

# PART III: EXHIBITS

State Timber Sale Contract  
No. 341-05-25  
Lotta Thin

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.: 347-05-25

(2) Sale Name: Lotta Thin

(3) Contract Expiration Date: \_\_\_\_\_

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: \_\_\_\_\_

Projects: \_\_\_\_\_

Phone: \_\_\_\_\_

Cell/Other

Phone: \_\_\_\_\_

Home: \_\_\_\_\_

Logging: \_\_\_\_\_

Phone: \_\_\_\_\_

Cell/Other

Phone: \_\_\_\_\_

Home: \_\_\_\_\_

Logging: \_\_\_\_\_

Phone: \_\_\_\_\_

Cell/Other

Phone: \_\_\_\_\_

Home: \_\_\_\_\_

Logging: \_\_\_\_\_

Phone: \_\_\_\_\_

Cell/Other

Phone: \_\_\_\_\_

Home: \_\_\_\_\_

Logging: \_\_\_\_\_

Phone: \_\_\_\_\_

Cell/Other

Phone: \_\_\_\_\_

Home: \_\_\_\_\_

(7) State Representatives:

Projects: \_\_\_\_\_

Phone: \_\_\_\_\_

Cell/Other

Phone: \_\_\_\_\_

Home: \_\_\_\_\_

Logging: \_\_\_\_\_

Phone: \_\_\_\_\_

Cell/Other

Phone: \_\_\_\_\_

Home: \_\_\_\_\_

(8) Name of Subcontractors & Starting Dates:

Projects: No(s) \_\_\_\_\_ - \_\_\_\_\_

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

Phone: \_\_\_\_\_

No(s) \_\_\_\_\_ - \_\_\_\_\_

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

Phone: \_\_\_\_\_

No(s) \_\_\_\_\_ - \_\_\_\_\_

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

Phone: \_\_\_\_\_

No(s) \_\_\_\_\_ - \_\_\_\_\_

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

Phone: \_\_\_\_\_

Logging: Felling \_\_\_\_\_

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

Phone: \_\_\_\_\_

Yarding: \_\_\_\_\_

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

Phone: \_\_\_\_\_

(9) Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

EXHIBIT B

INSTRUCTION SHEET FOR OPERATIONS PLAN

**SUBMIT ONE COPY OF PLAN TO STATE**

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

**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.



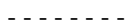
Cable landing, with numbers for sequence.



Tractor landing with alphabetical sequence.



Approximate setting boundary.



Spur truck roads.



Tractor yarding roads.



Temporary stream crossings.

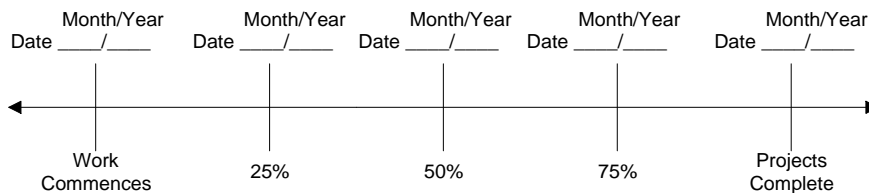
Original: Salem  
cc: District File  
Purchaser

EXHIBIT B  
 OPERATIONS PLAN

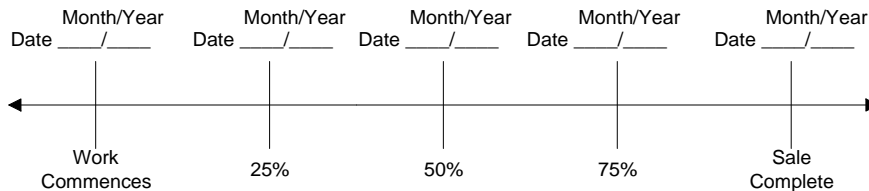
**Completion Timeline**

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 \_\_\_\_\_

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: \_\_\_\_\_  
 Address \_\_\_\_\_

(12) SALE NAME Lotta Thin  
 COUNTY Clatsop

(13) STATE CONTRACT NUMBER 341-05-25

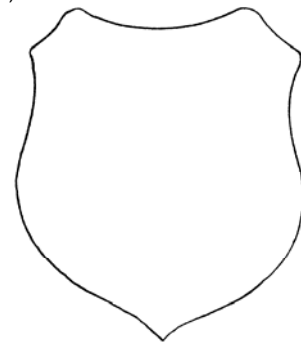
(14) SCALE: westside  eastside  cubic foot

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

(16) BUREAU BRAND CODE NUMBER \_\_\_\_\_

(17) STATE BRAND INFORMATION:

(COMPLETE) ↓



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

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

(6) WESTSIDE SCALE: YES  NO   
 Actual taper all logs over 40' scaling length

(7) EASTSIDE SCALE: YES  NO   
 \*Actual taper butt logs over 40' scaling length

(8) PENCIL BUCK YES  NO   
 back to Minimum Scaling Diameter \_\_\_\_\_

(9) ADD-BACK VOLUME -- YES  NO   
 Deductions due to delay

(18) PAINT REQUIRED: YES   
 COLOR Orange

(19) SPECIAL SCALES
PEELABLE CULL (all species)
UTILITY/PULP (all species)
<b>NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE</b>
OTHER: _____
OTHER: _____

(10) APPROVED SCALING LOCATIONS	Species	Yard	Truck

(20) REMARKS: Any hardwood log that does not conform with the grading rules for a No. 4 Alder log or better, and does not meet the minimum requirements of 8 inches in gross scaling diameter and contains 20 net board feet, shall be scaled as a utility log.

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

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

(21) SIGNATURES:

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

\_\_\_\_\_  
 Purchaser or Authorized Representative Date

\_\_\_\_\_  
 State Forester Representative Date

**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.**

EXHIBIT C

INSTRUCTIONS FOR FORM 343-307 (rev. 5/01)

- (1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires Item (21). Complete date.
- (2) Designate Third Party Scaling Organization (TPSO). Send 4 copies to TPSO, 1 to purchaser, 1 to Salem, and keep such copies as to district needs.
- (3) State District office, address and phone.
- (4) Enter Purchaser's business name and address 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 (13) thru (17)), and is required to show existence on the sale. **PerM** (per MBF). **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 (PerM) entries. PerM, SUM, and Sub must be indicated by checking the appropriate column. Species with the same specifications and value are combined into one entry. PerM 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, PERM and/or subspecies will always be scaled.
- (6) Westside -- 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 -- 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 (Eastside). Items with \* follow U.S. Forest Service Eastside rules.
- (8) Pencil Buck. Check NO if a westside sale, optional for eastside sales.
- (9) Add-Back Volume. Add-Back is normally checked YES. Scaler records deductions (sap rot, weather checks, etc.) caused by an abnormal delay in removal. Enter separately on scale ticket. TPSO provides State with summaries that include this as a net volume by species. Salvage sales and certain other circumstances may require that "NO" be checked.
- (10) Show scaling locations only applicable to TPSO. Not necessary to list markets. If all species are scaled at same location, enter "ALL."
- (11) When logging is complete, recall branding hammers, date and sign where indicated, check CANCELLATION box at top of form, and send to TPSO.
- (12) Enter sale name and county.
- (13) Enter sale Contract number.
- (14) Check Westside or Eastside log scale. Cubic foot refers to Northwest Log Rules Cubic Foot Scale.
- (15) Oregon Forest Products Brand Registry Number (optional).
- (16) DO NOT USE -- TPSO will fill in when applicable.
- (17) Show one brand only. Complete drawing. 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) under REMARKS, Item 19.
- (18) Check YES and designate orange.
- (19) Special Scales. These are the Special Scales that will be applied. If "Other" is indicated, please describe. Give comments in Item (19).
- (20) Use this space to designate weight conversion factors, or any other explanations to clarify scaling 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.
- (21) 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 18+11	DITCH
14 feet	N/A	1C to 1D	0+00 to 12+35	OUTSLOPED
16 feet	12 feet	1E to 1F	0+00 to 11+70	DITCH
14 feet	N/A	1G to 1H	0+00 to 3+20	OUTSLOPED
16 feet	12 feet	1I to 1J	0+00 to 0+50	DITCH
16 feet	12 feet	1O to 1P	0+00 to 2+00	DITCH
16 feet	12 feet	1R to 1S	0+00 to 2+25	DITCH
16 feet	12 feet	2A to 2B	0+00 to 21+51	DITCH
16 feet	12 feet	2C to 2D	0+00 to 1+50	DITCH
16 feet	12 feet	2F to 2G	0+00 to 1+20	DITCH
16 feet	12 feet	2H to 2I	0+00 to 1+00	DITCH
16 feet	12 feet	2J to 2K	0+00 to 2+40	DITCH
16 feet	12 feet	2L to 2M	0+00 to 8+00	DITCH
16 feet	12 feet	3A to 3B	0+00 to 40+20	DITCH
14 feet	N/A	3C to 3D	0+00 to 16+80	OUTSLOPED
16 feet	12 feet	3E to 3F	0+00 to 4+25	DITCH
16 feet	12 feet	3G to 3H	0+00 to 1+00	DITCH
16 feet	12 feet	3I to 3J	0+00 to 7+60	DITCH
16 feet	12 feet	4A to 4B	0+00 to 19+65	DITCH
16 feet	12 feet	4C to 4D	0+00 to 1+00	DITCH
16 feet	12 feet	4E to 4F	0+00 to 1+65	DITCH
16 feet	12 feet	4G to 4H	0+00 to 1+30	DITCH
16 feet	12 feet	4I to 4J	0+00 to 1+00	DITCH
16 feet	12 feet	I20 to I21	0+00 to 3+76	DITCH
16 feet	12 feet	I21 to Pt. A	3+76 to 34+10	DITCH
16 feet	12 feet	A to B	34+10 to 67+05	DITCH
16 feet	12 feet	I23 to I24	0+00 to 3+72	DITCH
16 feet	12 feet	I24 to I25	3+72 to 69+83	DITCH
16 feet	12 feet	I26 to I27	0+00 to 7+50	DITCH

EXHIBIT D  
FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DRAINAGE
16 feet	12 feet	E1 to E2	0+00 to 44+44	DITCH
16 feet	12 feet	E3 to E4	0+00 to 4+64	DITCH
16 feet	12 feet	E5 to E6	0+00 to 16+63	DITCH
16 feet	12 feet	E7 to E8	0+00 to 20+18	DITCH
16 feet	12 feet	I27 to I28	0+00 to 1+75	DITCH
16 feet	12 feet	I29 to I30	0+00 to 3+74	DITCH
16 feet	12 feet	I31 to I32	0+00 to 16+20	DITCH
16 feet	12 feet	I33 to I34	0+00 to 9+50	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 staked, the clearing limits shall extend 10 feet back of the top of the cutslope and 10 feet out from the toe of the fill slope, or as directed by STATE. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing debris shall not be left lodged against standing trees.

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

RIGHT OF WAY LOGS. Right of Way logs on road segment A to B shall be felled, bucked and decked outside of the clearing limits, to Weyerhaeuser Company specifications. These logs remain the property of Weyerhaeuser Company.

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 classifications are as follows:

New Construction – From the top of the cutslope to the toe of the fill.

CLEARING AND GRUBBING DISPOSAL. Chipping is required on road segments I20 to I21, I21 to A, A to B, E1 to E2 (23+30 to 44+44), and E5 to E6 (7+61 to 16+63). Chip all woody material, including stumps less than 24 inches in diameter, tree tops, and slash. Scatter chips outside of the posted Rights-of-Way boundary. Scatter stumps larger than 24 inches for these segments through openings in the timber outside of the cleared right-of-way.

For all other road segments scatter 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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

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

All suitable excavated material shall be used where possible for the formation of fills, shoulders, and drainage structure backfill. Embankment materials shall be free of woody debris, brush, muck, sod, frozen material, and other deleterious materials. All fills and drainage structure backfill shall be machine compacted according to the specifications in Exhibit D.

Unless road design 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.

Excess excavation shall not be sidecast where material will enter a stream course or where material will accumulate in areas deemed a high landslide hazard location by STATE.

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 follows: 400 divided by the radius of the curve equals the amount of extra width.

DRAINAGE

Ditch. Construct "V" ditch 3 feet wide and to a depth of 1 foot below subgrade. Subgrade shall be crowned at 4 to 6 percent. Construct ditchouts away from subgrade at locations marked in the field.

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

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: As marked in the field.

GRADING

	<u>Back Slopes</u>	<u>Fill Slopes</u>
Rock	Vertical to 1/4:1	Not steeper than 1½:1
Common - side slopes 50% and over	3/4:1	
Common - side slopes less than 50%	1:1	
Common - turnpike (level) section	2:1	

Top of cutslope shall be rounded.

LANDINGS. Landings shall be constructed as posted in the field, no less than 50 feet wide and no more than 70 feet wide. Surface is to be crowned for drainage, with general grade no more than 3 percent. Surface as shown on Exhibit D.

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

SEASONAL WINTERIZATION. All unrocked roads (1C to 1D, 1G to 1H, and 3C to 3D) or unfinished subgrades shall be waterbarred in accordance with Specifications in Exhibit M, and blocked from vehicular traffic prior to November 1, annually and as directed by STATE.



EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

- (1) 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. Waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with Exhibit D. Full bench road construction shall be performed in accordance with Exhibit D.
- (2) Fill Armor and Energy Dissipator Construction. Where rock is used for fill armor, rock shall be placed and tamped at a 1½:1 slope, beginning at the fill toes. 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.
- (3) Ditch Armoring. Where ditch armoring is required, 12"-6" riprap rock will be hauled in and used for surfacing the bottom and sides of the ditch, as directed by STATE.

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
1A to 1B	0+00	Begin drift of excess excavation to fill between stations 1+52 to 5+00.
	1+32	Begin two way junction.
		1+52Begin fill construction. End two way junction. Utilize designed end haul material from road segment 2A to 2B to start fill.
	3+40	Install culvert and utilize 10 cubic yards 24"-6" riprap rock to construct energy dissipator.
	5+00	End fill construction.
	7+05	End drift of excess excavation to fill between stations 1+52 to 5+00. Begin drift of excess excavation to random fills between stations 7+41 to 11+88.
	9+50	Construct waste area.
	11+87	Begin full bench construction/end haul of excess excavation to fill between stations 1+52 to 5+00.
	14+49	End full bench construction/end haul of excess excavation to fill between stations 1+52 to 5+00. Begin end haul of excess excavation to waste area located at station 9+50 to 10+00. Drift portion of excess excavation to construct adjacent fills.
	16+50	Begin full bench construction/end haul of excess excavation to designated waste area.
	17+60	End full bench construction/end haul.
	18+11	End drifting and end haul of excess excavation.
	1C to 1D	0+00
1+00		End subgrade compaction.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS:

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
1O to 1P	0+00	Point 1O. Install 18" x 40' culvert across Bovine Mainline. Skew culvert installation. Utilize 20 cubic yards ¾" – 0" rock for culvert bedding and backfill.
2A to 2B	1+40	Begin hauling excess excavation to waste area at station 14+50. Haul 800cy of excess excavation to road segment 1A to 1B. Begin drift of excess excavation per STATE design. Begin fill construction with 12"-6" riprap material hauled in. Fill slopes are to be 1¼:1.
	2+98	End fill construction.
	3+77	Construct landing.
	5+00	Begin full bench construction and end haul excess excavation to waste area at station 14+50.
	5+50	End full bench construction/end haul.
	7+91	Install culvert and utilize 10 cubic yards of 24"-6" riprap rock to construct an energy dissipator. Remove puncheon fill below new subgrade and develop 3 foot wide stream channel.
	8+30	End hauling of excess excavation.
	11+50	Construct landing.
	14+50	Construct waste area.
	21+05	Construct landing.
	21+51	End drift of excess excavation.
3C to 3D	0+00	Point 3C. Begin compaction on 14 foot outsloped subgrade.
	1+00	End subgrade compaction.
	4+25	Begin subgrade reinforcement with 4"-0" crushed rock.
	4+75	End subgrade reinforcement.
3G to 3H	0+00	Haul excess excavation material to Road Segment 4G-4H to construct fill.
A to B	34+10	Begin new construction.
	34+60	Begin fabric. Begin subgrade reinforcement with 75 cubic yards per station of 4"-0" crushed rock.
	36+10	End fabric and subgrade reinforcement.
	44+60	Construct waste area.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS:

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>	
A to B	49+35	Begin fabric. Begin subgrade reinforcement with 75 cubic yards per station of 4"-0" crushed rock.	
	52+05	End fabric and subgrade reinforcement.	
	56+85	Begin fabric. Begin subgrade reinforcement with 75 cubic yards per station of 4"-0" crushed rock.	
	61+50	End fabric and subgrade reinforcement.	
	63+10	Begin full bench construction/end haul to designated waste area.	
	65+85	End full bench construction/end haul. Begin fabric. Begin subgrade reinforcement with 75 cubic yards per station of 4"-0" crushed rock.	
	66+10	Begin armoring area between stream channel and ditch line with 10 cubic yards of 12"-6" riprap, allowing the ditch line to still drain to the existing culvert at 66+32.	
	66+32	Re-develop stream channel to existing culvert on Weyerhaeuser Tidewater Road in conjunction with the armoring begun at station 66+10.	
	66+35	End fabric and subgrade reinforcement.	
	66+58	End armoring ditch line and inside road edge.	
	67+05	End new construction.	
	E1 to E2	9+50	Construct waste area.
		9+35	Begin curve widening 2 feet on the right.
11+19		End curve widening 2 feet on the right.	
13+56		Begin curve widening 4 feet on the right.	
15+54		End curve widening 4 feet on the right. Begin curve widening 5 feet on the left.	
18+56		End curve widening 5 feet on the left.	
18+87		Begin curve widening 5 feet on the right.	
19+65		Construct waste area.	
20+95		End curve widening 5 feet on the right.	
23+30		Utilize excess material to construct E3 to E4. Construct waste area.	
27+02	Begin curve widening 5 feet on the left.		

EXHIBIT D  
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS:

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
E1 to E2	28+64	Begin curve widening 6 feet on the right.
	29+04	End curve widening 5 feet on the left.
	30+17	End curve widening 6 feet on the right.
	38+96	Begin curve widening 4 feet on the left.
	40+91	End curve widening 4 feet on the left.
E3 to E4	0+00	Utilize excess material from E1 to E2 to construct E3 to E4.
E5 to E6	7+65	Begin curve widening 4 feet on the left.
	8+87	End curve widening 4 feet on the left.
	9+45	Begin curve widening 4 feet on the right.
	10+70	End curve widening 4 feet on the right.
	2+92	Begin curve widening 3 feet on the left.
	4+59	End curve widening 4 feet on the left.
	4+96	Begin curve widening 4 feet on the right.
E7 to E8	6+70	End curve widening 4 feet on the right.
	7+35	Begin curve widening 2 feet on the right.
	9+31	End curve widening 2 feet on the right.
	10+45	Begin curve widening 4 feet on the left.
	12+40	End curve widening 4 feet on the left.
15+22	Begin curve widening 4 feet on the left.	
17+30	End curve widening 4 feet on the left.	

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

- (1) Timber Removal. Remove all trees within the posted Right-of-Way Boundary, as specified in Section 2045, Designated Timber.
- (2) Chipping. Chip all woody material, including stumps less than 24 inches in diameter, tree tops, and slash on Road Segments I20-I21, I21-Pt A. Scatter chips outside of the posted Rights-of-Way boundary.
- (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. Waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with Exhibit D.
- (4) Culvert Replacement and Culvert Installation. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include, skewing the culvert and/or installing the pipe at gradients equal to or exceeding the drainage (or ditch) gradient. 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. Fill construction backfill shall consist of select materials and be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with Exhibit D. Crushed rock shall be used for backfilling excavation trenches less than 3 feet deep. 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, 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 surfacing and added base rock. Provide for a crown of 4 to 6 percent, (½ inch per foot), and compact in accordance with Exhibit D. Subgrade shall be crowned at 4 to 6 percent. Subgrade shall be crowned at 4 to 6 percent.
  - (e) Upon completion of above required work, apply, process, and compact surfacing rock in accordance with specifications in Exhibit D.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
I21 to Pt A	4+44	Construct turnout left.
	10+00	Construct turnout left.
	16+00	Construct turnout left.
	21+22	Begin 4 feet of curve widening.
	22+72	End 4 feet of curve widening. Construct turnout right.
	28+80	Construct turnout left.
	34+10	Construct turnout right.
I22 to I23	0+00	Raise existing grade to blend in with junction of Road Segment A to B. Construct smooth transition with existing Tidewater Road.
	0+76	Install culvert. Utilize 10 cubic yards of 1"-0" crushed rock for culvert bedding and backfill.
	3+72	Construct smooth transition back to existing Tidewater Road grade.
I33 to I34	2+90	Reconstruct the existing fill, replace the existing culvert. Construct an energy dissipator.

EXHIBIT D

END-HAULING REQUIREMENTS

POINT TO POINT	STA. TO STA.	WASTE AREA LOCATION	WASTE AREA TREATMENT
1A to 1B	11+87 to 14+49	2	2
1A to 1B	16+50 to 17+60	1	1 and 3
2A to 2B	5+00 to 5+50	3	1 and 3
A to B	63+10 to 65+85	4	1 and 3
E1 to E2	14+90 to 16+90	5	1 and 3

End-Haul Areas General Requirements

Material shall not be intentionally side cast.

Clearing and grubbing debris shall be end-hauled.

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

Containment

Full containment: The amount of material lost over the outside edge of the road shall not exceed 6 inches in depth measured perpendicular to the natural ground slope. Pioneer excavation shall be removed by digging, loading, and hauling rather than by pushing or scraping methods.

Trees and stumps may have up to 12 inches of material directly above them. 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) Waste Area No. 1, as shown on Exhibit A, is at Station 9+50 to 10+00 on Road Segment 1A-1B.
- (2) Fill at Station 1+52 to 5+00 on Road Segment 1A to 1B.
- (3) Waste Area No. 3, as shown on Exhibit A, is at Station 14+50 to 15+00 on Road Segment 2A-2B.
- (4) Waste Area No. 4, as shown on Exhibit A, is at Station 44+60 to 45+10 on Road Segment A to B, or as located by Weyerhaeuser Company.
- (5) E1 to E2, Station 9+50, 19+65 and 23+30.

Waste Area Treatment

- (1) Place excess excavated materials, end haul materials, and clearing and grubbing debris in the waste area. All placed materials shall be deposited in stable locations as directed by STATE, spread evenly, compacted, and adequate drainage established. Pile woody debris on top of waste area.
- (2) Use suitable excess excavated materials as designed by STATE from road segments 1A to 1B, and 2A to 2B to construct designed fill. Compact fill according to Exhibit D specifications.
- (3) Mulch and seed all waste areas in accordance to Exhibit K.

EXHIBIT D

ROAD SURFACING – PROJECT NO. 1

ROAD SEGMENT: 1A to 1B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A to 1B		0+00 to 18+11		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00- 18+11	8	Station	50	Stations	18.11	906
Curve Widening	4"-0" Crushed		8			Curves	12	68
Fill Widening	4"-0" Crushed		8			Fills	3	39
Turnouts	4"-0" Crushed	4+70,10+75	8	Turnout	22	Turnouts	2	44
Turnaround	4"-0" Crushed	10+25	8	TA	24	TA	1	24
Junctions	4"-0" Crushed		8	Junction	50	Junctions	2	100
Junctions	¾"-0" Crushed		3	Junction	19	Junctions	1	19
Traction Rock	¾" -0" Crushed	1+54-3+40	3	Station	19	Stations	1.86	35
Traction Rock	¾" -0" Crushed	5+20-7+77	3	Station	19	Stations	2.57	49
Traction Rock	¾" -0" Crushed	15+37-17+61	3	Station	19	Stations	2.24	43
Energy Dissipator	24"-6" Rip Rap			Dissipator	10	Dissipators	1	10
Landing Rock	6"-0" Pit Run			Landing	80	Landings	1	80
Total Rock for Road Segment:				<b>1A to 1B</b>				1,417
ROAD SEGMENT: 1C to 1D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1C to 1D		0+00 to 1+00		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-1+00	8	Station	50	Stations	1	50
Junctions	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Total Rock for Road Segment:				<b>1C to 1D</b>				74
ROAD SEGMENT: 1E to 1F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1E to 1F		0+00 to 11+70		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-11+70	8	Station	50	Stations	11.7	585
Traction Rock	¾"-0" Crushed	4+00-10+00	2	Station	13	Stations	6	78
Turnouts	4"-0" Crushed	4+80 & 7+35	8	Turnout	22	Turnouts	2	44
Turnouts	¾"-0" Crushed	4+80 & 7+35	2	Turnout	10	Turnouts	2	20
Curve Widening	4"-0" Crushed		8	Curve	20	Curves	2	40
Curve Widening	¾"-0" Crushed		2	Curve	10	Curves	2	20
Junctions	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Turnaround	4"-0" Crushed	10+05		TA	24	TA	1	24
Landing Rock	6"-0" Pit-run	12+40		Landing	150	Landings	1	150
Total Rock for Road Segment:				<b>1E to 1F</b>				985
ROAD SEGMENT: 1I to 1J				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1I to 1J		0+00 to 0+50		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-0+50	8	Station	50	Stations	.5	25
Junction Rock	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Junctions	¾"-0" Crushed	0+00	2	Junction	10	Junctions	1	10
Landing Rock	6"-0" Pit-run	0+50		Landing	80	Landings	1	80
Total Rock for Road Segment:				<b>1I to 1J</b>				139



EXHIBIT D

ROAD SURFACING – PROJECT NO. 1

ROAD SEGMENT: 1O to 1P				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1O to 1P		0+00 to 2+00		
				Volume (CY) per		Number Of		
Base Rock	4"-0" Crushed	0+00-2+00	8	Station	50	Stations	2	100
Junction Rock	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Junctions	¾"-0" Crushed	0+00	2	Junction	10	Junctions	1	10
Culvert Bedding	¾"-0" Crushed	0+00		Culvert	20	Culverts	1	20
Landing Rock	6"-0" Pit-run	2+00		Landing	80	Landings	1	80
Total Rock for Road Segment:				<b>1O to 1P</b>				234
ROAD SEGMENT: 1Q				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1Q		Landing		
				Volume (CY) per		Number Of		
Landing Rock	4"-0" Crushed	1Q		Station	40	Landings	1	40
Junction Rock	4"-0" Crushed	1Q	8	Junction	24	Junctions	1	24
Junction Rock	¾"-0" Crushed	1Q	2	Junction	10	Junctions	1	10
Total Rock for Road Segment:				<b>1Q</b>				74
ROAD SEGMENT: 1R to 1S				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1R to 1S		0+00 to 2+25		
				Volume (CY) per		Number Of		
Base Rock	4"-0" Crushed	0+00-2+25	8	Station	50	Stations	2.25	113
Junctions	4"-0" Crushed	0+00	8	Station	24	Junctions	1	24
Junctions	¾"-0" Crushed	0+00	2	Junction	10	Junctions	1	10
Landing Rock	6"-0" Pit-run	2+25		Landing	80	Landings	1	80
Total Rock for Road Segment:				<b>1R to 1S</b>				227
ROAD SEGMENT: 1T				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1T		Landing		
				Volume (CY) per		Number Of		
Junctions	¾"-0" Crushed	0+00	2	Junction	10	Junctions	1	10
Landing Rock	6"-0" Pit-run	1T		Landing	40	Landings	1	40
Total Rock for Road Segment:				<b>1T</b>				50
ROAD SEGMENT: 2A to 2B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B		0+00 to 21+51		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-21+51	8	Station	50	Stations	21.51	1,076
Turnouts	4"-0" Crushed	6+25, 17+50	8	Station	22	Turnouts	2	44
Junctions	4"-0" Crushed		8	Junction	50	Junctions	1	50
Turnarounds	4"-0" Crushed	9+80, 18+15	8	TA	24	TA's	2	48
Fill Widening	4"-0" Crushed		8			Fills	2	7
Curve Widening	4"-0" Crushed		8			Curves	19	96
Landings	6"-0" Pit run			Landing	80	Landings	3	240
Junctions	¾"-0" Crushed		3	Junction	19	Junctions	1	19

EXHIBIT D

ROAD SURFACING – PROJECT NO. 1

ROAD SEGMENT: 2A to 2B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B		0+00 to 21+51		
				Volume (CY) per		Number of		
Turnouts	¾"-0" Crushed		3	Turnout	8	Turnouts	1	8
Traction Rock	¾"-0" Crushed	2+14-2+50	3	Station	19	Stations	.36	10
Traction Rock	¾"-0" Crushed	3+97-7+75	3	Station	19	Stations	3.78	72
Traction Rock	¾"-0" Crushed	10+22-15+90	3	Station	19	Stations	5.68	108
Energy Dissipator	24"-6" Rip Rap			Dissipator	10	Dissipators	1	10
Fill Material	12"-6" Rip Rap	1+70-2+60						628
Total Rock for Road Segment:				2A to 2B				2,416
ROAD SEGMENT: 2C to 2D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	2C to 2D		0+00 to 1+50		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-1+50	8	station	50	Stations	1.5	75
Junctions	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Landing Rock	6"-0" Pit-run	1+50		Landing	80	Landings	1	80
Total Rock for Road Segment:				2C to 2D				179
ROAD SEGMENT: 2E				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2E Landing		2E Landing		
				Volume (CY) per		Number of		
Landing Rock	6"-0" Pit-run	2E		Landing	80	Landings	1	80
Total Rock for Road Segment:				2E				80
ROAD SEGMENT: 2F to 2G				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	2F to 2G		0+00 to 1+20		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-1+20	8	Station	50	Stations	1.2	60
Junctions	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Junctions	¾"-0" Crushed	0+00	2	Junction	10	Junctions	1	10
Landing Rock	6"-0" Pit-run	1+20		Landing	80	Landings	1	80
Total Rock for Road Segment:				2F to 2G				174
ROAD SEGMENT: 2H to 2I				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	2H to 2I		0+00 to 1+00		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-1+00	8	station	50	stations	1	50
Junctions	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Junctions	¾"-0" Crushed	0+00	2	Junction	10	Junctions	1	10
Landing Rock	6"-0" Pit-run	1+20		Landing	80	Landings	1	80
Total Rock for Road Segment:				2H to 2I				164

EXHIBIT D

ROAD SURFACING – PROJECT NO. 1

ROAD SEGMENT: 2J to 2K				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2J to 2K		0+00 to 2+40		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	0+00-2+40	8	Station	50	Stations	2.4	120
Junctions	4"-0" Crushed	0+00	8	Junction	40	Junctions	1	40
Junctions	¾"-0" Crushed	0+00	2	Junction	20	Junctions	1	20
Landings	6"-0" Pit-run	2+40		Landing	80	Landings	1	80
Total Rock for Road Segment:				<b>2J to 2K</b>				260
ROAD SEGMENT: 2L to 2M				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2L to 2M		0+00 to 8+00		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	0+00-8+00	8	Station	50	Stations	8	400
Junctions	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Turnouts	4"-0" Crushed	2+50, 5+50	8	Turnout	22	Turnouts	2	44
Turnaround	4"-0" Crushed	6+25	N/A	TA	24	TA's	1	24
Landings	6"-0" Pit-run	8+00	N/A	Landing	80	Landings	1	80
Total Rock for Road Segment:				<b>2L to 2M</b>				572
ROAD SEGMENT: 3A to 3B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	3A to 3B		0+00 to 40+20		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-40+20	8	Station	50	Stations	40.2	2,010
Traction Rock	¾"-0" Crushed	30+00-36+00	2	Turnout	13	Stations	6	78
Turnouts	4"-0" Crushed	5+50,11+60, 15+15,23+20, 30+10,35+50	8	Turnout	22	Turnouts	6	132
Turnouts	¾"-0" Crushed	30+10, 35+50	2	Turnout	10	Turnouts	2	20
Curve Widening	4"-0" Crushed		8	Curve	N/A	Curves	N/A	120
Curve Widening	¾"-0" Crushed		2	Curve	N/A	Curves	N/A	20
Turnaround	4"-0" Crushed	39+00		TA	24	TA's	1	24
Junctions	4"-0" Crushed	0+00	8	Junction	40	Junctions	1	40
Junctions	¾"-0" Crushed	0+00	2	Junction	20	Junctions	1	20
Landings	6"-0" Pit-run	40+20		Landing	80	Landings	1	80
Total Rock for Road Segment:				<b>3A to 3B</b>				2,544
ROAD SEGMENT: 3C to 3D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	3C to 3D		0+00 to 1+00		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-1+00	8	Station	50	Stations	1	50
Junctions	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Subgrade Reinforcement	4"-0" Crushed	4+25-4+75	N/A	N/A		N/A		30
Total Rock for Road Segment:				<b>3C to 3D</b>				104

EXHIBIT D

ROAD SURFACING – PROJECT NO. 1

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		0+00 to 4+25		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	0+00 -4+25	8	Station	50	Stations	4.25	213
Junctions	4"-0" Crushed	0+00	8	Junction	40	Junctions	1	40
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Landings	6"-0" Pit-run	8+00		Landing	80	Landings	1	80
Total Rock for Road Segment:				3E to 3F				355
ROAD SEGMENT: 3G to 3H				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	3G to 3H		0+00 to 1+00		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-1+00	8	Station	50	Stations	1	50
Junctions	4"-0" Crushed		8	Junction	40	Junctions	1	40
Junctions	¾" -0" Crushed		2	Junction	20	Junctions	1	20
Landings	6"-0" Pit-run	1+00		Landing	80	Landings	1	80
Total Rock for Road Segment:				3G to 3H				190
ROAD SEGMENT: 3I to 3J				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	3I to 3J		0+00 to 7+60		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-7+60	8	Station	50	Stations	7.6	380
Traction Rock	¾" -0" Crushed	0+00-7+00	2	Station	13	Stations	7	91
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Turnouts	¾" -0" Crushed		2	Turnout	10	Turnouts	1	10
Curve Widening	4"-0" Crushed		8	Curve	N/A	Curves	2	40
Curve Widening	¾" -0" Crushed		2	Curve	N/A	Curves	2	20
Turnaround	4"-0" Crushed			TA	24	TA's	1	24
Junctions	4"-0" Crushed		8	Junction	40	Junctions	1	40
Junctions	¾" -0" Crushed		2	Junction	20	Junctions	1	20
Landing	6"-0" Pit-run	7+60		Landing	80	Landings	1	80
Total Rock for Road Segment:				3I to 3J				727
ROAD SEGMENT: 4A to 4B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	4A to 4B		0+00 to 19+65		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-19+65	8	Station	50	Stations	19.65	983
Traction Rock	¾" -0" Crushed	0+60-5+60	2	Station	13	Stations	5	65
Traction Rock	¾" -0" Crushed	12+00-15+50	2	Station	13	Stations	3.5	46
Turnouts	4"-0" Crushed	9+40,11+40,17+70	8	Turnout	22	Turnouts	3	66
Curve Widening	4"-0" Crushed		8			Curves	3	50
Curve Widening	¾" -0" Crushed		2			Curves	3	20
Turnaround	4"-0" Crushed	18+10		TA	24	TA's	1	24
Junctions	¾"-0" Crushed	0+00	2	Junction	20	Junctions	1	20
Junctions	4"-0" Crushed	0+00	8	Junction	40	Junctions	1	40
Landings	6"-0" Pit-run	19+65		Landing	80	Landings	1	80
Total Rock for Road Segment:				4A to 4B				1,394

EXHIBIT D

ROAD SURFACING – PROJECT NO. 1

ROAD SEGMENT: 4C to 4D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	4C to 4D		0+00 to 1+00		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-1+00	8	Station	50	Stations	1	50
Junctions	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Landings	6"-0" Pit-run	1+00		Landing	80	Landings	1	80
Total Rock for Road Segment:				4C to 4D				154
ROAD SEGMENT: 4E to 4F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	4E to 4F		0+00 to 1+65		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-1+65	8	Station	50	Stations	1.65	83
Junctions	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Junctions	¾" -0" Crushed	0+00	2	Junction	10	Junctions	1	10
Landings	6"-0" Pit-run	1+65		Landing	80	Landings	1	80
Total Rock for Road Segment:				4E to 4F				197
ROAD SEGMENT: 4G to 4H				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	4G to 4H		0+00 to 1+30		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-1+30	8	Station	50	Stations	1.3	65
Junctions	4"-0" Crushed	4E	8	Junction	40	Junctions	1	40
Junctions	¾" -0" Crushed	4E	2	Junction	20	Junctions	1	20
Landings	6"-0" Pit-run	1+30		Landing	80	Landings	1	80
Total Rock for Road Segment:				4G to 4H				205
ROAD SEGMENT: 4I to 4J				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	4I to 4J		0+00 to 1+00		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00-1+00	8	Station	50	Stations	1	50
Junctions	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Junctions	¾" -0" Crushed	0+00	2	Junction	10	Junctions	1	10
Landings	6"-0" Pit-run	1+00		Landing	80	Landings	1	80
Total Rock for Road Segment:				4I to 4J				164
ROAD SEGMENT: Point 4K Landing				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	Point 4K		Landing		
				Volume (CY) per		Number of		
Junctions	¾" -0" Crushed	0+00	2	Junction	10	Junctions	1	10
Landing Rock	4"-0" Crushed	4K		Landing	50	Landings	1	50
Total Rock for Road Segment:				4K				60
ROAD SEGMENT: Point 4L Landing				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	Point 4L		Landing		
				Volume (CY) per		Number of		
Junctions	¾" -0" Crushed	0+00	2	Junction	10	Junctions	1	10
Landing Rock	4"-0" Crushed			Landing	50	Landings	1	50
Total Rock for Road Segment:				4L				60

EXHIBIT D

ROAD SURFACING – PROJECT NO. 1

ROAD SEGMENT: I25 to I26				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	I25 to I26		0+00 to 7+50		
				Volume (CY) per		Number of		
Surfacing	¾" -0" Crushed	0+00-7+50	3	Station	19	Stations	7.50	143
Total Rock for Road Segment:				I25 to I26				143

Total Rock Project No. 1

12"-6"	24"-6"	6"-0"	4"-0"	¾"-0"	TOTAL
628	20	1,870	9,497	1,244	13,259

ROAD SURFACING – PROJECT NO. 3

ROAD SEGMENT: I20 to I21				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I20 – I21		0+00 to 3+76		
				Volume (CY) per		Number of		
Surfacing	1"-0" Crushed		4	Station	25	Stations	3.76	94
Total Rock for Road Segment:				I20 to I21				94
ROAD SEGMENT: I21 to Pt A				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I21 – Pt A		3+76 to 34+10		
				Volume (CY) per		Number of		
Leveling Rock	4"-0" Crushed							250
Surfacing	1"-0" Crushed		4	Station	25	Stations	30.34	759
Turnouts	1"-0" Crushed		4	Turnout	11	Turnouts	6	66
Curve Widening	1"-0" Crushed		4	Curve	8	Curves	2	16
Total Rock for Road Segment:				I21 to Pt A				1,091
ROAD SEGMENT: A to B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	A to B		34+10 to 67+05		
				Volume (CY) per		Number of		
Surfacing	4"-0" Crushed		10	Station	63	Stations	32.95	2,076
Turnouts	4"-0" Crushed	39+60, 43+35, 51+10, 55+10, 60+39	10	Turnouts	28	Turnouts	5	140
Curve Widening	4"-0" Crushed		10	Curve	N/A	Curves	19	152
Subgrade Reinforcement	4"-0" Crushed		12	Station	75	Stations	7.2	540
Surfacing	1"-0" Crushed		4	Station	25	Stations	32.95	824
Turnouts	1"-0" Crushed		4	Turnout	11	Turnouts	5	55
Curve Widening	1"-0" Crushed		4	Curve		Curves	19	49
Ditch/Road Armor	12"-6" Riprap							10
Total Rock for Road Segment:				A to B				3,846

EXHIBIT D

ROAD SURFACING – PROJECT NO. 3

ROAD SEGMENT: I22 to I23				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I22 to I23		0+00 to 3+72		
				Volume (CY) per		Number of		
Surfacing	1"-0" Crushed		8	Station	50	Stations	3.72	186
Culvert bedding	1"-0" Crushed			Culvert	10	Culverts	1	10
Total Rock for Road Segment:				I22 to I23				196
ROAD SEGMENT: I23 to I24				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I23 to I24		3+72 to 69+83		
				Volume (CY) per		Number Of		
Leveling	1"-0" Crushed			Station		Stations	66.11	350
Total Rock for Road Segment:				I23 to I24				350

Total Rock Project No. 3

12"-6"	4"-0"	1"-0"	TOTAL
10	3,158	2,409	5,577

ROAD SURFACING – PROJECT NO. 5

ROAD SEGMENT: E1 to E2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	E1 to E2		0+00 to 44+44		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00 - 44+44	8	station	50	stations	44.44	2,222
Turnouts	4"-0" Crushed	6+00,11+79, 16+13,22+35, 26+56,32+23, 39+82	8	turnout	22	turnouts	7	154
Curve Widening	4"-0" Crushed		8					237
Turnaround	4"-0" Crushed	42+90	8	turnaround	13	TA's	1	13
Surface Rock	3/4"-0" Crushed	0+00 - 44+44	4	station	25	stations	44.44	1,111
Turnouts	3/4"-0" Crushed		4	turnout	11	turnouts	7	77
Curve Widening	3/4"-0" Crushed		4					119
Turnaround	3/4"-0" Crushed	42+90	4	turnaround	7	TA's	1	7
Total Rock for Road Segment:				E1 to E2				3,940
ROAD SEGMENT: E3 to E4				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	E3 to E4		0+00 to 4+64		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00 - 4+64	8	station	50	stations	4.64	232
Surface Rock	3/4"-0" Crushed	0+00 - 4+64	4	station	25	stations	4.64	116
Total Rock for Road Segment:				E3 to E4				348

EXHIBIT D

ROAD SURFACING – PROJECT NO. 5

ROAD SEGMENT: E5 to E6				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	E5 to E6		0+00 to 16+63		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00 - 16+63	8	station	50	stations	16.63	832
Turnouts	4"-0" Crushed	2+53,8+13, 12+75	8	turnout	22	turnouts	3	66
Curve Widening	4"-0" Crushed		8					32
Surface Rock	3/4"-0" Crushed	0+00 - 16+63	4	station	25	stations	16.63	416
Turnouts	3/4"-0" Crushed		4	turnout	11	turnouts	3	33
Curve Widening	3/4"-0" Crushed		4					16
Total Rock for Road Segment:				E5 to E6				1,394
ROAD SEGMENT: E7 to E8				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	E7 to E8		0+00 to 20+18		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed	0+00 - 20+18	8	station	50	stations	20.18	1,009
Turnouts	4"-0" Crushed	6+01,11+51, 14+89	8	turnout	22	turnouts	3	66
Curve Widening	4"-0" Crushed		8					120
Surface Rock	3/4"-0" Crushed	0+00 - 20+18	4	station	25	stations	20.18	505
Turnouts	3/4"-0" Crushed		4	turnout	11	turnouts	3	33
Curve Widening	3/4"-0" Crushed		4					58
Total Rock for Road Segment:				E7 to E8				1,791
ROAD SEGMENT: I27 to I28				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I27 to I28		0+00 to 1+75		
				Volume (CY) per		Number of		
Surface Rock	3/4"-0" Crushed	0+00 - 1+75	4	station	25	stations	1.75	44
Junction Rock	3/4"-0" Crushed							40
Leveling Rock	3/4"-0" Crushed							30
Total Rock for Road Segment:				I27 to I28				114
ROAD SEGMENT: I29 to I30				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I29 to I30		0+00 to 3+74		
				Volume (CY) per		Number of		
Surface Rock	3/4"-0" Crushed	0+00 - 3+74	4	station	25	stations	3.74	94
Leveling Rock	3/4"-0" Crushed							30
Total Rock for Road Segment:				I29 to I30				124
ROAD SEGMENT: I31 to I32				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I31 to I32		0+00 to 16+20		
				Volume (CY) per		Number of		
Leveling Rock	3/4"-0" Crushed							80
Total Rock for Road Segment:				I31 to I32				80



EXHIBIT D

ROAD SURFACING – PROJECT NO. 5

ROAD SEGMENT: I33 to I34				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I33 to I34		0+00 to 9+50		
				Volume (CY) per	Number of			
Base Rock (Fill)	4"-0" Crushed	2+90	8	station	50	stations	1.00	50
Surface Rock	3/4"-0" Crushed	0+00 – 9+50	4	station	25	stations	9.50	238
Leveling Rock	3/4"-0" Crushed							50
Fill Armor	24"-6" Riprap	2+90						50
Total Rock for Road Segment:				I33 to I34				388

**Total Rock Project No. 5**

24"-6"	4"-0"	3/4"-0"	TOTAL
50	5,033	3,097	8,180

Roads shall be uniformly graded and approved by STATE prior to rocking. For typical cross section, see Forestry Department Drawing Nos. 351-C and 351-D at the Forestry Department district office.

## EXHIBIT D

### ROCK ACCOUNTABILITY

Subgrades must be approved by STATE prior to rocking. Rocking must be done only when weather conditions are acceptable to STATE, and must be suspended when muddy water could enter streams from runoff.

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 B. 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. If additional rock is required because of insufficient depth, it shall be added by truck measure to those areas that were slighted. The conversion from compacted yardage to truck yardage is 1.3 multiplied by the compacted yardage equals truck yardage.

The depth of compacted aggregates shall not vary more than 1 inch from the depth specified in Exhibit D. The average depth for each road segment shall be the specified depth or greater. Surfacing areas shall be staked 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

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 visible deformation ceases, or in the case of a sheepsfoot roller, the roller "walks out." A minimum of 3 passes shall be made over the entire width and length of the road. A pass is defined as traveling a road section in one direction and then back over that same section again. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

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 or, in the case of a sheepsfoot roller, the roller "walks out." At least of 3 passes shall be made over the entire width and length of each layer. A pass is defined as traveling a fill layer in one direction and then back over that same layer again.

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

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

Crushed Rock. The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of crushed rock shall be moistened or dried to a 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. A pass is defined as traveling a road section in one direction and then back over that same section again. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

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 mile 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 or sheepsfoot compactors shall exert a minimum pressure of 250 pounds per square inch on the ground area in contact with the tamping feet. The compactor shall cover a minimum width of 60 inches per pass and weigh a minimum of 16,000 pounds.
- (4) Vibratory Hand-Operated or Backhoe-Mounted Tamper. Vibratory hand-held or hydraulic tampers shall be used for compaction of backfill materials around culverts (and/or bridge approach embankment materials around abutments). The tamper shoe dimensions shall be a minimum of 10" X 13" and capable of a centrifugal force of 2,250 pounds.
- (5) Vibratory Grid Compactors. The roller shall have a grid surface and have an operating weight of 32,000 pounds or more. The rock shall be worked with a grader weighing at least 20,000 pounds during the grid rolling process. All rock shall come in contact with the vibratory grid compactor.

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 polyethylene or aluminized steel. All culverts shall conform to the material and fabricating requirements of the "Standard Specifications for Highway Construction" prepared by the Highway Division of the Oregon State Department of Transportation. Corrugation types and shapes other than those meeting the above minimum Highway requirements, shall be approved in writing by STATE.

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 stipulated in special instructions.

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

Culvert grade shall slope away from ditch grade at least 2 percent unless otherwise specified.

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 pipe. The culvert trench shall be excavated 3 pipe diameters wide to Permit compaction and working on each side of the pipe. Tamping shall be done in 6-inch lifts, 1 pipe diameter each side of the pipe to 95 percent density or over. Bedrock shall be excavated as required to provide a uniform foundation for the full length of the culvert.

A bedding of granulated material or 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 pipe.

Backfill shall consist of granulated material, crushed rock, or job-excavated soil free of stumps, limbs, rocks, or other objects which would damage the pipe.

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

Joining shall be done with bands of like material and corrugations. Manufacturers' instructions shall be followed for prefabricated pipe assembly.

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

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

EXHIBIT E  
 CULVERT SPECIFICATIONS

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

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

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

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

Dia.	Aluminized Steel Pipe Gauge	Band Gauges	Band Widths (")			Hugger Band Widths (")	
			Annular	Helical	Dimpled	Annular	Helical
12-15	16	16	7	12	12	13 1/8	10 1/2
18-24	16	16	12	12	12	13 1/8	10 1/2
30-36	16	16	12	12	12	13 1/8	10 1/2
42	14	16	12	12	NA	13 1/8	10 1/2
48	14	16	24	24	NA	13 1/8	10 1/2
54	14	16	24	24	NA	13 1/8	10 1/2
60	12	16	24	24	NA	13 1/8	10 1/2
66-72	12	16	24	24	NA	13 1/8	10 1/2
78	12	16	24	24	NA	13 1/8	10 1/2
84	12	16	24	24	NA	14 3/4	10 1/2
90-120	12	16	26	26	NA	NA	NA

Culverts larger than 60" in diameter shall have 3" x 1" corrugations.

Polyethylene culverts shall be double walled and meet the requirements of AASHTO M-294-901, Type S.

The intake ends of culverts in fills less than 3 feet 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 2 1/2 inches wide, with the spade driven 2 feet into the ground.

Tamping is required.

All removed culverts shall be hauled to an approved refuse site off of STATE land.

EXHIBIT E  
 CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
1	18	50	CPP	1A to 1B	1+32
2	18	42	CPP	1A to 1B	3+40
3	18	42	CPP	1A to 1B	10+66
4	18	34	CPP	1A to 1B	12+87
5	18	30	CPP	1E to 1F	2+10
6	18	34	CPP	1E to 1F	6+70
7	18	34	CPP	1E to 1F	10+05
8	18	40	CPP	1O to 1P	Sta. 0+00 across Bovine Mainline
9	18	46	CPP	2A to 2B	2+47
10	24	38	CPP	2A to 2B	7+75
11	18	32	CPP	2A to 2B	13+00
12	18	50	CPP	2J to 2K	0+05
13	18	40	CPP	2L to 2M	0+80
14	18	34	CPP	2L to 2M	6+00
15	18	32	CPP	3A to 3B	2+65
16	18	32	CPP	3A to 3B	6+80
17	18	32	CPP	3A to 3B	13+45
18	18	30	CPP	3A to 3B	19+65
19	18	30	CPP	3A to 3B	21+35
20	18	40	CPP	3A to 3B	25+13
21	18	32	CPP	3A to 3B	31+65
22	18	40	CPP	3C to 3D	4+55
23	18	40	CPP	3G to 3H	0+00
24	18	50	CPP	3I to 3J	0+00
25	18	46	CPP	3I to 3J	3+75
26	18	40	CPP	4G to 4H	0+00
27	18	40	CPP	4I to 4J	0+00

EXHIBIT E  
 CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
28	18	36	CPP	A to B	36+10
29	18	36	CPP	A to B	40+63
30	18	30	CPP	A to B	48+01
31	18	36	CPP	A to B	54+66
32	18	30	CPP	A to B	58+59
33	18	40	CPP	I22 to I23	0+76
34	18	35	CPP	E1 to E2	4+00
35	18	30	CPP	E1 to E2	11+55
36	18	30	CPP	E1 to E2	13+50
37	18	40	CPP	E1 to E2	18+56
38	18	30	CPP	E1 to E2	23+30
39	18	45	CPP	E1 to E2	25+68
40	18	60	CPP	E1 to E2	35+09
41	18	30	CPP	E1 to E2	41+82
42	18	35	CPP	E3 to E4	1+78
43	18	30	CPP	E5 to E6	4+03
44	18	30	CPP	E5 to E6	7+62
45	18	30	CPP	E5 to E6	16+16
46	18	30	CPP	E7 to E8	1+12
47	18	30	CPP	E7 to E8	4+66
48	18	50	CPP	E7 to E8	7+80
49	18	30	CPP	E7 to E8	12+13
50	18	30	CPP	E7 to E8	18+37
51	24	60	CPP	I33 to I34	2+90
52	18	30	CPP	I33 to I34	7+10



EXHIBIT F

ROCK PIT DEVELOPMENT AND USE

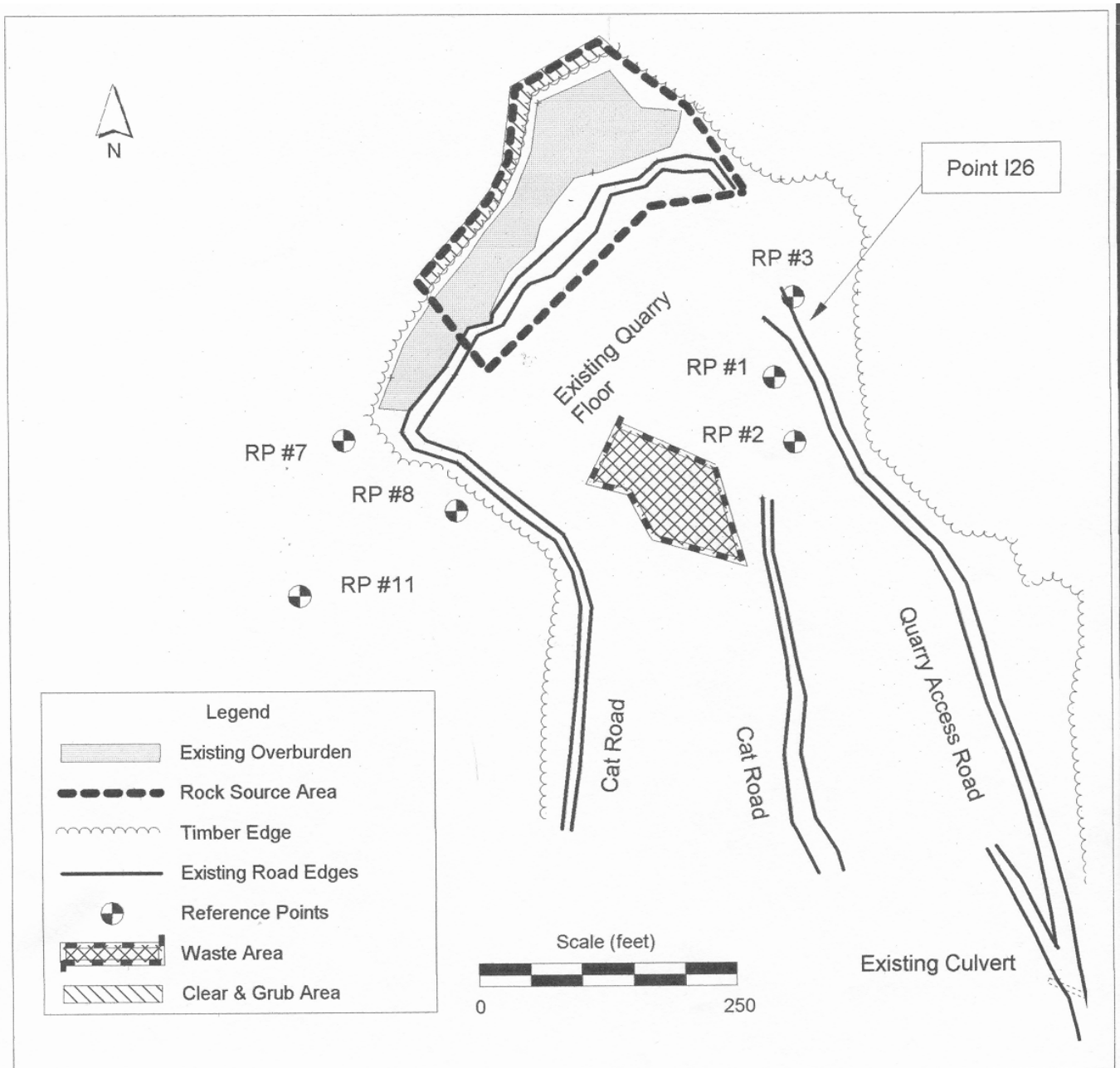
- (1) PURCHASER shall prepare a written development plan for the pit areas. The plan shall be submitted to STATE for approval prior to conducting any operation in either pit area. The plan shall include, but not be limited to:
  - (a) Location of benches and roads to benches.
  - (b) Disposal site for woody debris, overburden and reject material.
  - (c) Time lines for rock quarry use.
  - (d) Erosion Control measures.
- (2) PURCHASER shall schedule and coordinate quarry usage in all quarries and stockpiles with other existing or planned STATE contracts requiring quarry usage.
- (3) Pit sites shall be left in a condition free from overburden and debris. Access roads to the pit, and the pit floor, shall be cleared at the termination of use. Overburden shall be removed for a distance of 20 feet beyond the developed rock source. Trees removed for Quarry development will be felled, bucked, and decked at a site acceptable to the STATE adjacent to the quarry.
- (4) 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.
- (5) PURCHASER shall conduct the operations relative to the disposal of waste material in such manner that silt, rock, debris, dirt, or clay shall not be washed, conveyed, or otherwise deposited in any stream.
- (6) All overburden and reject material shall be hauled to the designated waste area shown on Exhibit F for both Quarries and disposed of as directed by STATE. There is existing overburden piled from previous operations in the Knob Point Quarry that will be hauled to the designated waste areas shown on Exhibit F and disposed of as directed by STATE. Waste material will be spread evenly on the site, sloped and compacted for drainage, as directed by STATE.
- (7) Clear and grub the West Tidewater rock source area. All woody debris, including stumps and slash shall be chipped and scattered outside the rock source and existing quarry area, as directed by STATE.
- (8) Clear and grub the Knob Point rock source area. All woody debris, including stumps and slash shall be burned in the quarry floor, as directed by STATE.
- (9) PURCHASER shall obtain a FPA Burn Permit prior to debris disposal for the Knob Point Quarry Development.
- (10) PURCHASER shall provide and maintain a 500 gallon fire truck, which meets FPA requirements, during all phases of debris burning activities for the Knob Point Quarry Development.
- (11) Benches shall be 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 degrees or less. Said bench shall be easily accessible with tractors.
- (12) Pit face shall be developed in a uniform manner.

EXHIBIT F

ROCK PIT DEVELOPMENT AND USE

- (13) Oversized material that is produced or encountered during development shall be broken down and utilized for crushing, utilized for riprap road rock materials, or stored on site as directed by the STATE.
- (14) Proper winterization and storm-water control measures such as water barring, drainage, utilization of filter bales, mulching and/or blocking access shall be utilized and such measures maintained to protect the watershed and project work, as directed by STATE.
- (15) PURCHASER shall notify STATE 5 days prior to the start of quarry development activities.
- (16) All quarry backslopes shall be left in a stable condition.
- (17) The quarry floor shall be developed to provide for drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained. Quarry access roads shall be cleared and blocked upon completion of quarry use as directed by STATE.

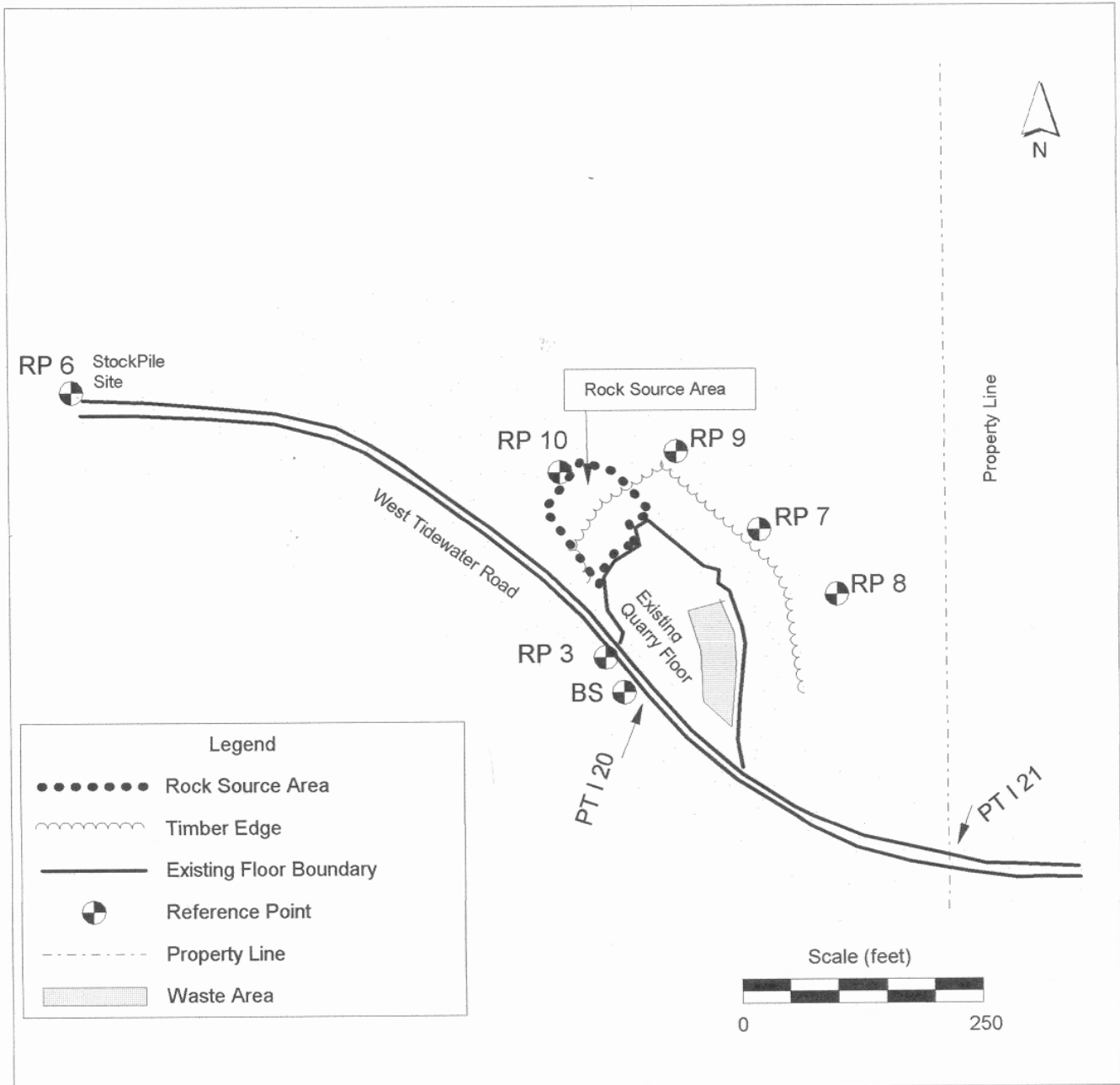
EXHIBIT F  
ROCK PIT DEVELOPMENT AND USE



Oregon Department of Forestry  
Astoria District  
Engineering Unit

Knob Point Quarry  
NW1/4, NW1/4, Section 18, T7N, R6V  
Clatsop County, Oregon

EXHIBIT F  
ROCK PIT DEVELOPMENT AND USE



Oregon Department of Forestry  
Astoria District  
Engineering Unit

West Tidewater Quarry  
NE1/4NW1/4, Section 18, T6N, R7W,  
Clatsop County, Oregon

EXHIBIT G

CRUSHED ROCK SPECIFICATIONS

Materials. The material shall be fragments of rock or other hard, durable particles crushed to the required size and a filler of finely crushed stone, sand, or other finely divided mineral matter. The material shall be free from vegetation and lumps of clay. STATE may require screening and/or rejecting of materials utilized for production of the ¾"-0" and 1"-0" crushed rock for the purpose of removing excess fines or dirt.

Quality and Grading Requirements. The stone base materials shall be crushed rock, including sand. River gravel shall not be used.

The material from which base material is produced or manufactured shall conform to the general requirements of Section 2630 of the "Standard Specifications for Highway Construction" prepared by the Highway Division, Oregon Department of Transportation, and shall meet the following test requirements:

Hardness - Test Method AASHTO T 96 35% Maximum

Durability - Test Method OSHD Standard  
 Passing No. 20 Sieve: 30% Maximum  
 Sediment Height: 3" Maximum

<u>For ¾"-0"</u>	Passing	1" sieve	100%
	Passing	¾" sieve	90-100%
	Passing	⅜" sieve	55-75%
	Passing	¼" sieve	40-60%

Of the fraction passing ¼" sieve, 40% to 60% shall pass the No. 10 sieve.

<u>For 1"-0"</u>	Passing	½" sieve	100%
	Passing	1" sieve	90-100%
	Passing	½" sieve	55-75%
	Passing	¼" sieve	40-55%

Of the fraction passing ¼" sieve, 40% to 60% shall pass the No. 10 sieve.

<u>For 4"-0"</u>	Passing	5" sieve	100%
	Passing	4" sieve	90-100%
	Passing	2" sieve	55-75%
	Passing	1¼" sieve	15-35%

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

PIT-RUN AND RIPRAP ROCK SPECIFICATIONS

<u>For 6"-0" Pit-Run</u>	Passing	10" sieve	100%
	Passing	6" sieve	65%

For 12"-6" Riprap A minimum of 50 percent or more of the material shall measure at least 12 inches 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.

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.



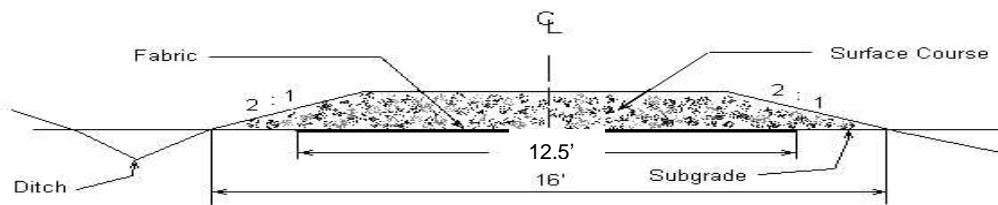
EXHIBIT I  
FABRIC SPECIFICATIONS

FABRIC SPECIFICATIONS - shall be woven 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 D1682
(2)	Modulus Load at 10% Elongation	140 lbs.	ASTM D1682
(3)	Mullen Burst	600 lbs.	ASTM D751
(4)	Width – 12.5 feet		

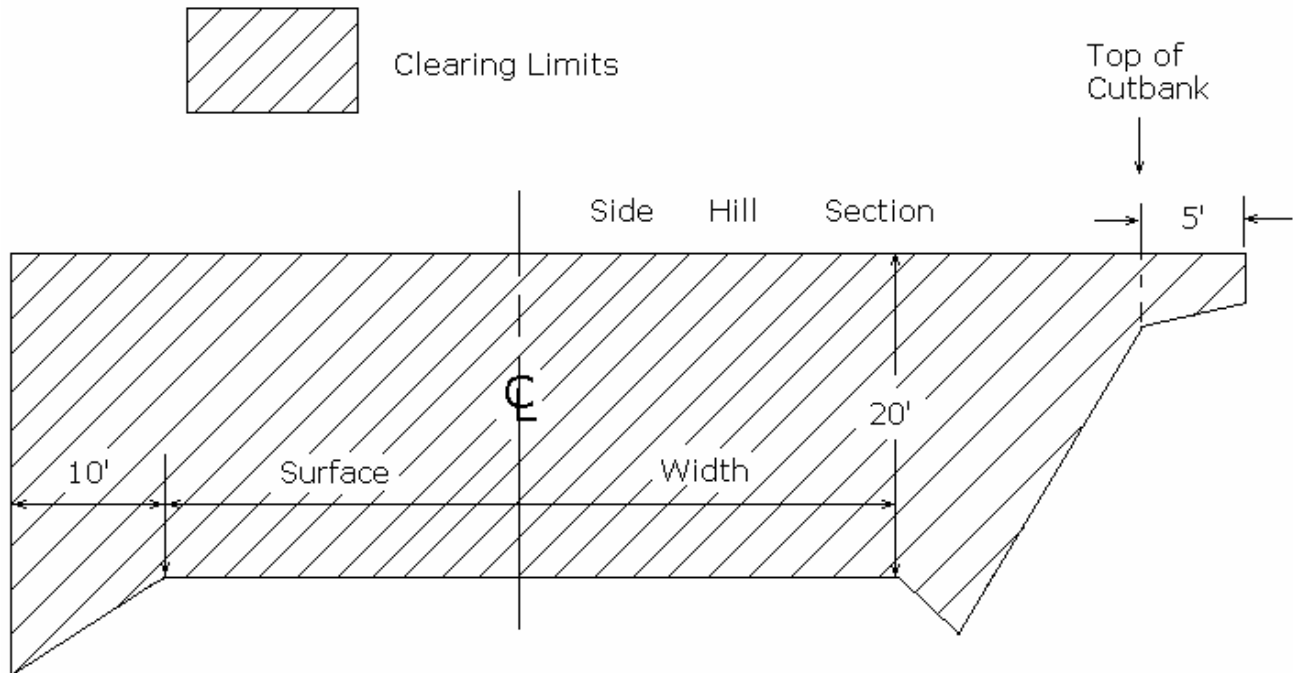
INSTALLATION REQUIREMENTS - fabric shall be installed according to the following requirements:

- (1) Typical cross section:



- (2) 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 or pushed below subgrade surface. Light vegetation (grass, weeds, leaves, and fine woody debris) may be left in place.
- (3) Fabric shall be installed directly on the prepared surface. Longitudinal and traverse joints shall be overlapped at least 3 feet.
- (4) 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.
- (5) 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.
- (6) Should STATE determine that installation of fabric on roads is not necessary, PURCHASER shall deliver an equivalent amount of road fabric to STATE.
- (7) Install fabric at the following locations: Pt A to Pt B sta.'s 34+60 to 36+10, 49+35 to 52+05, 56+85 to 61+50, and 65+77 to 66+35.
- (8) 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.

EXHIBIT J  
LOGGING ROAD BRUSHING SPECIFICATIONS



REQUIREMENTS

The minimum height of clearing shall be 20 feet from the road surface, and the minimum width of clearing on the cutslope side(s) of the road shall be 15 feet horizontal distance from the shoulder of the road, 5 feet beyond the top of the cutbank, and 10 feet horizontal on the down slope side from the road shoulder.

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, and water courses and chipped with chips scattered outside of the posted Rights-of-Way boundary.

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

Brush and chip all roadside vegetation on road segments: I20 to I21 and I21 to Pt. A.



EXHIBIT K

GRASS SEEDING AND MULCHING

This work shall consist of furnishing and placing required grass seed, and straw mulch.

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. Work shall be performed during each specified seeding season on all completed and previously untreated sections. PURCHASER shall notify STATE 24 hours prior to seeding.

Application Methods for Grass Seed

Dry Method. Hand-operated seeding devices may be used when seed is applied in dry form.

Application Rates for Seed

Seed listed below shall be applied at the following rate per acre: 100 lbs.

SPECIES	MIXTURE	PURE LIVE SEED	POISON AND/OR REPELLENT	GERMINATION
Annual Rye	26%	95%	0	>90%
Orchard Grass	25%	95%	0	>90%
New Zealand White Clover	17%	95%	0	>90%
Perennial Rye	15%	95%	0	>90%
Birdsfoot Trifol	07%	95%	0	>90%
Red Clover	06%	95%	0	>90%
Alsike Clover	04%	95%	0	>90%

Seeding and Mulching:

Apply grass seed and straw mulch to all waste areas.

Apply grass seed and straw mulch to all bare soils on Road Segment 1A to 1B, Station 1+52 to Station 5+00 and Station 11+87 to Station 18+10, Road Segment 2A to 2B, Station 2+34 to Station 9+80, and Road Segment A to B, Station 65+30 to Station 65+80.

Apply grass seed and straw mulch to all bare soils resulting from work on Project No. 6, Road Vacating.

Applied straw mulch shall be a minimum of 2 inches deep and provide a uniform cover.

EXHIBIT L

ROAD VACATING SPECIFICATIONS

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

- (1) Fill removal and stream channel development.
- (2) Culvert removal.
- (3) Restoration of natural contours by outsloping of the road prism.
- (4) Sidecast pullback.
- (5) Minimize disturbance of existing vegetation.
- (6) A total project cost not exceeding \$51,644.

PROJECT REQUIREMENTS AND GENERAL SPECIFICATIONS

- (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 1½:1, as directed by STATE.
- (3) Culvert Removal. Remove drainage structures and culverts. Removed culverts shall be hauled to an approved refuse site off of STATE land.
- (4) 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%, 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 L.
- (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% outsloped surface for drainage. Any excess material will be hauled to a designated waste area, as directed by STATE.
  - (b) Woody Debris may be incorporated in embankment 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.
  - (a) All excavated material and bare soil shall utilize grass seed and straw mulch approved by STATE and in accordance with the specifications in Exhibit K. 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 M.

EXHIBIT L

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.

Credit for Project Work. The final credit for Project No. 6 shall not exceed \$51,644 per Section 2630, "Credit for Project Work," in the Timber Sale Contract. STATE may adjust the credit in Section 2630 in the event that the work is completed prior to using all available credit rates.

Credit Rates. Rates credited toward completion of the project will be applied for periods of active operation on the project work only and exclusive of initial move in of equipment or supplies. The method of crediting PURCHASER will be determined by applying the following credit rates for equipment, personnel, and supplies.

(1)	C325 excavator, or equivalent, and operator.	\$115 per operating hour
(2)	C330 excavator, or equivalent, and operator.	\$130 per operating hour
(3)	D7 dozer, or equivalent, and operator.	\$ 90 per operating hour
(4)	C966 front end loader, or equivalent, and operator.	\$ 75 per operating hour
(5)	C12G grader, or equivalent, and operator.	\$ 70 per operating hour
(6)	C14G grader, or equivalent, and operator.	\$ 80 per operating hour
(7)	Heavy Equipment transport and operator. (For secondary mobilization of equipment for the project.)	\$ 80 per operating hour
(8)	10-12 cubic yard dump truck and operator.	\$ 57 per operating hour
(9)	20 cubic yard, Off-Road dump truck and operator.	\$ 67 per operating hour
(10)	25 cubic yard, Off-Road dump truck and operator.	\$ 95 per operating hour
(11)	Laborer(s) (Application of mulch only)	\$ 25 per operating hour
(12)	Straw Mulch (Includes transport and staging of material at job site)	\$5 per bale
(13)	Grass Seed	\$2 per pound

Record Keeping. PURCHASER shall keep an accurate log of operating time (exclusive of standby time, repair delays, down time, etc.) and invoices for all equipment, personnel, straw bales, and grass seed on a daily basis, and submit it to the STATE Representative upon request. STATE shall provide the form for recording the required log. If the log is determined by STATE to not be complete or accurate, then PURCHASER will not get credited for all or a portion of the work, as determined by STATE.

Verification. The STATE representative shall provide direction for the conduct of work according to the specifications, verify hours of operation, verify required record keeping, and determine credits for project work.

Continuous Operations. Operations shall provide for continual operation on the project, unless interrupted by poor weather, fire closures, or other uncontrollable circumstances. Equipment breakdowns shall be repaired without undue delay, and provision shall be made for replacement of equipment.

EXHIBIT L

ROAD VACATING SPECIFICATIONS

A Penalty of \$250 per day shall be assessed for any 8-hour work day that either equipment, personnel, or supplies are not operating or available due to failure to supply approved and acceptable equipment, personnel, or supplies in order to continue the project in an efficient and progressive manner. STATE may terminate the project in the event that work progress is not satisfactory to STATE.

Operators shall be experienced in operating the required equipment and be able to operate the equipment proficiently and efficiently. If STATE determines that an operator(s) or other personnel is/are not operating in a proficient and efficient manner, STATE considers the operator(s) or personnel not approved and not acceptable and may require the PURCHASER to do one or more of the following measures:

- Replace operator(s) and/or personnel;
- Replace equipment;
- Terminate operations.

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	Construct roadblock.
	8+30	Remove puncheon/fill, develop 6 foot stream channel.
	12+75	Remove puncheon/fill, develop 6 foot stream channel.
	14+00	Remove puncheon/fill, develop 6 foot stream channel.
V3 to V4	2+50	Remove puncheon/fill, develop 8 foot stream channel.
V5 to V6	0+00	Construct roadblock.
	1+04	Begin fill/culvert removal. Remove all road fill and restore to natural contours.
	1+44	End fill/culvert removal.
	5+14	Begin fill/culvert removal. Remove all road fill and restore to natural contours.
	6+90	End fill/culvert removal. Construct roadblock.
V7	N/A	Remove all road fill and restore to natural contours.
V8 to V9	0+00	Construct roadblock. Begin sidecast pullback.
	3+90	End sidecast pullback.
	10+90	Remove all road fill and restore to natural contours, develop 3 foot stream channel.
	13+05	Remove all road fill and restore to natural contours, develop 4 foot stream channel.

EXHIBIT L

ROAD VACATING SPECIFICATIONS

SPECIFIC INSTRUCTIONS/SPECIFICATIONS:

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
V8 to V9	27+75	Begin sidecast pullback.
	36+15	End sidecast pullback.
	36+60	Remove all road fill and restore to natural contours, develop 4 foot stream channel.
	39+45	Begin sidecast pullback.
	40+15	End sidecast pullback. Construct roadblock.
V10 to V11	0+00	Construct roadblock. Begin fill/culvert removal. Remove all road fill and restore to natural contours.
	1+30	Construct roadblock. End fill/culvert removal.
V12 to V13	0+00	Construct roadblock.
	4+10	Begin fill/culvert removal. Remove all road fill and restore to natural contours, develop 6 foot stream channel.
	4+60	End sidecast pullback.
	6+75	Begin fill/culvert removal. Remove all road fill and restore to natural contours, develop 6 foot stream channel.
	7+50	End sidecast pullback.
	10+50	Begin fill/culvert removal. Remove all road fill and restore to natural contours, develop 6 foot stream channel.
	11+10	End sidecast pullback.
	12+60	Construct roadblock.

EXHIBIT L

TYPICAL CROSS SECTION VIEW OF ROAD VACATING SIDECAST PULLBACK

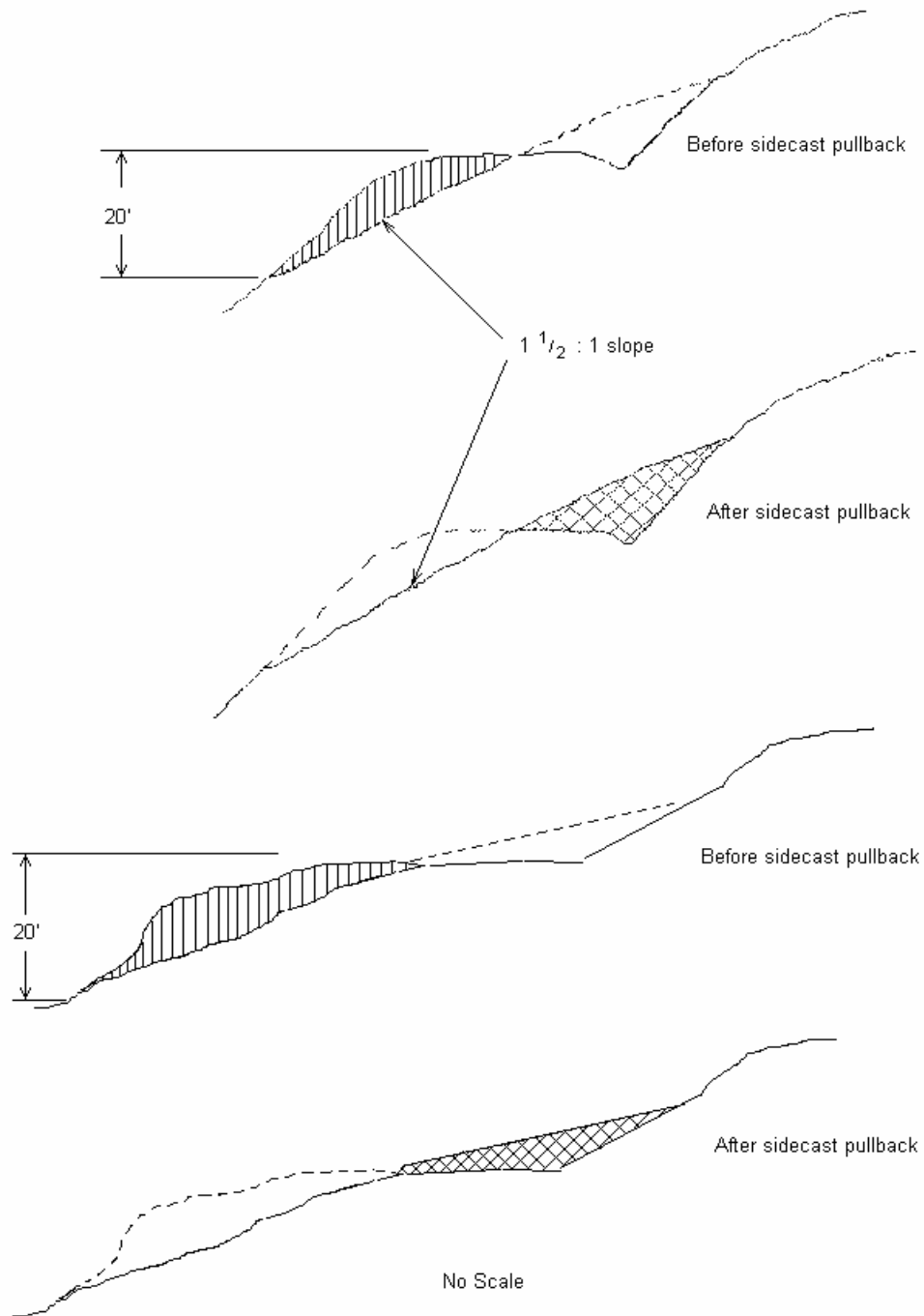
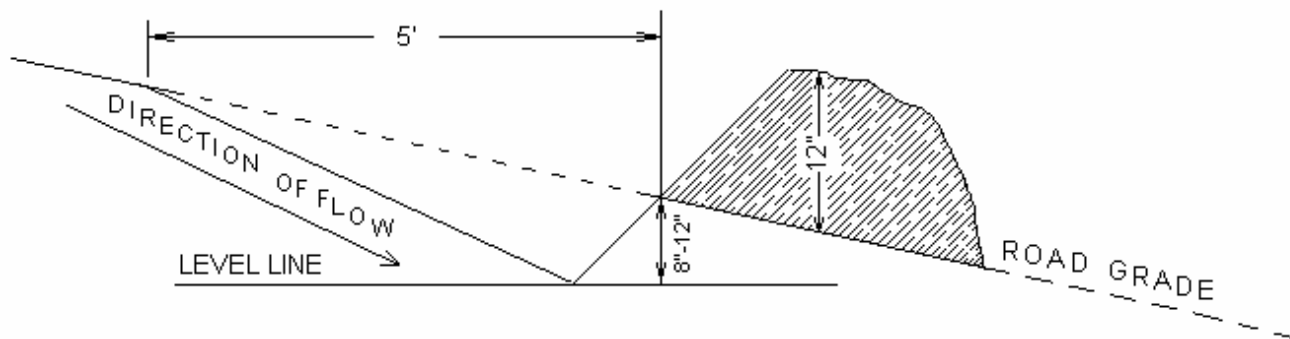
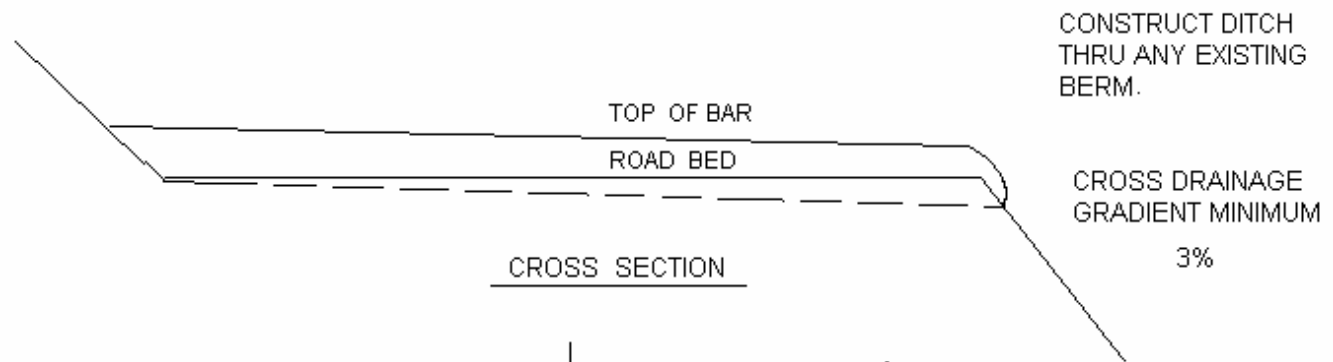


EXHIBIT M

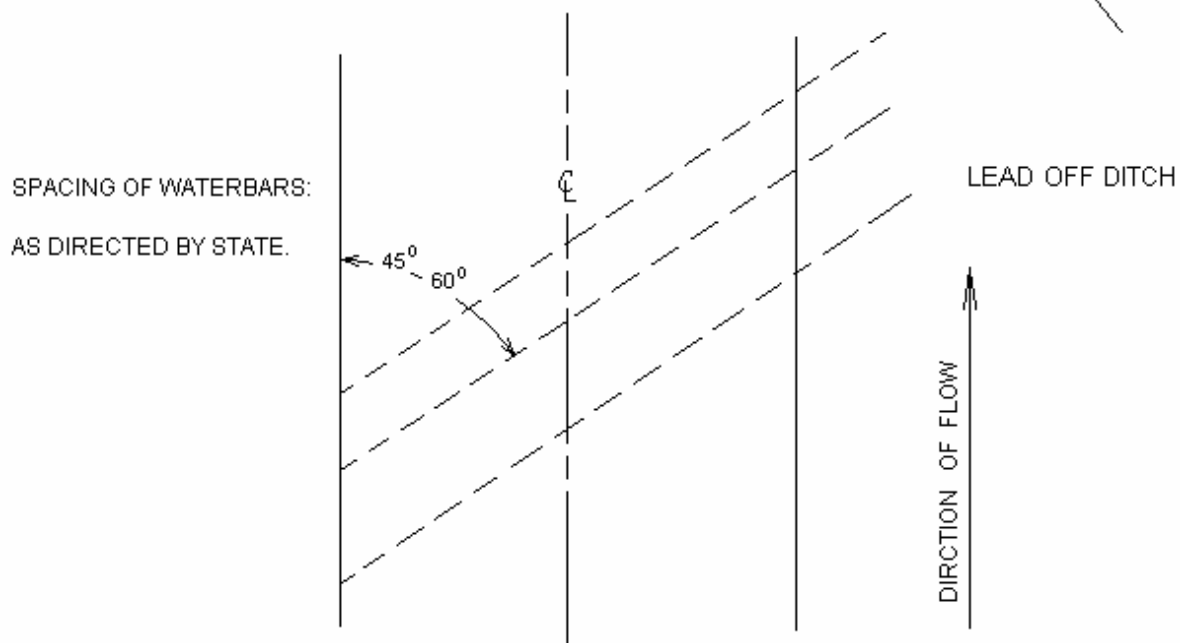
WATERBAR SPECIFICATIONS



PROFILE



CROSS SECTION



PLAN VIEW

## **PART IV: OTHER INFORMATION**

State Timber Sale Contract  
No. 341-05-25  
Lotta Thin

### WRITTEN PLAN

#### **Landowner:**

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

#### **Protected Resources:**

The following streams are located in Sections 27, 28, 32, 33, and 34 of T7N, R6W, W.M., Clatsop County, Oregon.

Area 1 There are no Type F streams within Area 1. The western boundary of Area 1 is approximately 200 feet away from Cow Creek which is classified as a medium Type F stream.

Area 2 There are no Type F streams within Area 2.

Area 3 An unnamed medium Type F tributary of Northrup Creek, flows through the western portion of Area 3 and adjacent to the northern boundary of the area.

Area 4 Northrup Creek, a large Type F stream, is located approximately 250 feet away from the southwest corner of Area 4. An unnamed medium Type F tributary of Northrup Creek, flows through the northwestern portion of Area 4.

#### **Specific Site Characteristics:**

Unnamed Type F Tributary to Northrup Creek (Areas 3, and 4): The streambed is approximately 7 to 12 feet wide. The stream has a meandering pattern with a low stream gradient. The stream banks vary from gentle to steep and riparian vegetation is predominately red alder with some. The stream banks have components of sword fern, shrubs and grasses.

#### **Tree and Vegetation Retention:**

The timber sale boundary for Areas 1, 2, 3, and 4 (partial cuts) are posted at least 25 feet from the Type F streams. There are several Type N streams throughout the sale area that are tributaries to these streams. These Type N streams have 25 foot unposted stream buffers.

#### **Practices:**

Along the above mentioned Type F stream that is within Areas 3 and 4, as well as all other perennial Type N streams not listed, the following practices are required under the timber sale contract:

- No trees will be felled within stream buffers (RMA's).
- Trees adjacent to the stream buffers (RMA's) will be felled away from or parallel to the streams to prevent trees from entering the aquatic areas.
- No ground based logging equipment will be permitted within the RMA's.

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.

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

Submitted: \_\_\_\_\_  
Purchaser/Operator Contract Representative

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

**Attachment:** Logging Plan Map