brush road according to Exhibit E and remove sod and brushing debris with road grader.
		Install an 18"x 40' CPP Cross Drain Culvert at Pt. 6, utilize 10 CY of 1½"-0" rock for bedding and backfill, and compact. Remove old culvert and dispose of off State lands.
		Utilize 10 CY of Jaw-run rock and 10 CY of 1½"-0" rock as road stabilization rock at Point 6.
		Apply 60 CY of 1½"-0" spot rock as directed by STATE.
		Apply 30 CY of 3"-0" rock to the Landing at Point 7.
		Process and compact road surface and Landing with grader and vibratory roller
8 to 9	0+00 to 18+42	Brush road according to Exhibit E and remove sod and brushing debris with road grader.
10 to 11	0+00 to 20+52	Brush road according to Exhibit E and remove sod and brushing debris with road grader.
	4+29	Clean out culvert (1).
12 to 13	0+00 to 18+00	Brush road according to Exhibit E and remove sod and brushing debris with road grader.
14 to 15	0+00 to 3+20	Brush road according to Exhibit E and remove sod and brushing debris with road grader.
16 to 17	0+00 to 1+75	Brush road according to Exhibit E and remove sod and brushing debris with road grader.
18 to 19	0+00 to 1+60	Brush road according to Exhibit E and remove sod and brushing debris with road grader.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS CONT. (Project No.2)

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
20 to 21	0+00	Remove large debris in roadway with backhoe.
		Re-establish ditch as directed by STATE (60 stations).
		Clean out culverts (3).
		Brush road according to Exhibit E and remove sod and brushing debris with road grader.
		Apply 150 CY of 1½"-0" spot rock as directed by STATE.
		Apply 10 CY of 3"-0" rock to each marked Turnout (3).
	17+90	Remove bank slough with backhoe.
	47+11	Realign road approximately 3 feet away from inside corner and utilize 40 CY of 3"-0" rock and 10 CY of 1½"-0" rock.
	91+40	Endhaul all waste material that cannot be scattered to waste area (20 CY).
		Process and compact road surface and turnouts with grader and vibratory roller.
22 to 23	0+00 to 11+00	Brush road according to Exhibit E and remove sod and brushing debris with road grader.

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	A to B			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	A to B		0+00 to 4+90			
				Volume (CY) per		Number of			
Base rock	Jaw-Run	0+00 to 4+90	8	44	Station	4.9	Stations	220	297
Landing rock	Jaw-Run	4+90	N/A	50	Landing	1	Landing	50	68
Junction Rock	3"-0"	0+00 to 0+50	N/A	20	Junction	1	Junction	20	27
Curve Widening Rock	Jaw-Run	0+25 to 0+75	N/A	30	Curve	1	Curve	30	41
Total Rock for Road Segment		A to B						320	433

ROAD SEGMENT	C to D			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	C to D		0+00 to 1+30			
				Volume (CY) per		Number of			
Base rock	Jaw-Run	0+00 to 1+30	8	44	Station	1.3	Stations	60	81
Landing rock	Jaw-Run	1+30	N/A	40	Landing	1	Landing	40	54
Junction Rock	3"-0"	0+00 to 0+50	N/A	10	Junction	1	Junction	10	14
Total Rock for Road Segment		C to D						110	149

ROAD SEGMENT	E to F			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	E to F		0+00 to 2+50			
				Volume (CY) per		Number of			
Base rock	Jaw-Run	0+00 to 2+50	8	44	Station	2.5	Stations	110	149
Landing rock	Jaw-Run	2+50	N/A	40	Landing	1	Landing	40	54
Junction Rock	3"-0"	0+00 to 0+50	N/A	10	Junction	1	Junction	10	14
Total Rock for Road Segment		E to F						160	217

ROAD SEGMENT	G to H			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	G to H		0+00 to 1+30			
				Volume (CY) per		Number of			
Base rock	Jaw-Run	0+00 to 1+30	8	44	Station	1.3	Stations	60	81
Landing rock	Jaw-Run	1+30	N/A	30	Landing	1	Landing	30	41
Junction Rock	3"-0"	0+00 to 0+50	N/A	10	Junction	1	Junction	10	14
Total Rock for Road Segment		G to H						100	136

EXHIBIT D
ROAD SURFACING

ROAD SEGMENT	1 to 2			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1 to 2		0+00 to 183+20			
				Volume (CY) per		Number of			
Spot rock	1 1/2"-0"	As Marked	NA	10	Load	10	Loads	100	135
Total Rock for Road Segment		1 to 2						100	135

ROAD SEGMENT	2 to 3			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2 to 3		0+00 to 156+70			
				Volume (CY) per		Number of			
Spot rock	1 1/2"-0"	0+00 to 156+70	NA	10	Load	30	Loads	300	405
Curve widening rock	1 1/2"-0"	Sta. 16+32	NA	20	Curve	1	Curve	20	27
Turnout rock	3"-0"	As Marked	NA	10	Turnout	4	Turnouts	40	54
Culvert bedding rock	1 1/2"-0"	(Sta. 39+55), (Sta. 79+92)	NA	15	Culvert	2	Culverts	30	41
Total Rock for Road Segment		2 to 3						390	527

ROAD SEGMENT	6 to 7			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	6 to 7		0+00 to 14+90			
				Volume (CY) per		Number of			
Spot rock	1 1/2"-0"	0+00 to 14+90	NA	10	Load	6	Loads	60	81
Landing rock	3"-0"	14+90	NA	30	Landing	1	Landing	30	41
Culvert bedding rock	1 1/2"-0"	0+00	NA	10	Culvert	1	Culvert	10	14
Road Stabilization rock	Jaw-Run	0+00	NA	1	Load	10	Loads	10	14
Road Stabilization rock	3"-0"	0+00	NA	1	Load	10	Loads	10	14
Total Rock for Road Segment		6 to 7						120	164

ROAD SEGMENT	20 to 21			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	20 to 21		0+00 to 91+40			
				Volume (CY) per		Number of			
Spot rock	1 1/2"-0"	NA	NA	10	Load	15	Loads	150	203
Road Alignment rock	3"-0"	Sta. 47+11	NA	10	Load	4	Loads	40	54
Road Alignment rock	1 1/2"-0"	Sta. 47+11	NA	10	Load	1	Load	10	14
Turnout rock	3"-0"	As Marked	NA	10	Turnout	3	Turnouts	30	41
Total Rock for Road Segment		20 to 21						230	312

EXHIBIT D
ROAD SURFACING

ROAD SEGMENT	Stockpile Restock			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	NA		NA			
				Volume (CY) per		Number of			
Stockpile (S1)	1 1/2"-0"	S1	NA	10	Load	50	Loads	500	675
Stockpile (S2)	3"-0"	S2	NA	10	Load	30	Loads	300	405
Total Rock for Stockpile Restock								800	1080

ROCK CONVERSION FACTORS

Size	1 1/2"-0"	3"-0"	Jaw-Run
Tons/CY	1.35	1.35	1.35

Maintenance Rock Volumes in CY			
Rock Size	1 1/2"-0"	3"-0"	Jaw-Run
Rock Totals	200	-	-

Total Rock Volumes For Projects			
Rock Size	1 1/2"-0"	3"-0"	Jaw-Run
Rock Totals CY	1180	500	650
Rock Totals TONS	1593	675	878

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

EXHIBIT D

ROCK ACCOUNTABILITY

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

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

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

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

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. 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 or outsloped at 3 to 4 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	SUBGRADE COMPACTION OPTIONS
All road segments.	1

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

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

ROAD SEGMENT	FILLS COMPACTION OPTIONS
All road segments.	1 and 2

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

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

Rock shall be crowned at 4 to 6 percent or outsloped at 3 to 4 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

Jaw-Run Rock. The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of jaw-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 or outsloped at 3 to 4 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	JAW-RUN COMPACTION OPTIONS
Segments requiring Jaw-Run rock	1 and 3

COMPACTION EQUIPMENT OPTIONS

- (1) Vibratory Rollers. The drum shall have a smooth surface, a diameter not less than 48 inches, a width not less than 58 inches, and a turning radius of 15 feet or less. Vibration frequency shall be regulated in steps to 1400, 1500, and 1600 VPM, corresponding to engine speeds of 1575, 1690, and 1800 RPM. The centrifugal force developed shall be 7 tons at 1600 VPM. It shall be activated by a power unit of not less than 25 horsepower. The vibratory roller shall be self-propelled and operated at speeds ranging from 0.9 miles to 1.8 miles per hour, as directed by STATE.
- (2) Vibratory Hand-Operated or Backhoe-Mounted Tamper. Vibratory hand-held or hydraulic tampers shall be used for compaction of backfill materials around culverts. The tamper shoe dimensions shall be a minimum of 10" X 13" and capable of a centrifugal force of 2,250 pounds.
- (3) Dozer. A dozer/track-type tractor weighing a minimum of 45,000 pounds as directed by STATE shall be operated over the jaw-run rock so that the entire surface comes in contact with the tracks.

EXHIBIT D

CRUSHED ROCK SPECIFICATIONS

Grading Requirements

<u>For 1½"-0"</u>	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%
<u>For 3"-0"</u>	Passing	4" sieve	100%
	Passing	3" sieve	90-100%
	Passing	1½" sieve	60-90%
	Passing	¾" sieve	40-60%
	Passing	¼" sieve	20-40%
	Passing	No. 10 sieve	5-20%
<u>For Jaw-Run</u>	Passing	6" sieve	100%
	Passing	3" sieve	45-65%
	Passing	¼" sieve	0-10%

Control of gradation shall be by visual inspection by STATE.

EXHIBIT D
CULVERT SPECIFICATIONS

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

Culverts 36 inches in diameter and smaller shall be constructed of corrugated polyethylene, unless otherwise specified in the Contract. Polyethylene culverts shall be double-walled and meet the requirements of AASHTO M-294-11, Type S, or ASTM F2648.

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.

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

Cross Drain Culverts

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

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

Disconnect Culverts

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

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

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

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

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

Minimum height of cover over top of culvert to subgrade when road is to be rockered shall be as follows: 12" for culverts 18" to 36". 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.

EXHIBIT D

CULVERT SPECIFICATIONS

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.

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

The intake ends of culverts in fills less than 3 feet to the top of the culvert shall be marked by driving 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. Install a culvert marker at each existing culvert that is missing a marker that could be reached by a grader blade.

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

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
1	18	30	CPP	A to B	0+00
2	18	35	CPP	2 to 3	39+55
3	18	35	CPP	2 to 3	79+92
4	18	40	CPP	6 to 7	0+00

CPP = Polyethylene

EXHIBIT D WATERBAR SPECIFICATIONS

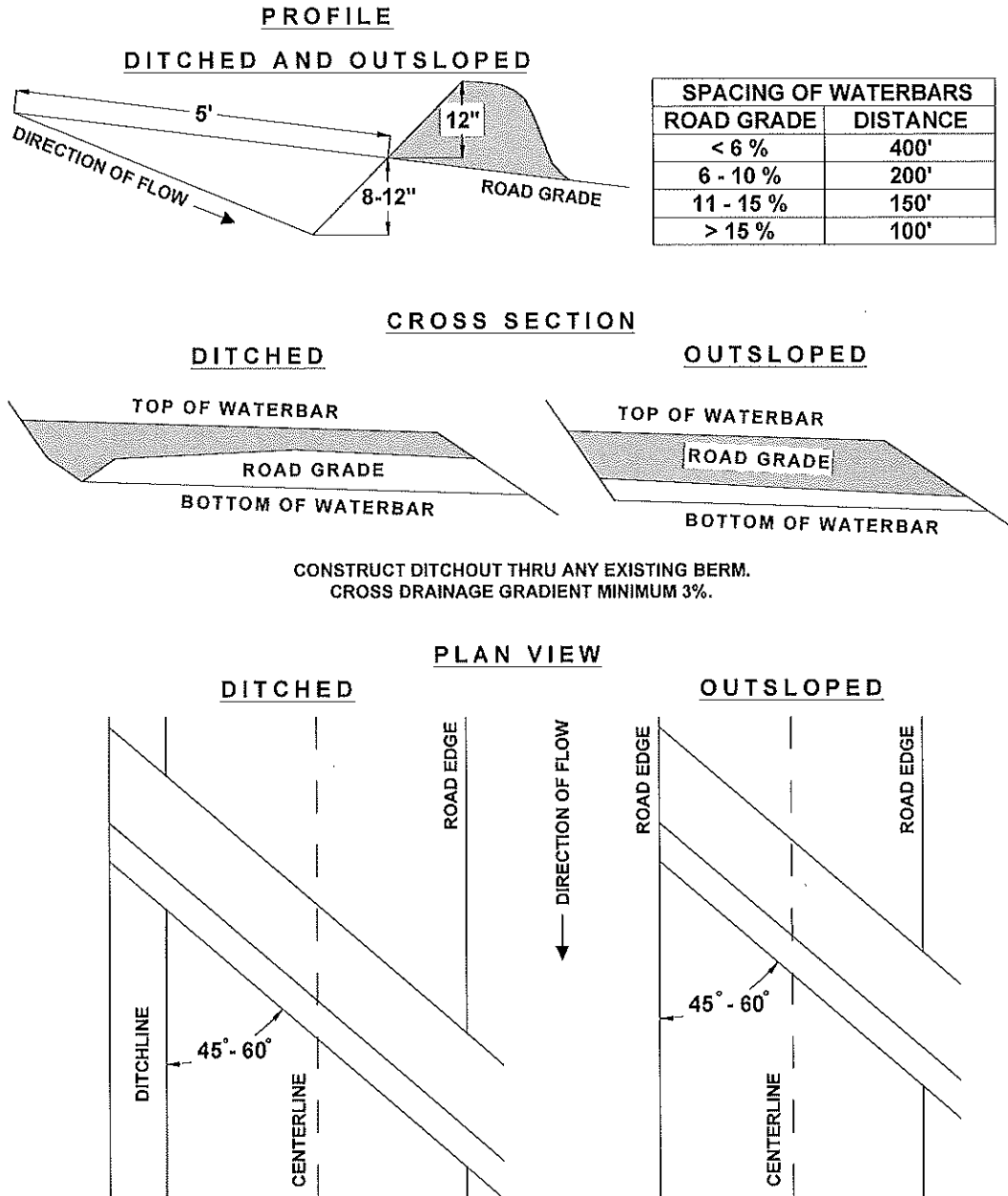


EXHIBIT E
ROAD BRUSHING SPECIFICATIONS

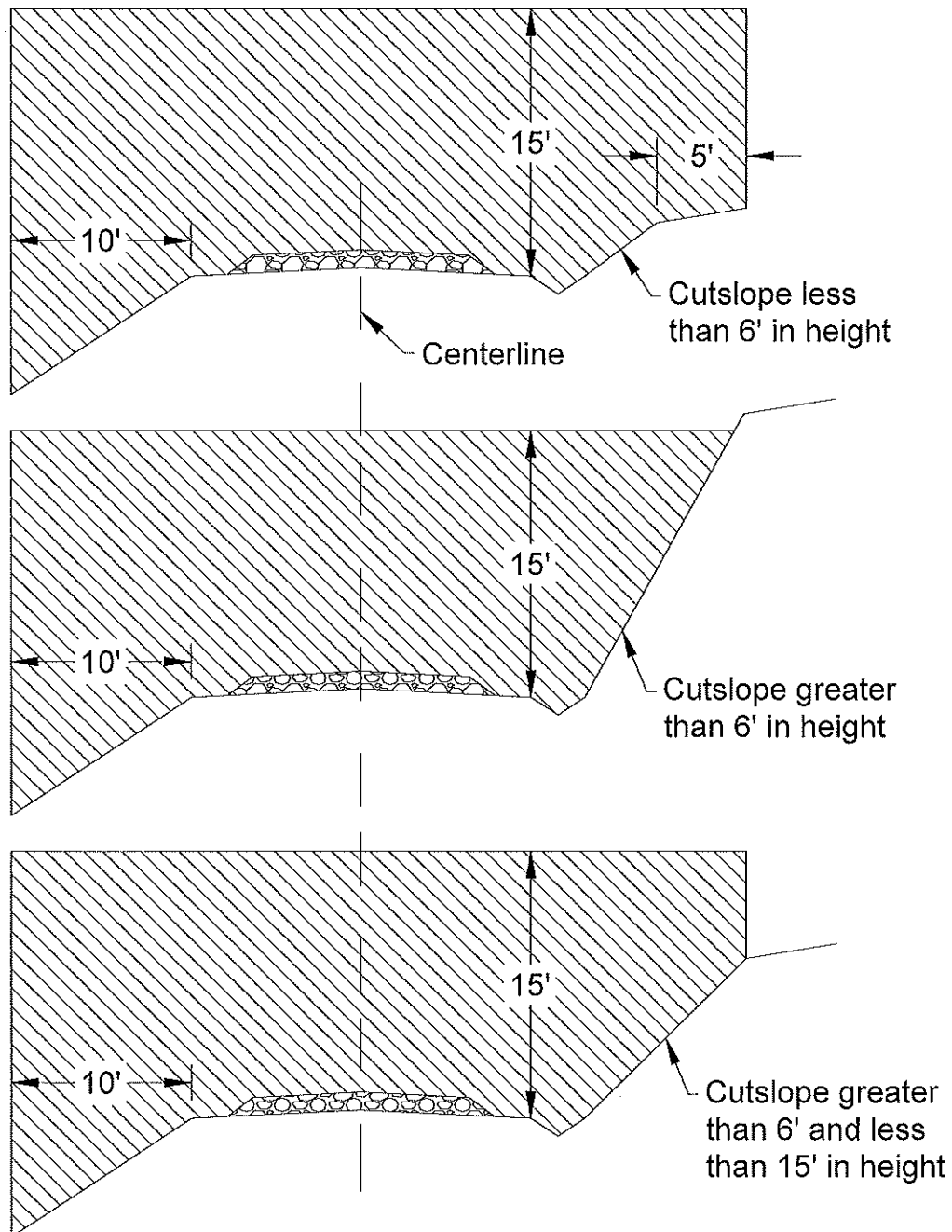


EXHIBIT E

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 in this exhibit. 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.

FPA WRITTEN PLAN for Yarding Corridors through Type F RMA's

Mahrvelous Timber Sale

Location: Portions of Section 21, T10S, R7W, W.M., Benton County, Oregon

Landowner: Oregon Department of Forestry
24533 Alsea Hwy
Philomath OR, 97370
(541) 929-3226

Protected Resources: Unnamed tributary of Oleman Creek, a small Type F stream.

Situation: The stream flows along the western boundary and into Timber Sale Area for approximately 2,500 feet.

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

If trees need to be felled within FPA defined stream buffers (RMA's) to allow for cable corridors, trees cut will not be removed. Cable lines may extend over and/or through these buffers.

Resource Protection Practices:

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

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

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

Purchaser/Operator Contract Representative

Date: _____

State Representative

Date: _____