

# PART III: EXHIBITS

State Timber Sale Contract  
No. 341-11-32  
Wallhanger

EXHIBIT B

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

## OREGON DEPARTMENT OF FORESTRY

### TIMBER SALE OPERATIONS PLAN

(See Page 2 for instructions)

Date Received by STATE: \_\_\_\_\_

(5) State Brand Information (complete):



(1) Contract No.: 341-11-32

(2) Sale Name: Wallhanger

(3) Contract Expiration Date: October 31, 2012

Project Completion Dates: \_\_\_\_\_

(4) Purchaser: \_\_\_\_\_

(6) Purchaser Representatives:

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

(7) State Representatives:

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

(8) Name of Subcontractors & Starting Dates:

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

(9) Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

EXHIBIT B  
INSTRUCTION SHEET FOR OPERATIONS PLAN

**SUBMIT ONE COPY OF PLAN TO STATE**

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

**Explanation of Item No. (from Page 1)**

- (5) All sales require you to use a brand furnished by STATE. If the State brand has not been assigned when the plan is submitted, it will be furnished and assigned later. Complete drawing. If more than one brand is assigned to the sale, complete both drawings.
- (6) The contract requires you to have a designated representative available on the sale area or work location who is authorized to receive in your behalf any notice or instruction given by STATE and to take action in regard to performance under the contract. If logging and project work is widely separated, a representative is required for each.
- (7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.
- (8) Show names of subcontractors to be used for any or all phases of the operations. If subcontractors are not known, or are changed later, give notification to the STATE representative prior to commencement of work by subcontractor.

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

- (10) The STATE representative will furnish extra copies of Exhibit A of the contract for your use in preparing the operations map. The map shall use the following legend and show:
  - 1. Landing locations, approximate setting boundaries, and probable sequence of logging the settings. Number the settings in sequence.
  - 2. Locations of spur roads planned for construction, other than those required by the timber sale contract. Provide spur road specifications.
  - 3. Location of proposed tractor yarding roads. Show if and how marked on the ground.
  - 4. Location of temporary stream crossings.
  - 5. List the sequence of performing project work.
  - 6. Location of rock sources - attach pit development plans.







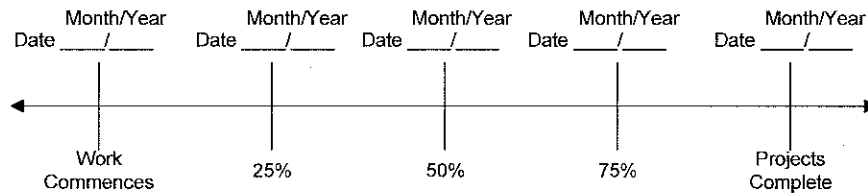
-  Cable Landing, with numbers for sequence.
-  Tractor Landing with alphabetical sequence.
-  Approximate setting boundary.
-  Spur truck roads.
-  Tractor yarding roads.
-  Temporary stream crossings.

EXHIBIT B  
OPERATIONS PLAN

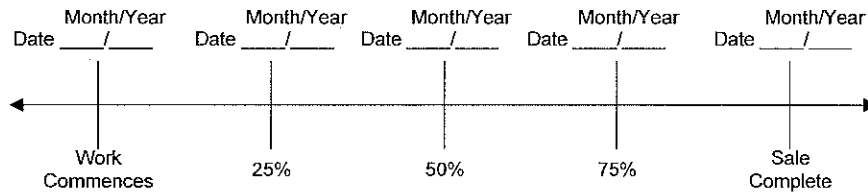
**Completion Timeline**

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

**Projects**



**Harvest & Other Requirements**



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

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

APPROVED: Date: \_\_\_\_\_

SUBMITTED BY:  
PURCHASER

STATE OF OREGON - DEPARTMENT OF FORESTRY

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

Original: Salem  
cc: District File  
Purchaser

EXHIBIT C

SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

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

(3) FROM: Astoria (04) Phone (503) 325-5451  
 (State Forestry District)  
 Address 92219 Hwy 202, Astoria, OR 97103

(4) PURCHASER: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 Phone Number: \_\_\_\_\_

(12) NOTICE OF CANCELLATION OF BRAND:  
 Effective Date: \_\_\_\_\_

State Forester's Representative \_\_\_\_\_

(13) SALE NAME Wallhanger

COUNTY Clatsop

(14) STATE CONTRACT NUMBER 341-11-32

(15) STATE BRAND REGISTRATION NUMBER \_\_\_\_\_

(16) STATE BRAND INFORMATION:  
 (COMPLETE)



(17) PAINT REQUIRED: YES   
 COLOR Orange

(5) MINIMUM SCALING SPECIFICATIONS			CLASS		
SPECIES	SCALING DIAMETER INCHES	*NET SCALE VOLUME	PER MBF	** SUM	SUB
All	-	10	X		

\* Apply minimum volume test to whole logs over 40' Westside; 20' Eastside.  
 \*\* Sum (if indicated): see instructions and explain in Item (19).

(6) WESTSIDE SCALE: YES  NO   
 Use Region 6 actual taper rule. Logs over 40'.

(7) EASTSIDE SCALE: YES  NO   
 Use Region 6 actual taper rule. Logs over 40'.

(8) Weight Scale Sample YES  NO   
 (6) - (8), pink log load receipts

(9) Weight Sale YES  NO

(10) Per Load YES  NO   
 (9) and (10), yellow log load receipts

(18) SPECIAL REQUESTS
PEELABLE CULL (all species)
<b>NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE</b>
ADD-BACK VOLUME - Deductions due to delay
OTHER:

(19) REMARKS All hardwoods less than 30 board feet shall be scaled as "utility". Hardwoods logs greater than or equal to 30 net board feet shall be scaled as a sawlog.

Operator's Name (Optional inclusion by District): \_\_\_\_\_

(20) SIGNATURES:  
 Purchaser or Authorized Representative \_\_\_\_\_ Date \_\_\_\_\_  
 State Forester Representative \_\_\_\_\_ Date \_\_\_\_\_

(11) APPROVED SCALING LOCATIONS	Species	Yard	Truck	Weight

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

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

EXHIBIT C

INSTRUCTIONS FOR FORM 343-307 (rev. 10/08)

- (1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires Item (12). Complete date.
- (2) Designate Third Party Scaling Organization (TPSO).
- (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. Review Section 2040 or 2045, "Log Removal," of the Contract. Species, or combined species can be separate entries. Information serves as a basis for scaling (see also Items (16) thru (18)), and is required to show existence on the sale. **SUM** (lump sum material). **SUB** (submerchantable material). SUB, as used by the State, references that material containing at least 10 bf (net) but less than the lower merchantable net volume limit or grade requirements for other merchantable (Per MBF) entries. Per MBF, SUM, and SUB must be indicated by checking the appropriate column. Species with the same specifications and value are combined into one entry. Per MBF and SUB require scaling therefore complete specifications. SUM need not be scaled, hence no specifications. Loads containing only SUM are to be ticketed if so instructed in Item (19). Mixed loads of SUM, Per MBF and/or subspecies will always be scaled.
- (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) Eastside – Region 6 actual taper/taper table segment scale. Special Service Rules on file with TPSO. See: Segment Scaling and Grading of Long Logs – All Species – State Forestry Department Scaling Practices (Northwest Log Rules Eastside). Items with \* follow U.S. Forest Service Eastside rules.
- (8) 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 (19).
- (9) Weight Sale – Check box if sale is to be sold as a weight sale. Processing procedures from approved locations to TPSO's will be explained in the Remarks section of Item (19).
- (10) Per Load – Check box if volumes on sale are per load. Specific instructions for handling and processing will be fully explained in the Remarks section of Item (19).
- (11) Show scaling locations only applicable to TPSO. Location name should appear as it does on the ODF Approved Scaling Location web site: [http://www.odf.state.or.us/DIVISIONS/management/asset\\_management/ScalingLocation.asp](http://www.odf.state.or.us/DIVISIONS/management/asset_management/ScalingLocation.asp) Locations with scaling and processing directions specific to their location should be on a separate form. Species should be identified if not capable of receiving "all" species. Check appropriate box for either: yard, truck scale, or weight. Refer to the web site listed above for the locations approval status.
- (12) When logging and hauling is complete, recall branding hammers, date and sign where indicated, check CANCELLATION box in Item (1), and send to TPSO.
- (13) Enter sale name and county
- (14) Enter sale Contract number.
- (15) Enter Oregon's State Brand Registry Number (required).
- (16) Show brand assigned to timber sale. One brand only. If more than one brand is assigned to the sale: (1) make separate form for each brand and (2) on each form, explain and show other brand(s) in the Remarks section Item (19).
- (17) Check yes for Paint Required and designate "Orange" for color. Non required removal volumes may sometimes require blue paint.
- (18) Special Requests. These are requests that will be applied to ODF timber sales. If "Other" is indicated, it must contain a description and any necessary comments.
- (19) Use this space to designate any weight conversion factors, per load volumes, weight scale sample instructions or any other explanations to clarify scaling or processing requirements. If additional scaling locations are approved, prepare another form showing all (old and new) locations. Check REVISION box at top of form and explain under remarks. Route as indicated.
- (20) Require purchaser to sign and date completed form.

EXHIBIT D  
 FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DRAINAGE
16 feet	12 feet	1A to 1B	0+00 to 36+05	DITCH
16 feet	12 feet	1C to 1D	0+00 to 2+40	DITCH
16 feet	12 feet	1G to 1H	0+00 to 30+35	DITCH
16 feet	12 feet	1I to 1J	0+00 to 10+70	DITCH
14 feet	None	1K to 1L	0+00 to 17+60	OUTSLOPE
16 feet	12 feet	1M to 1N	0+00 to 2+50	DITCH
16 feet	12 feet	2A to 2B	0+00 to 9+35	DITCH
14 feet	None	2G to 2H	0+00 to 5+45	OUTSLOPE
16 feet	12 feet	3A to 3B	0+00 to 5+65	DITCH
14 feet	None	3C to 3D	0+00 to 11+80	OUTSLOPE
14 feet	None	3E to 3F	0+00 to 9+15	OUTSLOPE
16 feet	12 feet	3G to 3H	0+00 to 7+55	DITCH
16 feet	12 feet	I1-I2	0+00 to 39+15	DITCH

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

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

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

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

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

GRUBBING CLASSIFICATION.

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

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

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

Excavation shall conform to STATE-specified lines, grades, dimensions, and plans when provided. Plans are provided for the following road segments: 1A to 1B, 1G to 1H, 1I to 1J, 2A to 2B, 3A to 3B, 3E to 3F, 3G to 3H, and I1 to I2.

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

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

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

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 unless otherwise specified in specific instructions.

DRAINAGE

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

Outslope. Road subgrade shall be outsloped at 4 to 6 percent.

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

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

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

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

SLOPES

Solid Rock

Fractured Rock

Soil - side slopes 50% and over

Soil - side slopes less than 50%

Top of cutslope shall be rounded.

Back Slopes

Vertical to ¼ :1

½ :1

¾ :1

1 :1

Fill Slopes

1½ :1

1½ :1

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

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

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

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

1. Timber Removal. Remove all trees within posted right-of-way boundary as specified in Section 2210, "Designated Timber".
2. Excavated Materials. Excavated materials shall be utilized for road construction. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with Exhibit D.
3. Fill Armor and Energy Dissipator Construction. Where rock is specified for fill armor, rock shall be machine placed and tamped at a 1½:1 slope, beginning at the toe of the fill. Where rock is used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with Exhibit H.
4. Geotextile Road Fabric: Install woven fabric from as directed by STATE in accordance with the specifications in Exhibit G.
5. Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic-yard, track-mounted excavator.
6. Subgrade Preparation and Application of Surfacing Rock.
  - (a) Complete culvert installations, drainage ditches, ditchouts, fill construction, and other specified work prior to the application of surfacing rock.
  - (b) Subgrade shall be crowned at 4 to 6 percent.
  - (c) Upon completion of above required work, apply, process, and compact surfacing rock in accordance with specifications in the "Compaction and Processing Requirements" in this Exhibit. Final road surface shall be crowned at 4 to 6 percent.

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description:</u>
1A to 1B	1+00 to 1+40	Armor left side of fill utilizing 40 cubic yards of 24"-6" riprap rock.
	7+40 to 7+75	Armor right side of fill utilizing 140 cubic yards of 24"-6" riprap rock.



EXHIBIT D  
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description:</u>
1A to 1B(cont)	8+50 to 8+90	Armor fill utilizing 100 cubic yards of 24"-6" riprap rock.
	19+00 to 20+30	Armor right side of fill utilizing 288 cubic yards of 24"-6" riprap rock.
	19+50	Begin 60-foot radius curve and curve widening.
	21+10	Widen road 4 feet left.
	20+70	End 60 foot radius curve and curve widening.
1G to 1H	19+10	Begin 50-foot radius curve and curve widening.
	19+50	Widen road 5 feet right.
	19+90	End 50 foot radius curve and curve widening.
	23+20 to 24+00	Armor fill utilizing 282 cubic yards of 24"-6" riprap rock.
1I to 1J	0+00	Begin 60-foot radius curve and curve widening.
	0+40	Widen road 4 feet right.
	0+80	End 60-foot radius curve and curve widening.
	4+70 to 5+75	Armor fill utilizing 297 cubic yards of 24"-6" riprap rock.
1K to 1L	0+00 to 8+40	End haul slash from existing road grade to waste area near 0+00.
2A to 2B	1+05	Begin 70-foot radius curve and curve widening.
	1+75	Widen road 10 feet right.
	2+60	End 70-foot radius curve and curve widening.
3A to 3B	0+50	Begin sidecast pullback.
	1+10	End sidecast pullback.
	2+10	Begin sidecast pullback.
	3+60	End sidecast pullback.

EXHIBIT D  
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description:</u>
3C to 3D	0+00	Utilize 11 cubic yards of 24"-6' riprap rock for ditchout on Peterson Ridge Road.
3G to 3H	0+40	Begin 50-foot radius curve and curve widening.
	0+90	Widen road 15 feet right. Incorporate portions of Windy Ridge Road for this curve widening.
	1+40	End 50-foot radius curve and curve widening.
	2+15	Begin full Containment.
	5+50	End full containment.
5+50 to 6+50		Armor left side of fill utilizing 105 cubic yards of 24"-6" riprap rock.

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. Excavated Materials. Excavated materials shall be utilized for road construction. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with this Exhibit. Excess excavated material not used for embankment on the following segment Pt. I1 to I2 shall be end hauled to waste areas as shown on Exhibit A and marked in the field.
3. Bank Slough Removal. Dig out all bank slough. Bank slough material shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Waste materials shall be seeded and mulched in accordance with specifications in Exhibit N.
4. Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include, skewing the culvert and/or installing the culvert at gradients equal to or exceeding the drainage (or ditch) gradient. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. All woody debris encountered during fill excavation shall be removed. All waste materials shall be hauled to nearby waste areas and shall be uniformly sloped and compacted for drainage. Waste materials shall be seeded and mulched in accordance with specifications in Exhibit N. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit D. Crushed rock shall be used for backfilling excavation trenches less than 3 feet deep. STATE may require the use of crushed rock for culvert bedding. Removed culverts shall be hauled to an approved refuse site off of STATE land.
5. Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels. Install a culvert marker at each newly installed culvert and at each existing culvert that is missing a marker that could be reached by a grader blade.
6. Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic yard, track-mounted excavator.
7. 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.
  - (d) Process (grade and mix) the existing surface and added base rock. Provide for a crown 4 to 6 percent, and compact in accordance to the "Compaction and Processing Requirements" in this Exhibit.

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

EXHIBIT D  
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description:</u>
I1 to I2	6+25	Begin 90-foot radius curve.
	6+75	Widen road 5 feet left.
	7+25	End 90-foot radius curve.
	8+70	Begin 100-foot radius curve.
	9+10	Widen road 4 feet right.
	9+65	End 100-foot radius curve.
	22+05	Begin 80-foot radius curve.
	22+55	Widen road 7 feet right.
	23+10	End 80-foot radius curve.
	27+85	Begin 75-foot radius curve.
	28+55	Widen road 9 feet right.
	29+15	End 75-foot radius curve.
	30+95	Begin 100-foot radius curve.
	31+30	Widen road 5 feet right.
	31+95	End 100-foot radius curve.

EXHIBIT D  
 FULL BENCH AND END-HAUL REQUIREMENTS

POINT TO POINT	STA. TO STA.	CONTAINMENT - SIDECAST	WASTE AREA LOCATION	WASTE AREA TREATMENT
1A to 1B	9+65 to 11+00	1	1	1,2, & 3
1A to 1B	12+00 to 13+00	1	1	1,2, & 3
1G to 1H	0+30 to 0+75	1	1	1,2, & 3
1G to 1H	12+00 to 14+70	1	1	1,2, & 3
1I to 1J	0+90 to 3+00	1	1	1,2, & 3
3A to 3B	0+50 to 1+10	1	2	1,2, & 3
3A to 3B	2+10 to 3+60	1	2	1,2, & 3
3G to 3H	2+15 to 5+50	1	2	1,2, & 3
I1 to I2	6+25 to 7+20	1	2	1,2, & 3
I1 to I2	8+55 to 9+65	1	2	1,2, & 3
I1 to I2	22+05 to 23+10	1	2	1,2, & 3
I1 to I2	27+95 to 29+10	1	2	1,2, & 3
I1 to I2	30+85 to 31+70	1	2	1,2, & 3

Full Bench and End-Haul Areas General Requirements

Sidecast includes any road generated excess excavation material which is not essential as part of the road prism, is not compacted, and is below the roadway. Material shall not be sidecast unless specified above.

Clearing and grubbing debris shall be end-hauled on road improvement segment Pt. I1-I2.

When controlled blasting is required, it shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain material within the road prism.

Containment/Sidecast

- (1) Full: No excavated material remains below the road.
- (2) Normal/Incidental: The amount of excavated material lost over the outside edge of the road shall not exceed 1 foot in depth.
- (3) Sidecast: Material shall be spread evenly below the road so that it does not build up behind trees, snags or other debris, and shall not exceed 3 feet in depth.

EXHIBIT D

FULL BENCH AND END-HAUL REQUIREMENTS

Any amount of material exceeding the containment requirements shall be removed by whatever means necessary and end-hauled to a designated waste area.

Waste Area Location

- (1) As shown on Exhibit A and as marked in the field within Area 1.
- (2) As shown on Exhibit A and as marked in the field.

Waste Area Treatment

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

EXHIBIT D  
 ROAD SURFACING

ROAD SEGMENT	1A-1B			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
	Application	Rock Size and Type	Location	Depth of Rock (inches)	1A-1B		0+00 - 36+05	
					Volume (CY) per	Number of		
Base Rock	4"-0"	0+00-36+05	9	station	56	stations	36.05	2,019
Curve Widening Base Rock	4"-0"	2+10-2+95, 5+70-6+80, 16+15-17+35, 19+50-21+65, 21+65-22+20, 25+15-25+95	9	curve	N/A	curves	6.00	154
Junctions	4"-0"	0+00	9	junction	33	junctions	1	33
Turnouts	4"-0"	2+60, 6+15, 11+30, 15+25, 17+00, 25+55, 30+75	9	TO	25	TO's	7	175
Turnarounds	4"-0"	35+20	9	TA	15	TA's	1	15
Traction Rock	3/4"-0"	1+20-3+00, 7+20-7+90, 10+50-11+40, 13+50-14+50, 16+50-20+10, 22+30-28+50	3	station	19	stations	14.25	271
Curve Widening Traction Rock	3/4"-0"	2+10-2+95, 16+50-17+35, 19+50-20+10, 25+15-25+95	3	curve	N/A	curves	4.00	36
Turnouts	3/4"-0"	2+60, 11+30, 17+00 25+55	3	TO	11	TO's	4.00	44
Fill Armor	24"-6"	1+00-1+40, 7+40-7+75, 8+50-8+90, 19+20-20+30	N/A	fill	N/A	fills	4.00	530
Dissipator Rock	24"-6"	10+70, 18+05, 24+65	N/A	dissipator	11	dissipator	3.00	33
Subgrade Reinforcement	6"-0" Pit-run		N/A	reinforcement	N/A	reinforcement	N/A	100
Landings	6"-0" Pit-run	36+05	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			1A-1B					3,470

ROAD SEGMENT	1C-1D			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
	Application	Rock Size and Type	Location	Depth of Rock (inches)	1C-1D		0+00-2+40	
					Volume (CY) per	Number of		
Base Rock	4"-0"	0+00-2+40	9	station	56	stations	2.40	134
Junctions	4"-0"	0+00	9	junction	33	junctions	1	33
Traction Rock	3/4"-0"		3	station	19	stations	1.00	19
Landings	6"-0" Pit-run	2+40	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			1C-1D					246

EXHIBIT D  
 ROAD SURFACING

ROAD SEGMENT	1G-1H			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
	Application	Rock Size and Type	Location	Depth of Rock (inches)	1G-1H	0+00-30+35		
					Volume (CY) per	Number of		
Base Rock	4"-0"	0+00-30+35	9	station	56	stations	30.35	1,700
Curve Widening Base Rock	4"-0"	0+00-0+40, 3+25-3+75, 10+50-11+05, 15+70-16+35, 19+10-19+90	9	curve	N/A	curves	5.00	88
Junctions	4"-0"	0+00	9	junction	33	junctions	1	33
Turnouts	4"-0"	2+25, 5+85, 10+65, 15+95, 24+80	9	TO	25	TO's	5	125
Trunmarounds	4"-0"	28+45	9	TA	15	TA's	1	15
Traction Rock	3/4"-0"	5+40-6+80, 11+40-12+30, 16+50-18+50, 20+00-24+90	3	station	19	stations	9.2	175
Fill Armor	24"-6"	23+20-24+00	N/A	fill	N/A	fills	2	280
Subgrade Reinforcement	6"-0" Pit-run		N/A	reinforcement	N/A	reinforcement	N/A	100
Landings	6"-0"	30+35	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			1G-1H					2,575

ROAD SEGMENT	1I-1J			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
	Application	Rock Size and Type	Location	Depth of Rock (inches)	1I-1J	0+00-10+70		
					Volume (CY) per	Number of		
Base Rock	4"-0"	0+00-10+70	9	station	56	stations	10.70	599
Junctions	4"-0"	0+00	9	junction	33	junctions	1	33
Turnouts	4"-0"	7+30	9	TO	25	TO's	1	25
Trunmarounds	4"-0"	9+60	9	TA	15	TA's	1	15
Traction Rock	3/4"-0"	0+75-6+00	3	station	19	stations	5.25	100
Fill Armor	24"-6"	4+70-5+75	N/A	fill	N/A	fills	1	297
Landings	6"-0"	10+70	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			1I-1J					1,129



EXHIBIT D  
 ROAD SURFACING

ROAD SEGMENT		1M-1N		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1M-1N		0+00-2+50		
				Volume (CY) per	Number of			
Base Rock	4"-0"	0+00-2+50	9	station	56	stations	2.50	140
Junctions	4"-0"	0+00	9	junction	33	junctions	1	33
Landings	6"-0"	2+00	N/A	Landing	80	Landings	1	80
Total Rock for Road Segment:			1M-1N					253

ROAD SEGMENT		2A-2B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A-2B		0+00 - 9+35		
				Volume (CY) per	Number of			
Base Rock	4"-0"	0+00-9+35	9	station	56	stations	9.35	524
Curve Widening Base Rock	4"-0"	1+05-2+60	9	curve	N/A	curves	1.00	99
Junctions	4"-0"	0+00	9	junction	33	junctions	1	33
Turnouts	4"-0"	5+95	9	TO	25	TO's	1	25
Traction Rock	3/4"-0"	1+90-3+00	3	station	19	stations	1.2	23
Curve Widening Traction Rock	3/4"-0"	1+05-2+60	3	curve	N/A	curves	1.00	33
Subgrade Reinforcement	6"-0" Pit-run		N/A	reinforcement	N/A	reinforcement	N/A	100
Fill Armor	24"-6"	2+05-2+60	N/A	fill	N/A	fills	1	35
Total Rock for Road Segment:			2A-2B					871

ROAD SEGMENT		2G-2H		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2G-2H		0+00 - 5+45		
				Volume (CY) per	Number of			
Junctions	4"-0"	0+00	9	junction	33	junctions	1	33
Total Rock for Road Segment:			2G-2H					33

EXHIBIT D  
 ROAD SURFACING

ROAD SEGMENT		3A to 3B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	3A to 3B		0+00-5+65		
				Volume (CY) per		Number Of		
Base Rock	4"-0"	0+00 to 5+65	9	station	56	stations	5.65	890
Junctions	4"-0"	0+00	9	junction	33	junctions	1	33
Culvert Dissipator	24"-6"	1+30, 4+00	N/A	dissipator	11	dissipator	4	44
Subgrade Reinforcement	6"-0" Pit-run		N/A	reinforcement	N/A	reinforcement	N/A	100
Landing	6"-0"		N/A	landing	80	landing	1	80
Total Rock for Road Segment:			3A - 3B					501

ROAD SEGMENT		3C to 3D		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	3C to 3D		11+80		
				Volume (CY) per		Number of		
Junctions	4"-0"	0+00	9	junction	33	junctions	1	33
Total Rock for Road Segment:			3C to 3D					33

ROAD SEGMENT		3E to 3F		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	3E to 3F		9+15		
				Volume (CY) per		Number of		
Junctions	4"-0"	0+00	9	junction	33	junctions	1	33
Ditchout Dissipator	24"-6"	0+00	N/A	dissipator	11	dissipator	1	11
Total Rock for Road Segment:			3E to 3F					44

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	3G-3H			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
	Application	Rock Size and Type	Location	Depth of Rock (inches)	3G-3H Volume (CY) per	0+00-7+55 Number of	0+00-7+55	
Base Rock	4"-0"	0+00-7+55	9	station	56	stations	7.55	423
Curve Widening Base Rock	4"-0"	0+40-1+40,3+80-4+20	9	curve	N/A	curve	2.00	99
Junctions	4"-0"	0+00, 7+55	9	junction	33	junctions	2	66
Turnouts	4"-0"	4+00, 6+45	9	TO	25	TO's	2	50
Traction Rock	3/4"-0"	0+00-7+55	3	station	19	stations	7.55	143
Curve Widening Traction Rock	3/4"-0"	0+40-1+40,3+80-4+20	3	curve	2	curve	2.0	44
Dissipator	24"-6"	4+50	N/A	dissipator	11	dissipators	1.0	11
Fil Armor	24"-6"	5+50-6+50	N/A	fill	N/A	fills	1	105
Total Rock for Road Segment:			3G-3H					941

ROAD SEGMENT	I1-I2			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
	Application	Rock Size and Type	Location	Depth of Rock (inches)	I1-I2 Volume (CY) per	0+00-39+15 Number of	0+00-39+15	
Base Rock	4"-0"	0+00-5+40, 9+45-21+90, 24+40-27+85, 31+95-39+15	6	station	25	stations	20.50	513
Base Rock	4"-0"	5+40-9+45, 21+90-24+40, 27+85-31+95	9	station	56	stations	10.65	596
Junctions	4"-0"	0+00, 33+10	6	junction	2	junctions	33	66
Curve Widening Base Rock	4"-0"	6+25-7+25, 8+70-9+45, 22+10-23+10, 27+85-29+15, 30+95-31+95	9	Curve	N/A	Curves	5	227
Turnouts	4"-0"	6+80, 15+50, 22+50,	6	TO	3	TO's	25	75
Traction Rock	3/4"-0"	0+00-9+00, 26+00-31+00	3	station	19	stations	14	266
Curve Widening Traction Rock	3/4"-0"	6+25-7+25, 8+70-9+45, 22+10-23+10, 27+85-29+15, 30+95-31+95	3	Curve	N/A	Curves	5	87
Total Rock for Road Segment:			I1-I2					2,030

ROCK TOTALS (CY)	24"-6"	6"-0"	4"-0"	3/4"-0"
12,127	1,324	750	8,813	1240

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

EXHIBIT D

ROCK ACCOUNTABILITY

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

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

Rock Checking. All rock spreading shall be done only when a STATE representative is present. STATE shall issue a receipt for each load delivered, and rock shall be measured without allowance for shrinkage or shakedown during hauling. Total truck measure volume for each road segment shall be as shown on Exhibit D. Deliver at least 600 cubic yards per 8-hour shift, unless otherwise approved by STATE. A penalty of \$10 for each 10 cubic yards which are not delivered during a single shift shall be billed, and payment shall be required prior to final acceptance of the project by STATE.

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

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

Load Records. Notify STATE before spreading the rock and maintain a record of all rock delivered for spreading. Make the record available for STATE inspection. A report listing the amount of rock delivered the prior month must be submitted no later than the 15th of each month.

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

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

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

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

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

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

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

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

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

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

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

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

EXHIBIT D

COMPACTION EQUIPMENT OPTIONS

- (1) Vibratory Rollers. The drum shall have a smooth surface, a diameter not less than 48 inches, a width not less than 58 inches, and a turning radius of 15 feet or less. (Vibration frequency shall be regulated in steps to 1400, 1500, and 1600 VPM, corresponding to engine speeds of 1575, 1690, and 1800 RPM. The centrifugal force developed shall be 7 tons at 1600 VPM. It shall be activated by a power unit of not less than 25 horsepower.) The vibratory roller shall be self-propelled and operated at speeds ranging from 0.9 miles to 1.8 miles per hour, as directed by STATE.
- (2) Rubber-Tired Skidders. A rubber-tired skidder weighing a minimum of 20,000 pounds shall be operated over the fill layers so that the entire layered surface comes in contact with the tires. Skidders with oversized tires (high flotation) are not acceptable for compaction.
- (3) Tampingfoot Compactors. Tampingfoot compactors shall exert a minimum pressure of 250 pounds per square inch on the ground area in contact with the tamping feet. The compactor shall cover a minimum width of 60 inches per pass and weigh a minimum of 16,000 pounds.
- (4) Vibratory Hand-Operated or Backhoe-Mounted Tamper. Vibratory hand-held or hydraulic tampers shall be used for compaction of backfill materials around culverts (and/or bridge approach embankment materials around abutments). The tamper shoe dimensions shall be a minimum of 10" X 13" and capable of a centrifugal force of 2,250 pounds.

EXHIBIT E  
CULVERT SPECIFICATIONS

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

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

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

Aluminized (Type 2) steel culverts shall meet the requirements of AASHTO M-36-03<sup>1</sup>.

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

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

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

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

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

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

A bedding of crushed rock or rock crusher reject as specified shall be placed to provide a wide band of support and to transmit the load from above evenly over the entire length of the culvert for all stream crossing culverts and all new and replacement culverts installed in existing roads.

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

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

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.

EXHIBIT E

CULVERT SPECIFICATIONS

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

The intake end of relief culverts shall be provided with a sediment catching basin 3 feet in diameter at the bottom. The outlet end of any culvert which would allow water to erode embankment soil shall be provided with an energy dissipator. Construct lead-off ditches away from culvert outlets where the slope gradients restrict the free flow of water.

Culverts greater than 24 inches in diameter shall have 1:1 beveled inlets.

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

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

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

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

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

<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>
18-24	16	(0.0598")	(0.064")	16	12	12
30-36	16	(0.0598")	(0.064")	16	12	12



EXHIBIT E  
 CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	GAUGE	ROAD SEGMENT POINT TO POINT	STATION
1	18	40	CPP	n/a	1A to 1B	0+00
2	18	35	CPP	n/a	1A to 1B	1+20
3	18	35	CPP	n/a	1A to 1B	4+15
4	18	35	CPP	n/a	1A to 1B	10+70
5	18	35	CPP	n/a	1A to 1B	18+05
6	18	35	CPP	n/a	1A to 1B	24+65
7	18	40	CPP	n/a	1C to 1D	0+00
8	18	30	CPP	n/a	1G to 1H	7+40
9	18	35	CPP	n/a	1G to 1H	26+50
10	18	35	CPP	n/a	1G to 1H	29+60
11	18	35	CPP	n/a	1I to 1J	4+00
12	18	35	CPP	n/a	1I to 1J	9+00
13	18	40	CPP	n/a	1M to 1N	0+00
14	18	30	CPP	n/a	2A to 2B	5+55
15	18	35	CPP	n/a	2A to 2B	7+35
16	18	30	CPP	n/a	2A to 2B	9+50
17	18	30	CPP	n/a	3A to 3B	1+30
18	18	30	CPP	n/a	3A to 3B	4+00
19	18	40	CPP	n/a	3G to 3H	4+50

CPP = Polyethylene

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

1. PURCHASER shall prepare a written development plan for the quarry and borrow area. The plan shall be submitted to STATE for approval prior to conducting any operation in quarry or borrow area. The plan shall include, but not be limited to:
  - (a) Location of benches and roads to benches.
  - (b) Disposal site for woody debris, overburden and reject material.
  - (c) Time lines for rock quarry use.
  - (d) Erosion Control measures.
2. PURCHASER shall schedule and coordinate quarry and stockpile usage with other existing or planned activity requiring quarry or stockpile usage. PURCHASER shall notify STATE 5 days prior to the start of quarry or borrow area development activities.
3. The quarry and borrow site shall be left in a condition free from overburden and debris. Access roads to the quarry, and the quarry floor, shall be cleared at the termination of use. Overburden shall be removed for a distance of 20 feet beyond the developed rock source.
4. All overburden and reject material shall be hauled to the designated waste area as directed by STATE.
5. PURCHASER shall conduct the operations relative to the disposal of waste material in such manner that sediment, rock, or debris shall not be washed, conveyed, or otherwise deposited in any stream.
6. At the Hunt Creek Quarry and Borrow Site, remove all woody debris, including stumps and slash. Removed material shall be hauled to the designated disposal areas, and piled as directed by STATE.
7. Controlled blasting techniques shall be utilized for any blasting operations, and shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain as much material as possible within the quarry development area. PURCHASER shall maintain a comprehensive blasting log that contains all pertinent data for all blasting operations. The blasting log shall be submitted to the STATE after the completion of all blasting activity. The blasting log is intended for STATE record keeping purposes only.
8. Benches shall be maintained/constructed at intervals of 40 feet or less in height and shall be a minimum of 20 feet in width. Any gravel or talus slopes shall be left with a working face at an angle of 60 percent or less. There shall be a minimum of one bench with an access road to it. Said bench shall be easily accessible with tractors.
9. Quarry and Borrow source face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.
10. Oversized material that is produced or encountered during development shall be broken down and utilized for riprap or pit-run as directed by STATE.
11. The quarry and borrow site floors shall be developed to provide for drainage away from the rock source. All quarry, borrow site and stockpile site drainage ditches shall be maintained. Borrow site access roads shall be cleared and blocked upon completion of borrow site use as directed by STATE.
12. Proper winterization and storm-water control measures such as waterbarring, drainage, utilization of filter bales, mulching and/or blocking access shall be constructed and maintained to protect the watershed and Project Work, as directed by STATE.
13. Apply seed and mulch to the waste area, as specified in Exhibit K.

EXHIBIT F

PIT-RUN and RIPRAP ROCK SPECIFICATIONS

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

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

Control of gradation shall be by visual inspection by STATE.

EXHIBIT G

GEOTEXTILE SPECIFICATIONS

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

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

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

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

EXHIBIT H

TYPICAL EMBEDDED ENERGY DISSIPATOR

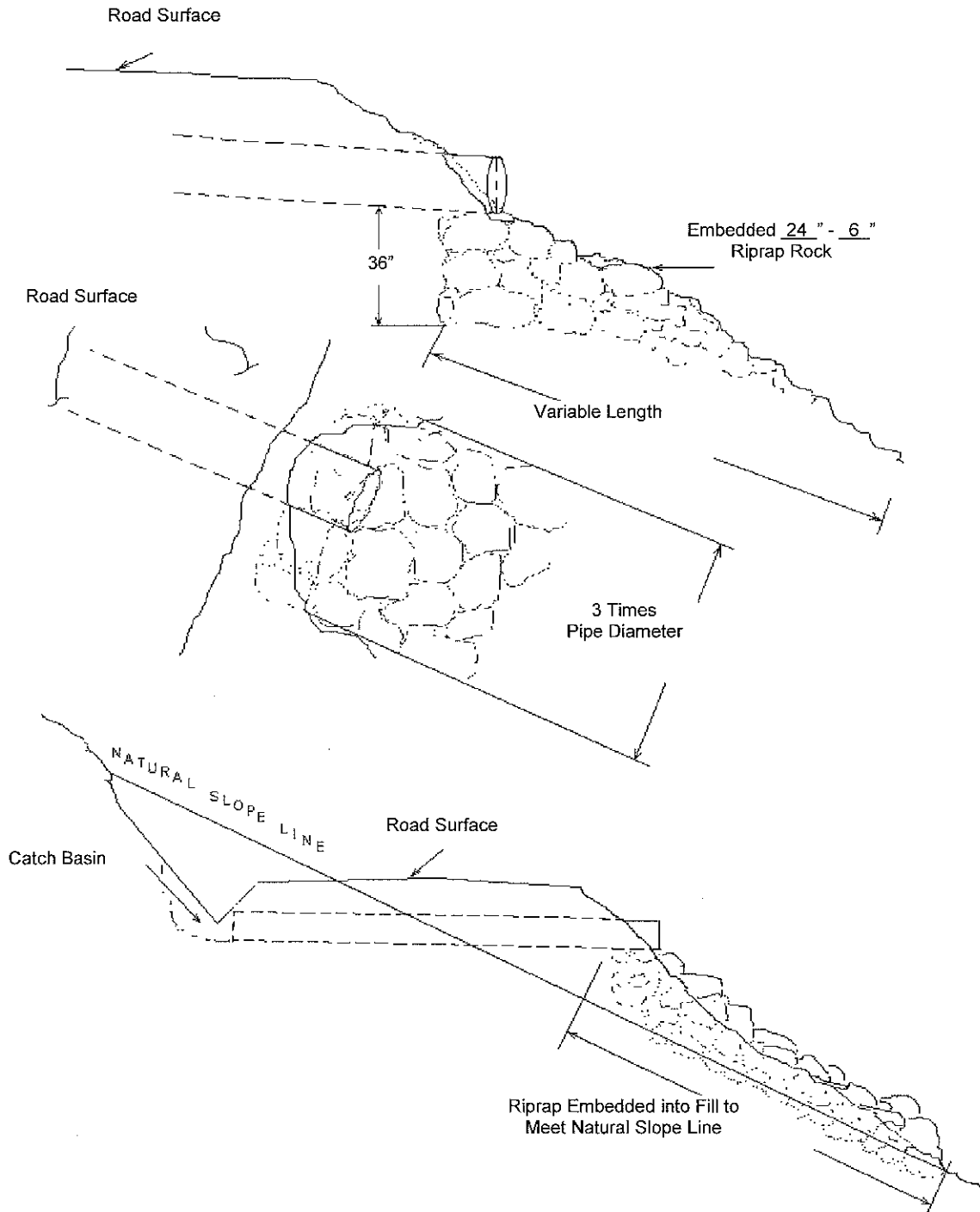
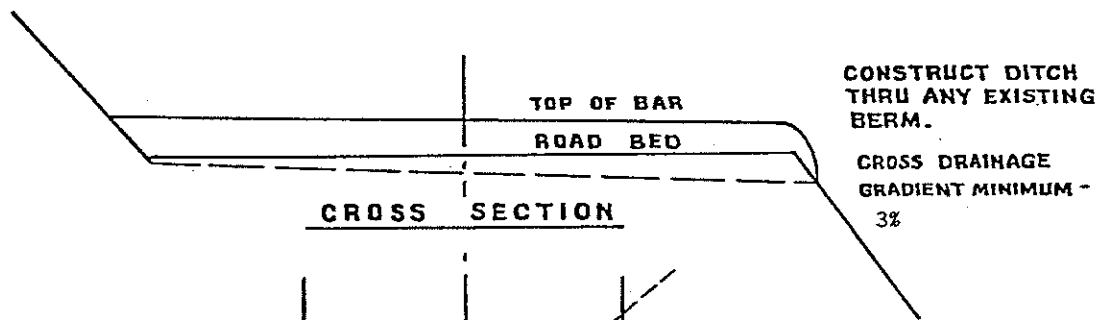
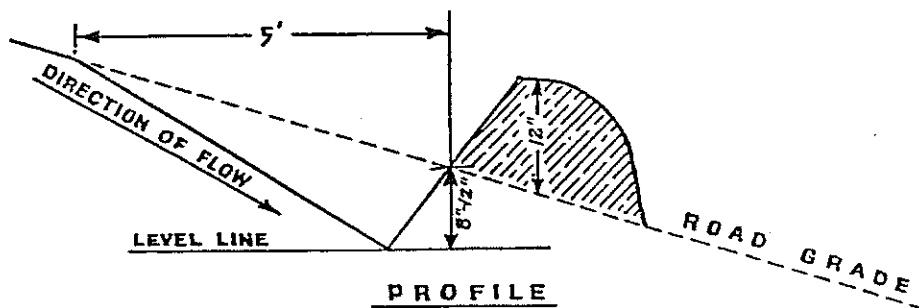
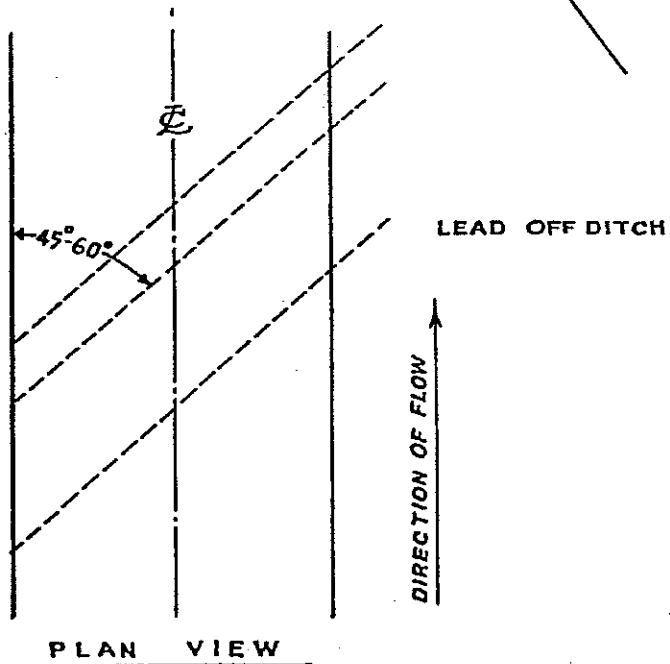


EXHIBIT I  
 WATERBAR SPECIFICATIONS



**SPACING OF WATERBARS**

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



**WATERBAR SPECIFICATIONS  
 FOR CROSS DITCHING #298**

EXHIBIT J

ROAD VACATING SPECIFICATIONS

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

- (a) Fill removal and stream channel development.
  - (b) Culvert removal.
  - (c) Restoration of natural contours by outsloping of the road prism.
  - (d) Sidecast pullback.
  - (e) Minimize disturbance of existing vegetation.
- (1) Tree Removal. Cut or remove all trees necessary to access the project area and to facilitate vacating operations, as directed by STATE. Timber shall NOT be removed as designated timber, unless located within posted timber sale boundaries or right-of-way boundaries.
  - (2) Fill Removal and Stream Channel Development. Remove fills to the natural stream course level(s). Stream channel(s) shall be excavated/developed to specified widths. Developed stream banks shall be sloped at natural contours or no steeper than 1 ½:1, as directed by STATE.
  - (3) Culvert Removal. Remove drainage structures and culverts. Removed culverts shall be hauled to an approved refuse site off of STATE land.
  - (4) Outslope Road. Outslope road to restore natural contours or establish a minimum of 10 percent slope for drainage at designated locations. If the road grade exceeds 10 percent, outslope of the road shall be 2 percent greater than the road grade.
  - (5) Sidecast Pullback. Excavate/pullback previously sidecast materials below the road at designated locations. Developed slopes shall be pulled back to a 1½:1 slope or to natural ground contours. The beginning position for sidecast pullback shall be no greater than 20 feet vertical distance from the existing road surface, in accordance with Exhibit \*. Sidecast material remaining greater than 20 feet below the road shall be tapered and sloped for drainage.
  - (6) Use of Excavated Materials.
    - (A) Fill Excavation and Sidecast Pullback. Excavated materials shall be placed on the interior (cut) side of the road, and utilized to restore the cutslope to natural contours, or to a minimum 10 percent outsloped surface for drainage. Any excess material will be hauled to a designated waste area, as directed by STATE.
    - (B) Woody Debris Shall be placed on the surface of pullback/fill material.
    - (C) Block Roads. Use excavated material from fill removals to block roads from vehicle access, as directed by STATE.
  - (7) Erosion Control. Erosion control shall be completed in a progressive manner. Grass seed and straw mulch shall be applied for every 500 feet of road vacated, prior to continuing work.

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

EXHIBIT J

ROAD VACATING SPECIFICATIONS

- (9) Equipment. A minimum 1½ cubic-yard, track mounted excavator shall be used for all excavation, culvert removal, streambed preparation, road blocking, and waterbarring, unless otherwise approved in writing by STATE.
- (10) Dry Conditions. All work shall be performed during dry conditions acceptable to STATE.
- (11) Support, including transport, other equipment, replacements, supplies, maintenance, and repairs, shall be furnished as required to complete the project and shall be furnished without cost to STATE, other than as agreed under the contract terms.

SPECIFIC INSTRUCTIONS/SPECIFICATIONS :

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
V1 to V2	0+00	Block road and begin waterbars.
	3+20	Remove cross drain.
	3+55	End waterbars and begin sidecast pullback.
	4+00	Remove fill, develop 3-foot stream channel.
	4+40	End sidecast pullback, begin waterbars.
	6+00	End waterbars, and begin sidecast pullback.
	6+60	Remove fill, develop 4-foot stream channel.
	7+00	End sidecast pullback, begin waterbars.
	13+90	End waterbars, begin sidecast pullback.
	14+40	Remove fill, develop 4-foot stream channel.
	14+95	End sidecast pullback, begin waterbars.
	15+50	End waterbars, begin sidecast pullback.
	16+60	Remove fill, develop 4-foot stream channel.
	17+70	End sidecast pullback, begin waterbars.
	18+70	End waterbars, begin sidecast pullback.
	19+30	Remove cross drain.
	20+30	End sidecast pullback, Pt. V2.
V3	N/A	Remove fill, develop 4-foot channel.



EXHIBIT K

TYPICAL CROSS SECTION VIEW OF ROAD VACATING SIDECAST PULLBACK

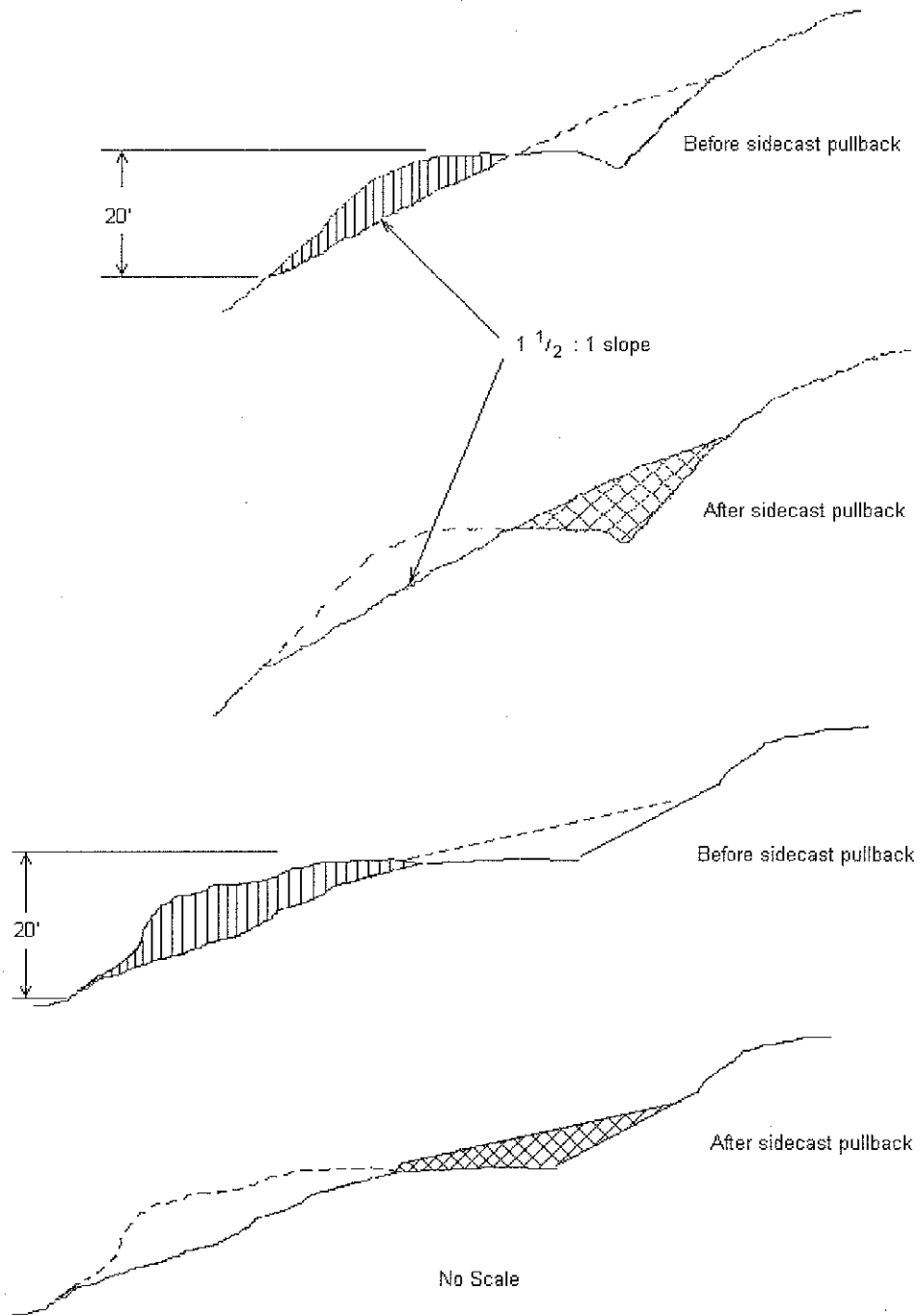
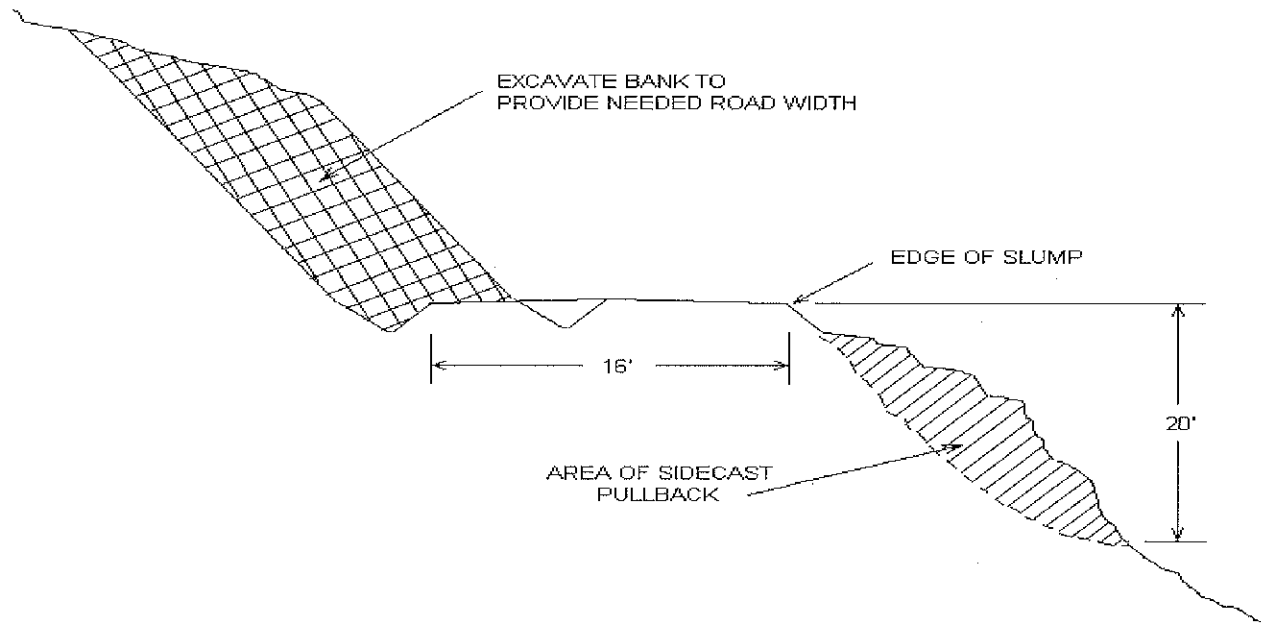


EXHIBIT L

TYPICAL CROSS SECTION VIEW OF SIDECAST PULLBACK AND ROAD REALIGNMENT



(No Scale)

EXHIBIT M

FOREST ROAD GATE DESIGN, CONSTRUCTION, AND INSTALLATION  
Counter Balanced Swing Gate

PURCHASER shall design, construct, and install one counter balanced swing gate at the beginning of road segment 2A to 2B, as directed by STATE.

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

PROJECT REQUIREMENTS AND MINIMUM SPECIFICATIONS

- (a) Coordinate site visitation, preliminary designs, and final design, construction, and installation of gate with STATE. An example of the gate to be constructed is located on Scandinavian Cannery Road off State Hwy 30 (MP 93), without lockbox.
- (b) Site visitation to determine the direction of swing and width for gate.
- (c) A preliminary detailed design proposal shall be submitted to STATE of the proposed gate to be installed and obtain written approval by STATE. STATE is responsible for timely review of preliminary designs, selection of the preferred design, and giving approval to prepare a final design. The design shall meet the following specifications:
  - (1) The gate shall be a counter balanced swing gate.
  - (2) The gate opening shall be at least 20 feet, and no more than 23 feet.
  - (3) The gate shall be constructed with a minimum of ¼"x 6"x 12" steel tubing. The support post and attachment post shall be constructed with a minimum of 12" schedule 40 steel pipe.
  - (4) A blocking post shall be installed beside the road in the direction of the swing and have a three foot chain attached for securing the gate in the open position. The blocking post shall be constructed with a minimum of 4" schedule 40 steel pipe.
  - (5) Posts shall have devices attached to prevent lifting out of the ground. Including an underground cross arm.
  - (6) The gate shall utilize a lock box capable of a minimum of two locks. Supply a minimum of 2 splitters. The pin shall not be removable.
  - (7) Prior to painting, gate and posts shall be cleaned and free of rust scale. Paint with a rust resistant primer coat and a topcoat of a rust resistant high visibility yellow paint.
- (d) The final detailed design shall be submitted to STATE for written approval before construction. STATE is responsible of timely review of the final design and giving approval to proceed with construction.
- (e) Construct the gate as to the specifications above and to the approved final design.
- (f) Install the gate at the proper location and as approved by STATE.
- (g) Place jetty rock or other suitable material to block vehicular access around each gate as approved by STATE.

EXHIBIT M

FOREST ROAD GATE DESIGN, CONSTRUCTION, AND INSTALLATION  
Gate Design Example

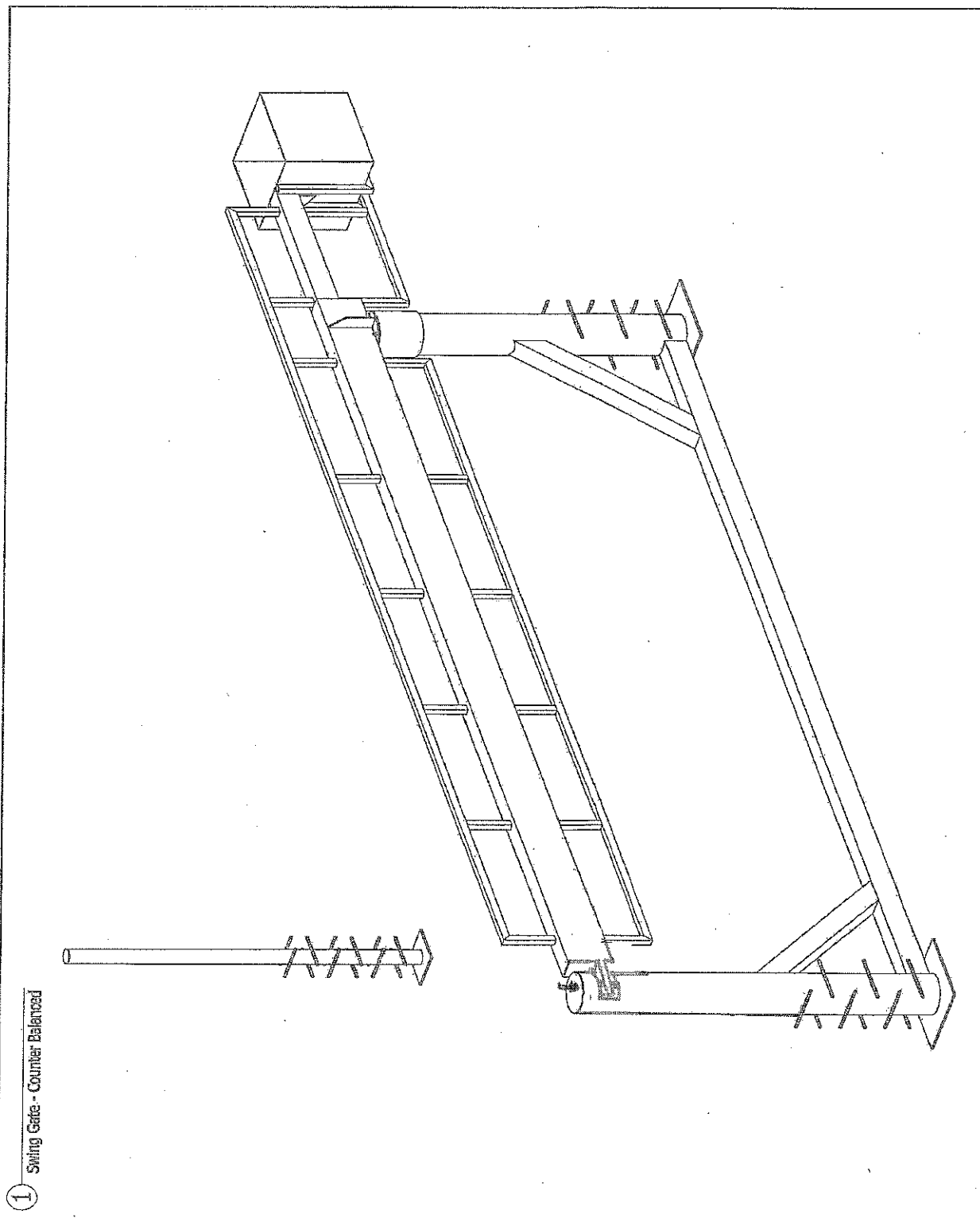


EXHIBIT N

SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required seed, fertilizer, and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed, fertilizer, and straw mulch to all waste areas resulting from Projects No. 1, 2, and 3 and bare soils resulting from Project No. 3.

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

APPLICATION METHODS FOR SEED AND FERTILIZER

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

APPLICATION RATES FOR SEED AND FERTILIZER

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

SPECIES	MIXTURE	PURE LIVE SEED	GERMINATION
Annual Rye	26%	95%	>90%
Orchard Grass	25%	95%	>90%
New Zealand White Clover	17%	95%	>90%
Perennial Rye	15%	95%	>90%
Birdsfoot Trifol	07%	95%	>90%
Red Clover	06%	95%	>90%
Alsike Clover	04%	95%	>90%

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

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

APPLICATION RATES FOR MULCH

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

APPLICATION LOCATIONS:

Road Segment	Location	Road Segment	Location
Waste Areas	See Exhibit A		
V1 to V2, V3			

## PART IV: OTHER INFORMATION

State Timber Sale Contract  
No. 341-11-32  
Wallhanger

Page 1 of 2

### FPA "Written Plan" for Operating within 100 Feet of Type F and Type D Streams Wallhanger Timber Sale

Portions of Section 5, 6 and 8, T8N, R6W, W.M., Clatsop County, Oregon

Landowner: **Oregon Department of Forestry**  
92219 Highway 202  
Astoria, Oregon 97103  
Phone: (503) 325-5451

#### Protected Resources:

1. Pump Creek.
2. Unnamed Tributary to Pump Creek.
3. Wallhanger Creek.
4. Spear Creek.

#### Specific Site Characteristics:

1. Pump Creek (Medium, Type F) – This stream (approximately 2 to 3 feet wide) runs along the east sale boundaries of Area 1 for approximately 500 feet. The stream bank has moderate short slopes with alder and conifer.
2. Unnamed Tributary of Pump Creek (Small, Type F) – This stream (approximately 1 to 2 feet wide) runs approximately 300 feet within Area 1. The stream bank has moderate short slopes with alder and conifer.
3. Wallhanger Creek (Small, Type F) – This stream (approximately 1 to 2 feet wide) runs approximately 2,400 feet within Area 1. The stream bank has moderate short slopes with alder and conifer.
4. Spear Creek (Small, Type D) – This stream (approximately 2 to 3 feet wide) runs along the east sale boundary of Area 3 for approximately 2400 feet. The stream bank has moderate short slopes with alder and conifer.

#### Tree and Vegetation Retention:

**PARTIAL HARVEST (Area 1):** The streamside tree retention within the FPA defined RMA width of 50 feet will range from 130 ft<sup>2</sup> to 150 ft<sup>2</sup> basal area per acre (minimum required basal for small, Type F stream is 40 square and 120 square feet for medium, Type F). The timber sale boundary for Area 1 (partial cut) is posted at least 25 feet from the Type F streams. There is also unposted Type F streams within Area 1 (Wallhanger Creek and Unnamed Tributary of Pump Creek) which has a minimum 25 feet no touch buffer.

**CLEAR CUT HARVEST (Area 3):** The streamside tree retention within the FPA defined RMA for Type D stream is 100 feet for half the distance from the intake to the drainage boundary (1,500 feet). The timber sale boundary for Area 3 (clear cut) is posted at least 100 feet from the Type D stream.

**Resource Protection Practices:**

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

1. No trees will be felled within posted stream buffers (RMA's) except where needed for corridors.
2. Trees that fall or slide into Type F RMA's shall not be removed without prior approval from STATE.
3. Trees adjacent to the posted stream buffers (RMA's) will be felled away from or parallel to the streams to prevent trees from entering the aquatic areas.
4. 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.
5. Logs shall be fully suspended when yarding across all stream buffers (RMA's).
6. 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 Practice Act regarding the operations conducted within 100 feet of streams. I agree to the protection measures listed in this plan.

Submitted by: \_\_\_\_\_ Date: \_\_\_\_\_  
Operator/PURCHASER

Attachment: Exhibit A map

Original: Salem  
XC: Operator, Purchaser, District File, Engineering Unit, Sunset Unit

OREGON DEPARTMENT of FISH and WILDLIFE

FISH SCREENING PROGRAM

**SMALL PUMP SCREEN SELF CERTIFICATION**

The Oregon Water Resources Department in coordination and cooperation with the Oregon Department of Fish and Wildlife includes screen requirements on pumps to protect fish as a condition of many surface water and/or reservoir water right permits. This is done in accordance with ORS 537.153.

The Oregon Department of Fish and Wildlife does not usually inspect small pump screens at pumped diversions less than 225 GPM (Gallons per Minute), but furnishes the following fish screening criteria information to the water right permit tee:

**Screen material open area** must be at least 27% of the total wetted screen area.

**Perforated plate:** Openings shall not exceed 3/32 or 0.0938 inches (2.38 mm).

**Mesh/Woven wire screen:** Square openings shall not exceed 3/32 or 0.0938 inches (2.38mm) in the narrow direction, e.g., 3/32 inch x 3/32 inch open mesh.

**Profile bar screen/Wedge wire:** Openings shall not exceed 0.0689 inches (1.75 mm) in the narrow direction.

**Screen area** must be large enough to cause fish impact. Wetted screen area depends on the water flow rate and the water approach velocity. **Approach velocity** is the water velocity perpendicular to and approximately three inches in front of any part of the screen face.

**An Active pump screen** is a self cleaning screen that has a proven cleaning system. The **screen approach velocity for active pump screens** shall not exceed 0.4 fps (feet per second) or 0.12 mps (meters per second). The wetted screen area in square feet is calculated by dividing the maximum water flow rate in cubic feet per second (1 cfs = 449 gpm) by 0.4 fps.

**A Passive pump screen** is a screen that has no cleaning system other than periodic manual cleaning. **Screen approach velocity for passive pump screens** shall not exceed 0.2 fps or 0.06 mps. The wetted screen area in square feet is calculated by dividing the maximum water flow rate by 0.2 fps.

*For further information on fish screening please contact:*

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

As evidence of having met fish screen installation requirements, please sign the certification and send to: Oregon Water Resources Department, Water Rights Section, 725 Summer St. NE, Suite A, Salem, OR 97301-1271

**Certification:** I certify that my small pumped diversion of less than 225 gpm meets fish screening criteria, and that I will maintain it to comply with regulatory criteria. I also understand that should fish screening standards change, I may be required to modify my installation to meet applicable standards.

Applicant Signature: \_\_\_\_\_

Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ WRD File #

Printed Name and Address: \_\_\_\_\_

Phone: (\_\_\_\_) \_\_\_\_\_ Fax: (\_\_\_\_) \_\_\_\_\_



NOTICE OF TRANSFER OF STATE TIMBER

Instructions:

629-Form-301-010

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

SECTION 1

On \_\_\_\_\_, state timber sale purchaser (Transferor)  
\_\_\_\_\_, sold, exchanged or otherwise transferred to  
\_\_\_\_\_, (Transferee) state timber originating from State  
Timber Sale Contract No: \_\_\_\_\_.

Transferee hereby certifies that they:

- (a) Will not export the unprocessed state timber which is the subject of this transaction;
- (b) Will not sell, transfer, exchange or otherwise convey the unprocessed timber which is the subject of this transaction to any other person without first obtaining a like certification from that person.
- (c) Are not prohibited by OAR's 629-31-005 through 045 from purchasing state timber or logs directly from the State Forester, or this is a sale of Western Red Cedar for domestic processing.

SECTION 2

- Have not exported unprocessed timber originating from private lands in Oregon in the last 24 months.
- This is a sale of hardwood logs for domestic processing.
- This is a sale of Western Red Cedar for domestic processing.
- This is a sale of pulp logs or cull logs processed at domestic pulp mills, domestic chip plants or other domestic operations for the purpose of conversion of the logs into chips.

SECTION 3

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

Transferor:

Transferee:

Signed \_\_\_\_\_

Signed \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_

Dated \_\_\_\_\_

Dated \_\_\_\_\_

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

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