

PART III: EXHIBITS

State Timber Sale Contract
No. 341-07-43
Loose Goose

EXHIBIT B

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

OREGON DEPARTMENT OF FORESTRY

TIMBER SALE OPERATIONS PLAN

(See Page 2 for instructions)



Date Received by STATE: _____

(5) State Brand Information (complete):

(1) Contract No.: 341-07-43

(2) Sale Name: Loose Goose

(3) Contract Expiration Date: October 31, 2010

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) _____ - _____
No(s) _____ - _____
No(s) _____ - _____
No(s) _____ - _____

Date: _____
Date: _____
Date: _____
Date: _____

Phone: _____
Phone: _____
Phone: _____
Phone: _____

Logging: Felling _____
Yarding: _____

Date: _____
Date: _____

Phone: _____
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.

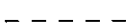
- (10) The STATE representative will furnish extra copies of Exhibit A of the contract for your use in preparing the operations map. The map shall use the following legend and show:
 - 1. Landing locations, approximate setting boundaries, and probable sequence of logging the settings. Number the settings 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.



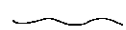
Tractor landing with alphabetical sequence.



Approximate setting boundary.



Spur truck roads.



Tractor yarding roads.



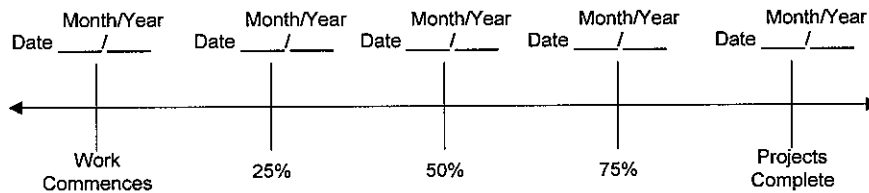
Temporary stream crossings.

EXHIBIT B
OPERATIONS PLAN

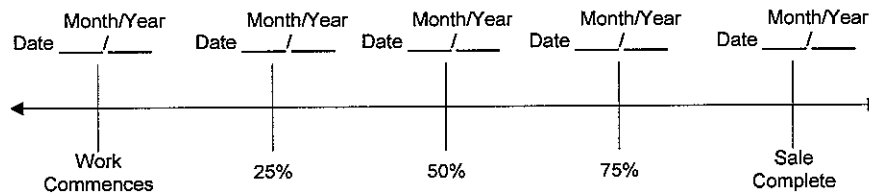
Completion Timeline

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

Projects



Harvest & Other Requirements



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

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

APPROVED: Date: _____

SUBMITTED BY:
PURCHASER

STATE OF OREGON - DEPARTMENT OF FORESTRY

Title _____

Title _____

Original: Salem
cc: PURCHASER, Operator, District File, Jewell Unit, Engineering Unit

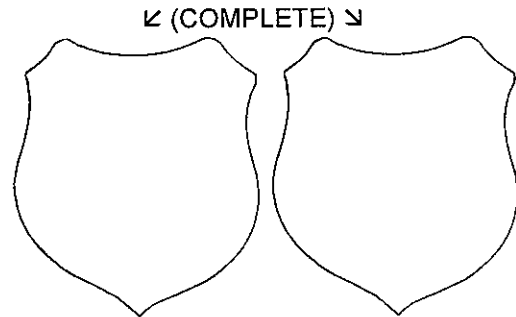
EXHIBIT C

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 Loose Goose
 COUNTY Clatsop
- (13) STATE CONTRACT NUMBER 341-07-43
- (14) SCALE: westside eastside cubic foot
- (15) STATE BRAND REGISTRATION NUMBER _____
- (16) BUREAU BRAND CODE NUMBER _____
- (17) STATE BRAND INFORMATION:

MINIMUM SCALING SPECIFICATIONS			CLASS		
SPECIES	SCALING DIAMETER INCHES	*NET SCALE VOLUME	PER MBF	** SUM	SUB
All Conifers	--	10	X		
All 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)
NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE
OTHER: _____
OTHER: _____

(10) APPROVED SCALING LOCATIONS	Species	Yard	Truck

- (20) REMARKS: All hardwood logs less than 30 board feet shall be scaled as "Utility." Hardwood logs greater than or equal to 30 net board feet shall be scaled as a sawlog.

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

- (11) NOTICE OF CANCELLATION OF BRAND:
 Effective Date: _____

 State Forester's Representative

- (21) SIGNATURES:
- _____
 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	A to B	0+00 to 9+60	DITCH
16 feet	12 feet	1A to 1B	0+00 to 3+50	DITCH
16 feet	12 feet	1C to 1D	0+00 to 3+50	DITCH
16 feet	12 feet	1G to 1H	0+00 to 10+40	DITCH
16 feet	12 feet	1I to 1J	0+00 to 3+00	DITCH
16 feet	12 feet	1K to 1L	0+00 to 9+20	DITCH
16 feet	12 feet	1M to 1N	0+00 to 15+10	DITCH
16 feet	12 feet	1O to 1P	0+00 to 0+80	DITCH
16 feet	12 feet	1Q to 1R	0+00 to 1+10	DITCH
16 feet	12 feet	1S to 1T	0+00 to 2+90	DITCH
16 feet	12 feet	1U to 1V	0+00 to 6+30	DITCH
16 feet	12 feet	1W to 1X	0+00 to 2+50	DITCH
16 feet	12 feet	2A to 2B	0+00 to 24+40	DITCH
16 feet	12 feet	2C to 2D	0+00 to 14+30	DITCH
14 feet	N/A	2C to 2D	14+30 to 27+90	OUTSLOPE
16 feet	12 feet	2E to 2F	0+00 to 1+20	DITCH
16 feet	12 feet	2G to 2H	0+00 to 2+50	DITCH
16 feet	12 feet	2I to 2J	0+00 to 2+40	DITCH
16 feet	12 feet	2K to 2L	0+00 to 0+50	DITCH
16 feet	12 feet	3A to 3B	0+00 to 1+00	DITCH
16 feet	12 feet	3C to 3D	0+00 to 5+20	DITCH
16 feet	12 feet	4A to 4B	0+00 to 19+50	DITCH
14 feet	N/A	4C to 4D	0+00 to 4+20	OUTSLOPE
14 feet	N/A	5A to 5B	0+00 to 6+00	OUTSLOPE
14 feet	N/A	5C to 5D	0+00 to 4+20	OUTSLOPE
16 feet	12 feet	5E to 5F	0+00 to 1+00	DITCH
14 feet	N/A	5G to 5H	0+00 to 15+40	OUTSLOPE
14 feet	N/A	5I to 5J	0+00 to 3+70	OUTSLOPE
14 feet	N/A	5K to 5L	0+00 to 2+90	OUTSLOPE
16 feet	12 feet	5M to 5N	0+00 to 1+30	DITCH

EXHIBIT D
 FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DRAINAGE
16 feet	12 feet	6A to 6B	0+00 to 1+30	DITCH
16 feet	12 feet	6C to 6D	0+00 to 3+30	DITCH
14 feet	N/A	6E to 6F	0+00 to 3+30	OUTSLOPE
16 feet	12 feet	I1 to I2	0+00 to 113+90	DITCH
16 feet	12 feet	I2 to I3	0+00 to 45+40	DITCH
16 feet	12 feet	I2 to I4	0+00 to 62+70	DITCH
16 feet	12 feet	I4 to I5	0+00 to 32+20	DITCH
16 feet	12 feet	I4 to I6	0+00 to 50+00	DITCH
16 feet	12 feet	I7 to I8	0+00 to 1+50	DITCH
16 feet	12 feet	I9 to I10	0+00 to 53+30	DITCH
16 feet	12 feet	I10 to I11	0+00 to 95+30	DITCH
16 feet	12 feet	WI1 to WI2	0+00 to 47+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 marked, the clearing limits shall extend 5 feet back of the top of the cutslope and 5 feet out from the toe of the fill slope, or as directed by STATE. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing debris shall not be left lodged against standing trees.

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

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

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

GRUBBING CLASSIFICATION.

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

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

CLEARING AND GRUBBING DISPOSAL. Scatter in stable locations through openings in the timber outside of the cleared right-of-way, except areas where end-haul is required. In areas where end-haul is required, clearing and grubbing debris shall be fully contained and hauled to a designated waste area. Do not place clearing and grubbing debris on side slopes exceeding 50 percent. Grubbing debris shall be left in a stable location, and not left lodged against standing trees.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

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

Excavation shall conform to STATE-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 backfills. Embankment materials shall be free of woody debris, brush, muck, sod, frozen material, and other deleterious materials. All fills and drainage structure backfills 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

Subgrade. Subgrade shall be crowned at 4 to 6 percent (1/2 inch per foot).

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

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

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

GRADING

	<u>Back Slopes</u>	<u>Fill Slopes</u>
Rock	Vertical to 1/4 :1	Not steeper
Common - side slopes 50% and over	1/4 :1	than 1 1/2:1
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 or unfinished subgrades shall be waterbarred in accordance with specifications in Exhibit J, and blocked from vehicular traffic prior to October 1, annually, and as directed by STATE.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

- (1) Excavated Materials. Excavated materials shall be utilized for road construction and hauled in where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with Exhibit D.
- (2) Fill Armor and Energy Dissipator Construction. Where rock is specified 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) Subgrade Preparation and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, ditchouts, fill construction, and other specified work prior to the application of surfacing rock.
 - (b) Subgrade shall be crowned at 4 to 6 percent (½ inch per foot).
 - (c) Upon completion of above required work, apply, process, and compact surfacing rock in accordance with specifications in Exhibit D. Final road surface shall be crowned at 4 to 6 percent (½ inch per foot).

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
1A to 1B	0+50	Construct fill with excavated material end hauled from Road Segments 1C to 1D and 1I to 1J.
1C to 1D	0+50	Begin end haul excavation, haul excavated material to Road Segment 1A to 1B.
	2+50	Conclude end haul excavation.
1I to 1J	0+50	Begin end haul excavation, haul necessary excavated material to complete fill approach on Road Segment 1A to 1B. Drift excess material over the edge onto the existing grade adjacent to Point 1I. Any material that cannot be fully contained within the existing grade shall be end hauled to the waste area located at Point 5C as directed by STATE.
	3+00	Conclude end haul excavation.
2A to 2B	4+00	Begin fill construction. Utilize approximately 900 cubic yards of material from borrow pit on Road Segment 2A to 2B as shown on Exhibit A.
	6+00	End fill construction.
	7+30	Construct 50 foot landing on the right side of the road.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
2C to 2D	7+50	Construct 50 foot landing on the right side of the road.
2G to 2H	0+00	Begin utilization of approximately 350 cubic yards of material from borrow pit on Road Segment 2A to 2B as shown on Exhibit A.
	1+75	End utilization of material from borrow pit on Road Segment 2A to 2B.
4A to 4B	0+43	Begin construction of 70 foot radius curve with 25 foot approaches at each end. Curve widening is 10 feet right.
	2+10	End construction of 70 foot radius curve.
	2+65	Begin fill armoring. Utilize 94 cubic yards of 24"-6" riprap rock for fill armor.
	2+70	Install culvert. Utilize 12 cubic yards of 24"-6" riprap rock for dissipator construction. Skew culvert 30°.
	3+19	Begin construction of 100 foot radius curve with 25 foot approaches at each end. Curve widening is 4 feet right.
	3+43	End construction of 100 foot radius curve.
	3+67	Begin construction of 70 foot radius curve with 25 foot approaches at each end. Curve widening is 6 feet right.
	3+70	End fill armoring.
	3+81	End construction of 70 foot radius curve.
	4+13	Begin construction of 100 foot radius curve with 25 foot approaches at each end. Curve Widening is 4 feet left.
	4+70	Construct ditchout left.
	4+98	End construction of 100 foot radius curve. Construct turnout left.
	6+08	Begin construction of 80 foot radius curve with 25 foot approaches at each end. Curve Widening is 5 feet left.
	6+09	Construct ditchout right.
	6+40	Begin fill armoring. Utilize 105 cubic yards of 24"-6" riprap rock for fill armor.
	7+39	End construction of 80 foot radius curve.
	7+65	End fill armoring.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
	7+60	Begin construction of 70 foot radius curve with 25 foot approaches at each end. Curve Widening is 6 feet right.
	8+25	End construction of 70 foot radius curve. Begin fill armoring. Utilize 80 cubic yards of 24"-6" riprap rock for fill armor.
	8+30	Begin construction of 70 foot radius curve with 25 foot approaches at each end. Curve Widening is 6 feet left.
	9+00	End fill armoring.
	10+60	Begin fill armoring. Utilize 15 cubic yards of 24"-6" riprap rock for fill armor. End construction of 70 foot radius curve. Construct ditchout right.
	10+75	End fill armoring.
	12+50	Begin fill armoring. Utilize 104 cubic yards of 24"-6" riprap rock for fill armor.
	12+53	Begin construction of 200 foot radius curve with 25 foot approaches at each end. Curve Widening is 2 feet right.
	13+02	End construction of 200 foot radius curve.
	13+50	End fill armoring.
	14+02	Begin construction of 70 foot radius curve with 25 foot approaches at each end. Curve Widening is 6 feet left.
	14+91	End construction of 70 foot radius curve.
	15+01	Begin construction of 200 foot radius curve with 25 foot approaches at each end. Curve Widening is 2 feet left.
	15+78	End construction of 200 foot radius curve.
	17+25	Begin fill armoring. Utilize 213 cubic yards of 24"-6" riprap rock for fill armor.
	18+75	End fill armoring.
5A to 5B	4+60	Construct 50 foot landing on the right side of the road.
5E to 5F	0+00	Begin utilization of approximately 300 cubic yards of material from end haul excavation generated from Road Segment 6C to 6D to match approach with existing road.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
5E to 5F	0+75	End utilization of material from end haul excavation generated from Road Segment 6C to 6D.
6C to 6D	0+75	Begin end haul excavation, haul excess excavated material to Road Segment 5E to 5F. Material not necessary for the construction of Road Segment 5E to 5F shall be hauled to the waste area located at Point 5E.
	3+30	Conclude end haul excavation.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS

- (1) 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.
- (2) Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include, skewing the culvert and/or installing the culvert at gradients equal to or exceeding the drainage (or ditch) gradient. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. All woody debris encountered during fill excavation shall be removed. All waste materials shall be hauled to nearby waste areas and shall be uniformly sloped and compacted for drainage. Waste materials shall be seeded and mulched in accordance with specifications in Exhibit L. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with Exhibit D. Crushed rock shall be used for backfilling excavation trenches less than 3 feet deep. STATE may require the use of crushed rock for culvert bedding. Removed culverts shall be hauled to an approved refuse site off of STATE land.
- (3) 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.
- (4) Riprap Rock Use: Where rock is used for fill armor, rock shall be placed and tamped at a 1½ : 1 slope, beginning at the fill toes. When 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.
- (5) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic yard, track mounted excavator.
- (6) Subgrade Preparation and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, fill reconstruction, ditchouts, and other specified work prior to the application of new surfacing rock.
 - (b) Cut out all potholes and/or washboard sections from the existing surfacing.
 - (c) Apply required patching and leveling rock, as directed by STATE.
 - (d) Process (grade and mix) the existing surface and added base rock. Provide for a crown of ½ inch per foot in road width (4 to 6 percent), and compact in accordance to Exhibit D.
 - (e) Upon completion of above required work, apply, process, and compact surfacing rock in accordance to Exhibit D.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
I2 to I3	1+45	Fill reconstruction and culvert replacement. Utilize 50 cubic yards of 1½"-0" rock for culvert bedding and backfill. Utilize 40 cubic yards of 4"-0" for base rock replacement. Utilize 20 cubic yards of 1½"-0" for surface rock replacement. Utilize 40 cubic yards of 24"-6" riprap rock to construct an energy dissipator and armor fill slopes.
	2+80	Install culvert. Utilize 20 cubic yards of 1½"-0" rock for culvert bedding and backfill. Utilize 10 cubic yards of 24"-6" riprap rock to construct an energy dissipator.
	7+95	Install culvert. Utilize 20 cubic yards of 1½"-0" rock for culvert bedding and backfill. Utilize 10 cubic yards of 24"-6" riprap rock to construct an energy dissipator.
	11+10	Fill reconstruction and culvert replacement. Utilize 50 cubic yards of 1½"-0" rock for culvert bedding and backfill. Utilize 40 cubic yards of 4"-0" for base rock replacement. Utilize 20 cubic yards of 1½"-0" for surface rock replacement. Utilize 40 cubic yards of 24"-6" riprap rock to construct an energy dissipator and armor fill slopes.
	21+60	Install culvert. Utilize 20 cubic yards of 1½"-0" rock for culvert bedding and backfill. Utilize 10 cubic yards of 24"-6" riprap rock to construct an energy dissipator.
	25+80	Install culvert. Utilize 20 cubic yards of 1½"-0" rock for culvert bedding and backfill. Utilize 10 cubic yards of 24"-6" riprap rock to construct an energy dissipator.
	29+15	Fill reconstruction and culvert replacement. Utilize 70 cubic yards of 1½"-0" rock for culvert bedding and backfill. Utilize 60 cubic yards of 4"-0" for base rock replacement. Utilize 30 cubic yards of 1½"-0" for surface rock replacement. Utilize 210 cubic yards of 24"-6" riprap rock to construct an energy dissipator and armor fill slopes.
	34+85	Utilize 10 cubic yards of 24"-6" riprap rock to construct an energy dissipator.
	35+30	Fill reconstruction and culvert replacement. Utilize 50 cubic yards of 1½"-0" rock for culvert bedding and backfill. Utilize 40 cubic yards of 4"-0" for base rock replacement. Utilize 20 cubic yards of 1½"-0" for surface rock replacement. Utilize 60 cubic yards of 24"-6" riprap rock to construct an energy dissipator and armor fill slopes.
	37+90	Fill reconstruction and culvert replacement. Utilize 50 cubic yards of 1½"-0" rock for culvert bedding and backfill. Utilize 40 cubic yards of 4"-0" for base rock replacement. Utilize 20 cubic yards of 1½"-0" for surface rock replacement. Utilize 40 cubic yards of 24"-6" riprap rock to construct an energy dissipator and armor fill slopes.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

I4 to I5	10+50	Fill widening and culvert extension. Remove alder tree near existing culvert outlet, and re-align stream for approximately 20 feet downstream. Install 10 foot culvert extension to the existing culvert outlet. Utilize 30 cubic yards of ¾"-0" rock for culvert bedding and backfill. Utilize 20 cubic yards of 4"-0" for base rock replacement. Utilize 10 cubic yards of ¾"-0" for surface rock replacement. Utilize 70 cubic yards of 24"-6" riprap rock to construct an energy dissipator and armor fill slopes. Finished subgrade shall be 18 feet wide.
WI1 to WI2	39+50	Construct 50 foot radius curve. Apply 8 feet of curve widening on inside of curve. Utilize 60 cubic yards of 6"-0" pit-run rock for subgrade reinforcement.

EXHIBIT D
 END-HAULING REQUIREMENTS

POINT TO POINT	STA. TO STA.	CONTAINMENT	WASTE AREA LOCATION	WASTE AREA TREATMENT
1C to 1D	0+50 to 2+50	2	4	4
1I to 1J	0+50 to 3+00	2	4, 5, and 6	1, 2, 3, and 4
2A to 2B	4+00 to 6+00	2	7	5
2G to 2H	0+00 to 1+75	2	8	5
4A to 4B	7+95 to 10+20	1	2	1,2, and 3
4A to 4B	13+76 to 15+80	1	2 and 3	1,2, and 3
6C to 6D	0+75 to 3+30	2	9 and 10	1, 2, 3, and 4
WI1 to WI2	39+00 to 40+00	1	1	1 and 2

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

- (1) 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.
- (2) Average containment: The amount of material lost over the outside edge of the road shall not exceed 12 inches in depth measured perpendicular to the natural ground slope.

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 Locations

- (1) As shown on Exhibit A and as marked in the field.
- (2) Road Segment 4A to 4B at Sta. 2+50.
- (3) As shown on Exhibit A and as marked in the field. This waste area is limited to 1200 cubic yards of waste or a quantity as directed by STATE.
- (4) Road Segment 1A to 1B between Stations 0+00 and 1+00.
- (5) Existing waste area at Point 5C as shown on Exhibit A.
- (6) Existing road grade adjacent to Point 1I as shown on Exhibit A.

EXHIBIT D
END-HAULING REQUIREMENTS

Waste Area Locations

- (7) Road Segment 2A to 2B between Stations 4+00 and 6+00.
- (8) Road Segment 2G to 2H between Stations 0+00 and 1+75.
- (9) Road Segment 5E to 5F between Stations 0+00 and 1+00.
- (10) Point 5E as shown on Exhibit A.

Waste Area Treatment

- (1) Deposit at waste area, spread evenly, compact, and provide adequate drainage.
- (2) Pile woody debris separate from other waste material.
- (3) Mulch and seed all waste areas in accordance with Exhibit K.
- (4) Utilize fill to construct designated road subgrade between stations designated in "Waste Area Location" above.
- (5) Utilize fill from borrow pit on Road Segment 2A to 2B as shown on Exhibit A to construct designated road subgrade between stations designated in "Waste Area Location" above.

EXHIBIT D
 ROAD SURFACING

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		0+00 to 9+60		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	A to B	9	Station	49	Stations	9.6	470
Turnouts	4"-0" Crushed		9	Turnout	22	Turnouts	2	44
Traction Rock	¾"- 0" Crushed	A to B	2	Station	11	Stations	9.6	106
Total Rock for Road Segment:				A to B				620
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 3+50		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	1A to 1B	8	Station	43	Stations	3.5	151
Junctions	4"-0" Crushed	1A	8	Junction	24	Junctions	1	24
Junctions	¾"- 0" Crushed	1A	2	Junction	11	Junctions	1	11
Turnarounds	4"-0" Crushed		8	TA	12	TAs	1	12
Traction Rock	¾"- 0" Crushed	0+00 to 3+00	2	Station	11	Stations	3	33
Landings	6"-0" Pit-Run	1B		Landing	50	Landings	1	50
Total Rock for Road Segment:				1A to 1B				281
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 3+50		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	1C to 1D	8	Station	43	Stations	3.5	151
Traction Rock	¾"- 0" Crushed	0+00 to 3+00	2	Station	11	Stations	3	33
Junctions	4"-0" Crushed	1C	8	Junction	24	Junctions	1	24
Junctions	¾"- 0" Crushed	1C	2	Junction	11	Junctions	1	11
Turnarounds	4"-0" Crushed		8	TA	12	TAs	1	12
Landings	6"-0" Pit-Run	1D		Landing	50	Landings	1	50
Total Rock for Road Segment:				1C to 1D				281
ROAD SEGMENT: 1G to 1H				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1G to 1H		0+00 to 10+40		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	1G to 1H	8	Station	43	Stations	10.4	447
Turnouts	4"-0" Crushed		8	Turnout	19	Turnouts	2	38
Junctions	4"-0" Crushed	1G	8	Junction	24	Junctions	1	24
Junctions	¾"- 0" Crushed	1G	2	Junction	11	Junctions	1	11
Turnarounds	4"-0" Crushed		8	TA	12	TAs	1	12
Landings	6"-0" Pit-Run	1H		Landing	50	Landings	1	50
Total Rock for Road Segment:				1G to 1H				582

EXHIBIT D
 ROAD SURFACING

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 3+00		
				Volume (CY) Per	Number Of	Number Of	Number Of	
Base Rock	4"-0" Crushed	1I to 1J	8	Station	43	Stations	3.0	129
Junctions	4"-0" Crushed	1I	8	Junction	24	Junctions	1	24
Junctions	1½" - 0" Crushed	1I	2	Junction	11	Junctions	1	11
Turnarounds	4"-0" Crushed		8	TA	12	TAs	1	12
Landings	6"-0" Pit-Run	1J		Landing	50	Landings	1	50
Total Rock for Road Segment:				1I to 1J				226
ROAD SEGMENT: 1K to 1L				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1K to 1L		0+00 to 9+20		
				Volume (CY) Per	Number of	Number of	Number of	
Base Rock	4"-0" Crushed	1K to 1L	8	Station	43	Stations	9.2	396
Turnouts	4"-0" Crushed		8	Turnout	19	Turnouts	3	57
Junctions	4"-0" Crushed	1K	8	Junction	24	Junctions	1	24
Junctions	1½" - 0" Crushed	1K	2	Junction	11	Junctions	1	11
Traction Rock	¾" - 0" Crushed	1+50 to 7+00	2	Station	11	Stations	5.5	61
Curve Widening	¾" - 0" Crushed		2					20
Curve Widening	4"-0" Crushed		8					40
Turnarounds	4"-0" Crushed		8	TA	12	TAs	1	12
Landings	6"-0" Pit-Run	1L		Landing	50	Landings	1	50
Total Rock for Road Segment:				1K to 1L				670
ROAD SEGMENT: 1M to 1N				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1M to 1N		0+00 to 15+10		
				Volume (CY) Per	Number Of	Number Of	Number Of	
Base Rock	4"-0" Crushed	1M to 1N	8	Station	43	Stations	15.1	649
Turnouts	4"-0" Crushed		8	Turnout	19	Turnouts	2	38
Junctions	4"-0" Crushed	1M, 1O, 1Q, 1S, 1U, 1W	8	Junction	24	Junctions	6	144
Junctions	¾" - 0" Crushed	1M, 1O, 1Q, 1S, 1U	2	Junction	11	Junctions	5	55
Traction Rock	¾" - 0" Crushed	3+50 to 13+50	2	Station	11	Stations	10	110
Curve Widening	¾" - 0" Crushed		2					10
Curve Widening	4"-0" Crushed		8					20
Turnarounds	4"-0" Crushed		8	TA	12	TAs	1	12
Landings	6"-0" Pit-Run	1N		Landing	50	Landings	1	50
Total Rock for Road Segment:				1M to 1N				1,088
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 0+80		
				Volume (CY) Per	Number of	Number of	Number of	
Base Rock	4"-0" Crushed	1O to 1P	8	Station	43	Stations	0.8	34
Landings	6"-0" Pit-Run	1P		Landing	50	Landings	1	50
Total Rock for Road Segment:				1O to 1P				84

EXHIBIT D
 ROAD SURFACING

ROAD SEGMENT: 1Q to 1R				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	1Q to 1R		0+00 to 1+10		
				Volume (CY) Per	Number of	Volume (CY) Per	Number of	
Base Rock	4"-0" Crushed	1Q to 1R	8	Station	43	Stations	1.1	47
Landings	6"-0" Pit-Run	1R		Landing	50	Landings	1	50
Total Rock for Road Segment:				1Q to 1R				97
ROAD SEGMENT: 1S to 1T				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1S to 1T		0+00 to 2+90		
				Volume (CY) Per	Number of	Volume (CY) Per	Number of	
Base Rock	4"-0" Crushed	1S to 1T	8	Station	43	Stations	2.9	125
Landings	6"-0" Pit-Run	1T		Landing	50	Landings	1	50
Total Rock for Road Segment:				1S to 1T				175
ROAD SEGMENT: 1U to 1V				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1U to 1V		0+00 to 6+30		
				Volume (CY) Per	Number of	Volume (CY) Per	Number of	
Base Rock	4"-0" Crushed	1U to 1V	8	Station	43	Stations	6.3	271
Turnouts	4"-0" Crushed		8	Turnout	19	Turnouts	1	19
Turnarounds	4"-0" Crushed		8	TA	12	TAs	1	12
Landings	6"-0" Pit-Run	1V		Landing	50	Landings	1	50
Total Rock for Road Segment:				1U to 1V				352
ROAD SEGMENT: 1W to 1X				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1W to 1X		0+00 to 2+50		
				Volume (CY) Per	Number of	Volume (CY) Per	Number of	
Base Rock	4"-0" Crushed	1W to 1X	8	Station	43	Stations	2.5	108
Turnouts	4"-0" Crushed		8	Turnout	19	Turnouts	1	19
Landings	6"-0" Pit-Run	1X		Landing	50	Landings	1	50
Total Rock for Road Segment:				1W to 1X				177
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 24+90		
				Volume (CY) Per	Number of	Volume (CY) Per	Number of	
Base Rock	4"-0" Crushed	2A to 2B	8	Station	43	Stations	24.4	1,049
Turnouts	4"-0" Crushed		8	Turnout	19	Turnouts	3	57
Junctions	4"-0" Crushed	2C, 2G, 2I, 2K	8	Junction	24	Junctions	4	96
Junctions	¾"-0" Crushed	2A, 2G	2	Junction	11	Junctions	2	22
Turnarounds	4"-0" Crushed		8	TA	12	TAs	2	24
Traction Rock	¾"-0" Crushed	1+50 to 4+50	2	Station	11	Stations	3	33
Traction Rock	¾"-0" Crushed	16+00 to 22+00	2	Station	11	Stations	6	66
Curve Widening	¾"-0" Crushed		2					20
Curve Widening	4"-0" Crushed		8					40
Landings	6"-0" Pit-Run	7+30		Landing	50	Landings	1	50
Landings	6"-0" Pit-Run	2B		Landing	80	Landings	1	80
Total Rock for Road Segment:				2A to 2B				1,537

EXHIBIT D
 ROAD SURFACING

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 27+90		
				Volume (CY) Per	Number of	Stations		Turnouts
Base Rock	4"-0" Crushed	2C to 14+30	8	Station	43	Stations	14.3	615
Turnouts	4"-0" Crushed		8	Turnout	19	Turnouts	3	57
Junctions	4"-0" Crushed	2E	8	Junction	24	Junctions	1	24
Traction Rock	¾"- 0" Crushed	2C to 6+00	2	Station	11	Stations	6	66
Curve Widening	¾"- 0" Crushed		2					10
Curve Widening	4"-0" Crushed		8					20
Landings	6"-0" Pit-Run	7+50		Landing	50	Landings	1	50
Total Rock for Road Segment:				2C to 2D				842
ROAD SEGMENT: 2E to 2F				POINT TO POINT	Sta. to Sta.		TOTAL VOLUME (CY)	
Application	Rock Size and Type	Location	Depth of Rock (inches)	2E to 2F		0+00 to 1+20		
				Volume (CY) Per	Number of	Stations	Landings	
Base Rock	4"-0" Crushed	2E to 2F	8	Station	43	Stations	1.2	52
Landings	6"-0" Pit-Run	2F		Landing	80	Landings	1	80
Total Rock for Road Segment:				2E to 2F				132
ROAD SEGMENT: 2G to 2H				POINT TO POINT	Sta. to Sta.		TOTAL VOLUME (CY)	
Application	Rock Size and Type	Location	Depth of Rock (inches)	2G to 2H		0+00 to 2+50		
				Volume (CY) Per	Number of	Stations	Turnouts	
Base Rock	4"-0" Crushed	2G to 2H	8	Station	43	Stations	2.5	108
Traction Rock	¾"- 0" Crushed	2G to 1+00	2	Station	11	Stations	1	11
Curve Widening	¾"- 0" Crushed		2					10
Curve Widening	4"-0" Crushed		8					20
Turnarounds	4"-0" Crushed		8	TA	12	TAs	1	12
Landings	6"-0" Pit-Run	2G		Landing	50	Landings	1	50
Total Rock for Road Segment:				2G to 2H				211
ROAD SEGMENT: 2I to 2J				POINT TO POINT	Sta. to Sta.		TOTAL VOLUME (CY)	
Application	Rock Size and Type	Location	Depth of Rock (inches)	2I to 2J		0+00 to 2+40		
				Volume (CY) Per	Number of	Stations	Landings	
Base Rock	4"-0" Crushed	2I to 2J	8	Station	43	Stations	2.4	103
Landings	6"-0" Pit-Run	2J		Landing	80	Landings	1	80
Total Rock for Road Segment:				2I to 2J				183
ROAD SEGMENT: 2K to 2L				POINT TO POINT	Sta. to Sta.		TOTAL VOLUME (CY)	
Application	Rock Size and Type	Location	Depth of Rock (inches)	2K to 2L		0+00 to 0+50		
				Volume (CY) Per	Number of	Stations	Landings	
Base Rock	4"-0" Crushed	2K to 2L	8	Station	43	Stations	0.5	22
Landings	6"-0" Pit-Run	2L		Landing	80	Landings	1	80
Total Rock for Road Segment:				2K to 2L				102

EXHIBIT D
 ROAD SURFACING

ROAD SEGMENT: 3A to 3B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	3A to 3B		0+00 to 1+00		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	3A to 3B	8	Station	43	Stations	1.0	43
Junctions	4"-0" Crushed	3A	8	Junction	24	Junctions	1	24
Landings	6"-0" Pit-Run	3B		Landing	50	Landings	1	50
Total Rock for Road Segment:				3A to 3B				117
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 5+20		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	3C to 3D	8	Station	43	Stations	5.2	224
Junctions	4"-0" Crushed	3C	8	Junction	24	Junctions	1	24
Turnarounds	4"-0" Crushed		8	TA	12	TAs	1	12
Landings	6"-0" Pit-Run	3D		Landing	50	Landings	1	50
Total Rock for Road Segment:				3C to 3D				310
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+50		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	4A to 4B	9	Station	49	Stations	19.5	955
Turnouts	4"-0" Crushed		9	Turnout	22	Turnouts	4	88
Curve Widening	4"-0" Crushed		9					198
Fill Widening	4"-0" Crushed	17+95 to 18+45	9					18
Surface Rock	¾"- 0" Crushed	4A to 4B	4	Station	22	Stations	19.5	429
Curve Widening	¾"- 0" Crushed		4					105
Turnouts	¾"- 0" Crushed		4	Turnout	11	Turnouts	4	44
Fill Widening	¾"- 0" Crushed	17+95 to 18+45	4					8
Fill Armor	24"-6" Riprap		18			Fills	5	611
Energy Dissipator	24"-6" Riprap			Dissipator	12	Dissipators	1	12
Total Rock for Road Segment:				4A to 4B				2,467
ROAD SEGMENT: 5E to 5F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	5E to 5F		0+00 to 1+00		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	5E to 5F	8	Station	43	Stations	1.0	43
Junctions	4"-0" Crushed	5E	8	Junction	24	Junctions	1	24
Junctions	¾"- 0" Crushed	5E	2	Junction	11	Junctions	1	11
Landings	6"-0" Pit-Run	5F		Landing	50	Landings	1	50
Total Rock for Road Segment:				5E to 5F				128

EXHIBIT D
 ROAD SURFACING

ROAD SEGMENT: 5M to 5N				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	5M to 5N		0+00 to 1+30		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	5M to 5N	8	Station	43	Stations	1.3	56
Junctions	4"-0" Crushed	5M	8	Junction	24	Junctions	1	24
Junctions	¾"- 0" Crushed	5M	2	Junction	11	Junctions	1	11
Landings	6"-0" Pit-Run	5N		Landing	50	Landings	1	50
Total Rock for Road Segment:				5M to 5N				141
ROAD SEGMENT: 6A to 6B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	6A to 6B		0+00 to 1+30		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	6A to 6B	8	Station	43	Stations	1.3	56
Junctions	4"-0" Crushed	6A	8	Junction	24	Junctions	1	24
Junctions	¾"- 0" Crushed	6A	2	Junction	11	Junctions	1	11
Landings	6"-0" Pit-Run	6B		Landing	80	Landings	1	80
Total Rock for Road Segment:				6A to 6B				171
ROAD SEGMENT: 6C to 6D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	6C to 6D		0+00 to 3+30		
				Volume (CY) Per		Number of		
Base Rock	4"-0" Crushed	6C to 6D	8	Station	43	Stations	3.3	142
Junctions	4"-0" Crushed	6C	8	Junction	24	Junctions	1	24
Junctions	¾"- 0" Crushed	6C	2	Junction	11	Junctions	1	11
Traction Rock	¾"- 0" Crushed	6C to 3+00	2	Station	11	Stations	3	33
Landings	6"-0" Pit-Run	6D		Landing	80	Landings	1	80
Total Rock for Road Segment:				6C to 6D				290
ROAD SEGMENT: 6G, 6H				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	6G and 6H		NA		
				Volume (CY) Per		Number of		
Landings	6"-0" Pit-Run	6G, 6H		Landing	80	Landings	2	160
Total Rock for Road Segment:				6G, 6H				160
ROAD SEGMENT: I1 to I2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2		0+00 to 113+90		
				Volume (CY) Per		Number of		
Subgrade Leveling	¾"- 0" Crushed	I1 to I2						100
Surfacing	¾"- 0" Crushed	I1 to I2	3	Station	16	Stations	113.9	1,822
Curve Widening	¾"- 0" Crushed		3					130
Turnouts	¾"- 0" Crushed		3	Turnout	10	Turnouts	15	150
Junctions	¾"- 0" Crushed		3	Junction	30	Junctions	3	90
Junctions	¾"- 0" Crushed		3	Junction	10	Junctions	4	40
Total Rock for Road Segment:				I1 to I2				2,332

EXHIBIT D
 ROAD SURFACING

ROAD SEGMENT: I2 to I3				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I2 to I3		0+00 to 45+40		
				Volume (CY) Per		Number of		
Subgrade Leveling	4"-0" Crushed	I2 to I3						100
Surfacing	1 1/2"-0" Crushed	I2 to I3	3	Station	16	Stations	45.4	726
Curve Widening	1 1/2"-0" Crushed		3					50
Turnouts	1 1/2"-0" Crushed		3	Turnout	10	Turnouts	6	60
Junctions	1 1/2"-0" Crushed		3	Junction	10	Junctions	4	40
Turnarounds	4"-0" Crushed		3	TA	10	TAs	3	30
Surfacing (Fills)	1 1/2"-0" Crushed	1+45	3					20
Base Rock (Fills)	4"-0" Crushed	1+45	10					40
Culvert Bedding	1 1/2"-0" Crushed	1+45						50
Fill Armor/Dissipator	24"-6" Riprap	1+45						40
Surfacing (Fills)	1 1/2"-0" Crushed	11+10	3					20
Base Rock (Fills)	4"-0" Crushed	11+10	10					40
Culvert Bedding	1 1/2"-0" Crushed	11+10						50
Fill Armor/Dissipator	24"-6" Riprap	11+10						40
Surfacing (Fills)	1 1/2"-0" Crushed	29+15	3					30
Base Rock (Fills)	4"-0" Crushed	29+15	10					60
Culvert Bedding	1 1/2"-0" Crushed	29+15						70
Fill Armor/Dissipator	24"-6" Riprap	29+15						210
Surfacing (Fills)	1 1/2"-0" Crushed	35+30	3					20
Base Rock (Fills)	4"-0" Crushed	35+30	10					40
Culvert Bedding	1 1/2"-0" Crushed	35+30						50
Fill Armor/Dissipator	24"-6" Riprap	35+30						60
Surfacing (Fills)	1 1/2"-0" Crushed	37+90	3					20
Base Rock (Fills)	4"-0" Crushed	37+90	10					40
Culvert Bedding	1 1/2"-0" Crushed	37+90						50
Fill Armor/Dissipator	24"-6" Riprap	37+90						40
Culvert Backfill	1 1/2"-0" Crushed	X-Drains		Culvert	20	Culverts	4	80
Energy Dissipator	24"-6" Riprap	X-Drains		Dissipator	10	Dissipators	5	50
Total Rock for Road Segment:				I2 to I3				2,126
ROAD SEGMENT: I2 to I4				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I2 to I4		0+00 to 62+70		
				Volume (CY) Per		Number of		
Surfacing	1 1/2"-0" Crushed	I2 to I4	3	Station	16	Stations	62.7	1,003
Curve Widening	1 1/2"-0" Crushed		3					100
Turnouts	1 1/2"-0" Crushed		3	Turnout	10	Turnouts	13	130
Junctions	1 1/2"-0" Crushed		3	Junction	20	Junctions	2	40
Total Rock for Road Segment:				I2 to I4				1,273

EXHIBIT D
 ROAD SURFACING

ROAD SEGMENT: 14 to 15				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	14 to 15		0+00 to 32+20		
				Volume (CY) Per	Number of			
Subgrade Leveling	¾" - 0" Crushed	14 to 15						350
Surfacing (Fills)	¾" - 0" Crushed	10+50	3					10
Base Rock (Fills)	4" - 0" Crushed	10+50	10					20
Culvert Bedding	¾" - 0" Crushed	10+50						30
Fill Armor/Dissipator	24"-6" Riprap	10+50						70
Total Rock for Road Segment:				14 to 15				480
ROAD SEGMENT: 14 to 16				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	14 to 16		0+00 to 50+00		
				Volume (CY) Per	Number of			
Subgrade Leveling	¾" - 0" Crushed	14 to 16						300
Landings	6" - 0" Pit Run	50+00		Landing	80	Landings	1	80
Total Rock for Road Segment:				14 to 16				380
ROAD SEGMENT: 17 to 18				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	17 to 18		0+00 to 1+50		
				Volume (CY) Per	Number of			
Base Rock	4" - 0" Crushed	17 to 18	8	Station	43	Stations	1.5	65
Junctions	4" - 0" Crushed	17	8	Junction	24	Junctions	1	24
Landings	6" - 0" Pit Run	1+50		Landing	80	Landings	1	80
Total Rock for Road Segment:				17 to 18				169
ROAD SEGMENT: 19 to 110				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	19 to 110		0+00 to 53+30		
				Volume (CY) Per	Number of			
Subgrade Leveling	1 ½" - 0" Crushed	19 to 110						100
Surfacing	1 ½" - 0" Crushed	19 to 110	3	Station	16	Stations	53.3	853
Curve Widening	1 ½" - 0" Crushed		3					70
Turnouts	1 ½" - 0" Crushed		3	Turnout	10	Turnouts	8	80
Junctions	1 ½" - 0" Crushed		3	Junction	10	Junctions	5	50
Total Rock for Road Segment:				19 to 110				1,153
ROAD SEGMENT: 110 to 111				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	110 to 111		0+00 to 95+30		
				Volume (CY) Per	Number of			
Subgrade Leveling	1 ½" - 0" Crushed	110 to 111						350
Total Rock for Road Segment:				110 to 111				350
ROAD SEGMENT: W11 to W12				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	W11 to W12		0+00 to 39+50		
				Volume (CY) Per	Number of			
Leveling Rock	4" - 0" Crushed							250
Base Rock	4" - 0" Crushed	39+50	9	Station	49	Stations	1	49
Curve Widening	4" - 0" Crushed	39+50	9	Curve	36	Curves	1	36
Subgrade Reinf.	6" - 0" Pit-run	39+50			60			60
Total Rock for Road Segment:				W11 to W12				395
ROCK TOTALS (CY)		24"-6"	6"-0"	4"-0"	1 1/2"-0"	3/4"-0"		
19,937		1,133	1,760	8,673	4,134	4,384		

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

EXHIBIT D
ROCK ACCOUNTABILITY

PURCHASER shall obtain subgrade approval from STATE prior to rocking. Rocking shall be limited to periods when weather conditions are acceptable to STATE and when sediments will not enter streams.

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

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

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

Depth shall be determined in the most compacted area of the surface cross section. 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." At least 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:

Subgrade shall be crowned at 4 to 6 percent unless otherwise specified.

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 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 uniform moisture content suitable for maximum compaction and compacted in layers not to exceed 6 inches in depth. When more than 1 layer is required, each shall be shaped and compacted before the succeeding layer is placed. Any irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform. Each layer shall be compacted with a minimum of 3 passes over the entire width and length of the road. 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:

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

Rock shall be crowned at 4 to 6 percent unless otherwise specified.

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

EXHIBIT D

COMPACTION EQUIPMENT OPTIONS

- (1) Vibratory Rollers. The drum shall have a smooth surface, a diameter not less than 48 inches, a width not less than 58 inches, and a turning radius of 15 feet or less. Vibration frequency shall be regulated in steps to 1400, 1500, and 1600 VPM, corresponding to engine speeds of 1575, 1690, and 1800 RPM. The centrifugal force developed shall be 7 tons at 1600 VPM. It shall be activated by a power unit of not less than 25 horsepower. The vibratory roller shall be self-propelled and operated at speeds ranging from 0.9 miles to 1.8 miles per hour, as directed by STATE.
- (2) Rubber-Tired Skidders. A rubber-tired skidder weighing a minimum of 20,000 pounds shall be operated over the fill layers so that the entire layered surface comes in contact with the tires. Skidders with oversized tires (high flotation) are not acceptable for compaction.
- (3) Tampingfoot Compactors. Tampingfoot 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.

EXHIBIT E
CULVERT SPECIFICATIONS

All culvert materials shall be furnished and installed by PURCHASER, unless otherwise specified in the Contract. All 18 inch diameter culverts shall be constructed of corrugated double-walled polyethylene, or corrugated aluminized steel. Polyethylene culverts shall meet the requirements of AASHTO M-294-901, Type S. This specification applies to high density polyethylene corrugated pipe with an integrally formed smooth interior. Aluminized steel culverts shall be constructed of corrugated aluminized Type 2 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 an energy dissipator, half round, or other approved slope protection device. Construct lead-off ditches away from culvert outlets where the slope gradients restrict the free flow of water.

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.	Steel Pipe Gauge	Band Gauges	Band Widths (")			Hugger Band Widths (")	
			Annular	Helical	Dimpled	Annular	Helical
12-15	16 (0.0598")	16	7	12	12	13 1/8	10 1/2
18-24	16 (0.0598")	16	12	12	12	13 1/8	10 1/2
30-36	16 (0.0598")	16	12	12	12	13 1/8	10 1/2
42	14 (0.0747")	16	12	12	NA	13 1/8	10 1/2
48	12 (0.1046")	16	24	24	NA	13 1/8	10 1/2
54	14 (0.0747")	16	24	24	NA	13 1/8	10 1/2
60	12 (0.1046")	16	24	24	NA	13 1/8	10 1/2
66-72	12 (0.1046")	16	24	24	NA	13 1/8	10 1/2
78	12 (0.1046")	16	24	24	NA	13 1/8	10 1/2
84	12 (0.1046")	16	24	24	NA	14 3/4	10 1/2
90-120	12 (0.1046")	16	26	26	NA	NA	NA

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

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

Tamping is required.

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

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.

EXHIBIT E
 CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
1	18	40	CPP	A to B	0+95
2	18	40	CPP	1G to 1H	0+00
3	18	40	CPP	1I to 1J	0+00
4	18	35	CPP	1K to 1L	3+30
5	18	35	CPP	1M to 1N	10+10
6	18	40	CPP	2A to 2B	0+00
7	18	30	CPP	2A to 2B	12+80
8	18	30	CPP	2A to 2B	15+80
9	18	35	CPP	2A to 2B	19+50
10	18	40	CPP	2C to 2D	2+95
11	18	35	CPP	3A to 3B	0+00
12	18	35	CPP	3C to 3D	0+00
13	18	40	CPP	4A to 4B	0+40
14	18	35	CPP	4A to 4B	2+70
15	18	35	CPP	5M to 5N	0+00
16	18	40	CPP	6C to 6D	0+15
17	18	35	CPP	6C to 6D	2+20
18	24	60	ACSP	I2 to I3	1+45
19	18	30	CPP	I2 to I3	2+80
20	18	30	CPP	I2 to I3	7+95
21	24	70	ACSP	I2 to I3	11+10
22	18	30	CPP	I2 to I3	21+60
23	18	50	CPP	I2 to I3	25+80
24	24	80	ACSP	I2 to I3	29+15
25	24	60	ACSP	I2 to I3	35+30
26	24	60	ACSP	I2 to I3	37+90
27	36	10	ACSP	I4 to I5	10+50

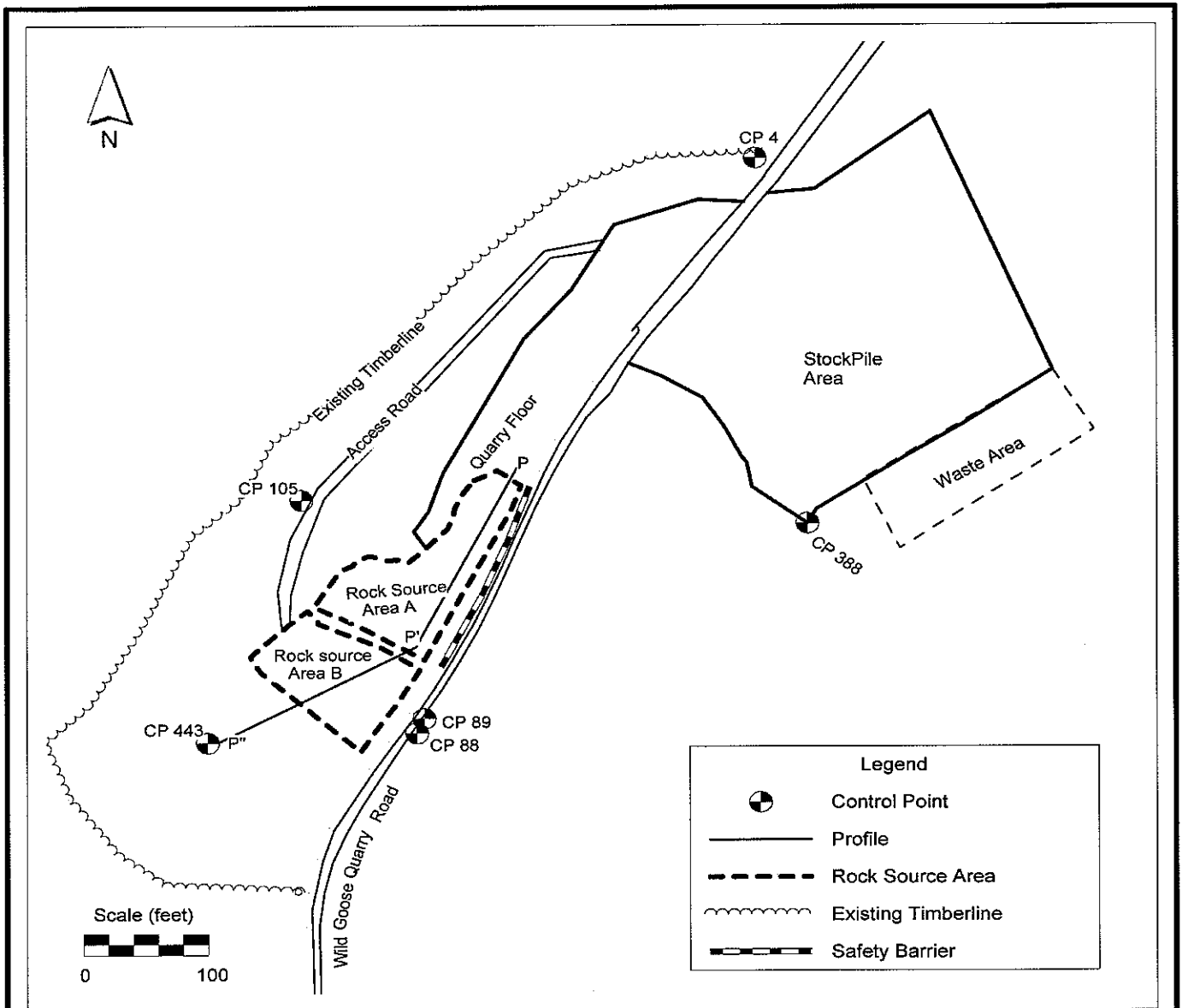
ACSP = Aluminized, CPP = Polyethylene

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

- (1) PURCHASER shall prepare a written development plan for the quarry area. The plan shall be submitted to STATE for approval prior to conducting any operation in the quarry area. The plan shall include, but not be limited to:
 - (a) Location of benches and roads to benches.
 - (b) Disposal site for debris and overburden.
 - (c) Time lines for rock quarry use.
 - (d) Erosion Control measures.
- (2) PURCHASER shall schedule and coordinate quarry and stockpile usage with other existing or planned activity requiring quarry or stockpile usage. PURCHASER shall notify STATE 5 days prior to the start of quarry development activities.
- (3) The quarry site shall be left in a condition free from overburden and debris. Access roads to the quarry, and the quarry floor, shall be cleared at the termination of use. Overburden shall be removed for a distance of 20 feet beyond the developed rock source.
- (4) PURCHASER shall develop waste area as shown on page 3 of 4 of Exhibit F as directed by STATE.
- (5) All overburden and reject material shall be hauled to the designated waste area as directed by STATE.
- (6) 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.
- (7) At the Wild Goose Quarry, fall all timber within the posted right of way boundary and remove all merchantable timber. All woody debris, including stumps and slash shall be hauled, piled and disposed of by burning in the quarry floor, as directed by STATE.
- (8) PURCHASER shall obtain a FPA Burn Permit prior to debris disposal for the Wild Goose Quarry.
- (9) Controlled blasting techniques shall be utilized for any blasting operations, and shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain as much material as possible within the quarry development area. PURCHASER shall maintain a comprehensive blasting log that contains all pertinent data for all blasting operations. The blasting log shall be submitted to the STATE after the completion of all blasting activity. The blasting log is intended for STATE record keeping purposes only.
- (10) The Rock Source shown as Area A on page 3 of 4 of Exhibit F shall be developed and utilized prior to the Purchaser developing and utilizing the area shown as Area B on Exhibit F.
- (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. There shall be a minimum of one bench with an access road to it. Said bench shall be easily accessible with tractors.
- (12) Quarry face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.
- (13) Oversized material that is produced or encountered during development shall be broken down and utilized for crushing.
- (14) 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.
- (15) PURCHASER shall construct safety barrier as shown on Exhibit F, page 3 of 4 as directed by STATE.
- (16) Proper winterization and storm-water control measures such as water barring, drainage, utilization of filter bales, mulching and/or blocking access shall be constructed and maintained to protect the watershed and project work, as directed by STATE.

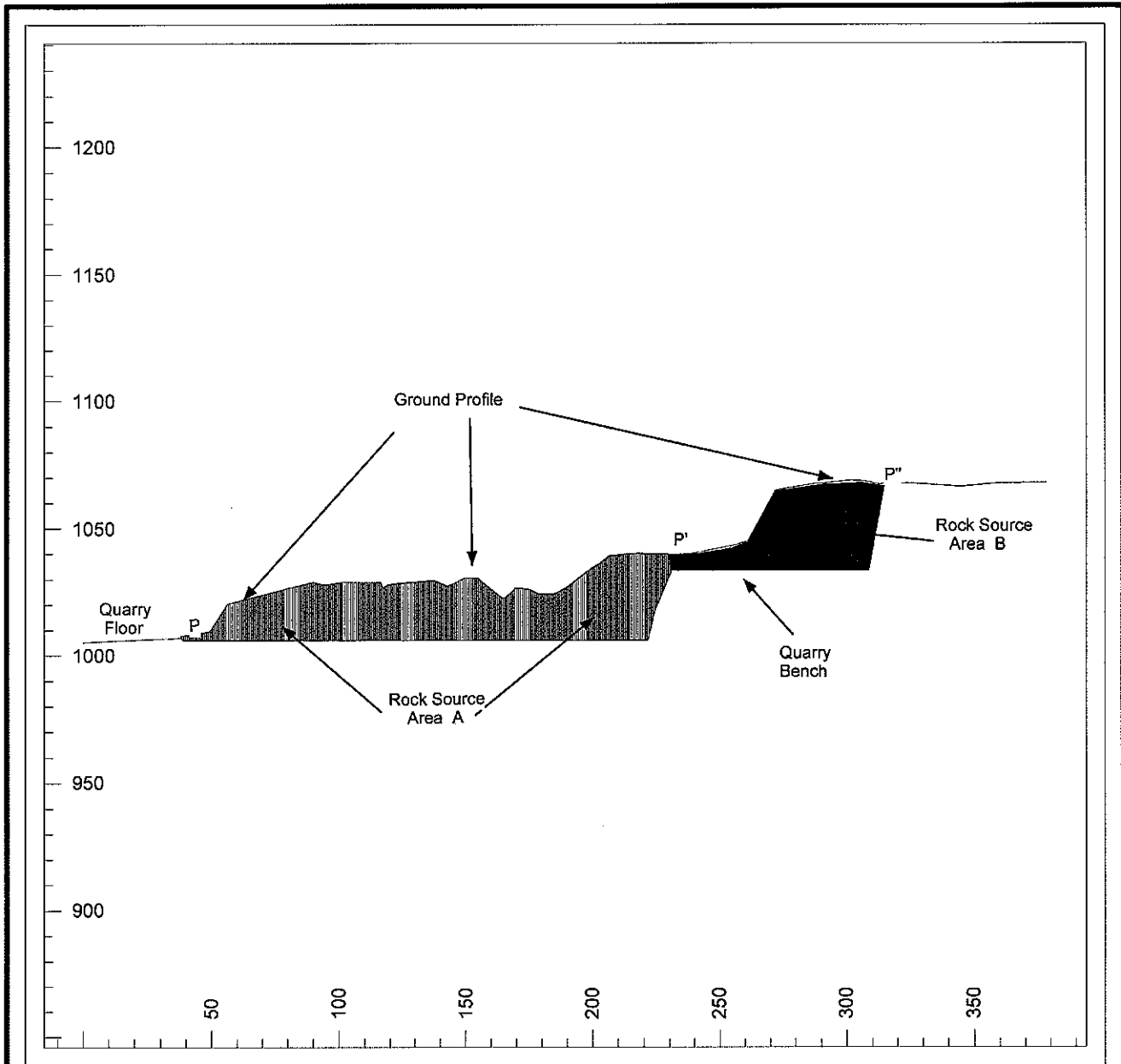
EXHIBIT F
ROCK QUARRY DEVELOPMENT AND USE



Oregon Department of Forestry
Astoria District
Engineering Unit

Wild Goose Quarry
NE1/4, Section 1, T6N, R7W, W. M.
Clatsop County, Oregon

EXHIBIT F
ROCK QUARRY DEVELOPMENT AND USE



Oregon Department of Forestry
Astoria District
Engineering Unit

Wild Goose Quarry
NE1/4, Section 1, T6N, R7W, W.M.
Clatsop County, Oregon

EXHIBIT G
CRUSHED ROCK SPECIFICATIONS

Materials. The material shall be well graded and consistent and a filler of finely crushed stone, sand, or other finely divided mineral matter.

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

If material is specified as durable, it must meet the following test requirements:

Hardness - Test Method AASHTO T 96: 30% Maximum

Durability - Test Method ODOT TM 208
Passing No. 20 Sieve: 30% Maximum

For the purpose of crushing rock specified under the projects in Section 2610, "Project Work," PURCHASER shall utilize a three-stage rock crusher, or equivalent, unless otherwise approved by STATE.

The rock crusher shall be calibrated to produce rock as specified in Exhibit G. Prior to the commencement of production crushing, PURCHASER shall sample, test, and provide rock test results meeting STATE specifications. STATE may then sample and test crushed rock for approval to proceed. PURCHASER shall take one sample of each 2,000 cubic yards of crushed rock material produced thereafter, using approved AASHTO sampling procedures. PURCHASER shall submit samples to a certified laboratory or shall perform testing for gradation requirements using AASHTO T 11 and AASHTO T 27 testing procedures. Prior to testing, each sample shall be split, making one-half of the sample, with proper identification, available for testing by STATE. Each sample and the results of PURCHASER testing shall be made available to STATE within 24 hours of sampling. Any rock crushed prior to STATE approval to proceed shall not be credited to the required rock quantity. Any subsequent rock tests not meeting STATE specifications shall be reason for rejection of that portion of crushed rock produced after that test and shall not be credited to the required rock quantity. STATE may sample the crushed rock at any time during the operation. Results of STATE's tests shall prevail over all other test results.

EXHIBIT G
CRUSHED ROCK SPECIFICATIONS

Grading Requirements

<u>For 3/4"-0"</u>	Passing	1" sieve	100%
	Passing	3/4" sieve	90-100%
	Passing	3/8" sieve	55-75%
	Passing	1/4" sieve	40-60%

Of the fraction passing 1/4" sieve, 40% to 60% shall pass the No. 10 sieve.

<u>For 1 1/2"-0"</u>	Passing	2" sieve	100%
	Passing	1 1/2" sieve	95-100%
	Passing	3/4" sieve	55-90%
	Passing	1/4" sieve	35-50%

Of the fraction passing 1/4" sieve, 40% to 60% shall pass the No. 10 sieve.

<u>For 4"-0"</u>	Passing	5" sieve	100%
	Passing	4" sieve	95-100%
	Passing	2" sieve	60-90%
	Passing	1/4" sieve	20-35%

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

Control of gradation shall be by visual inspection by STATE.

EXHIBIT H
TYPICAL EMBEDDED ENERGY DISSIPATOR

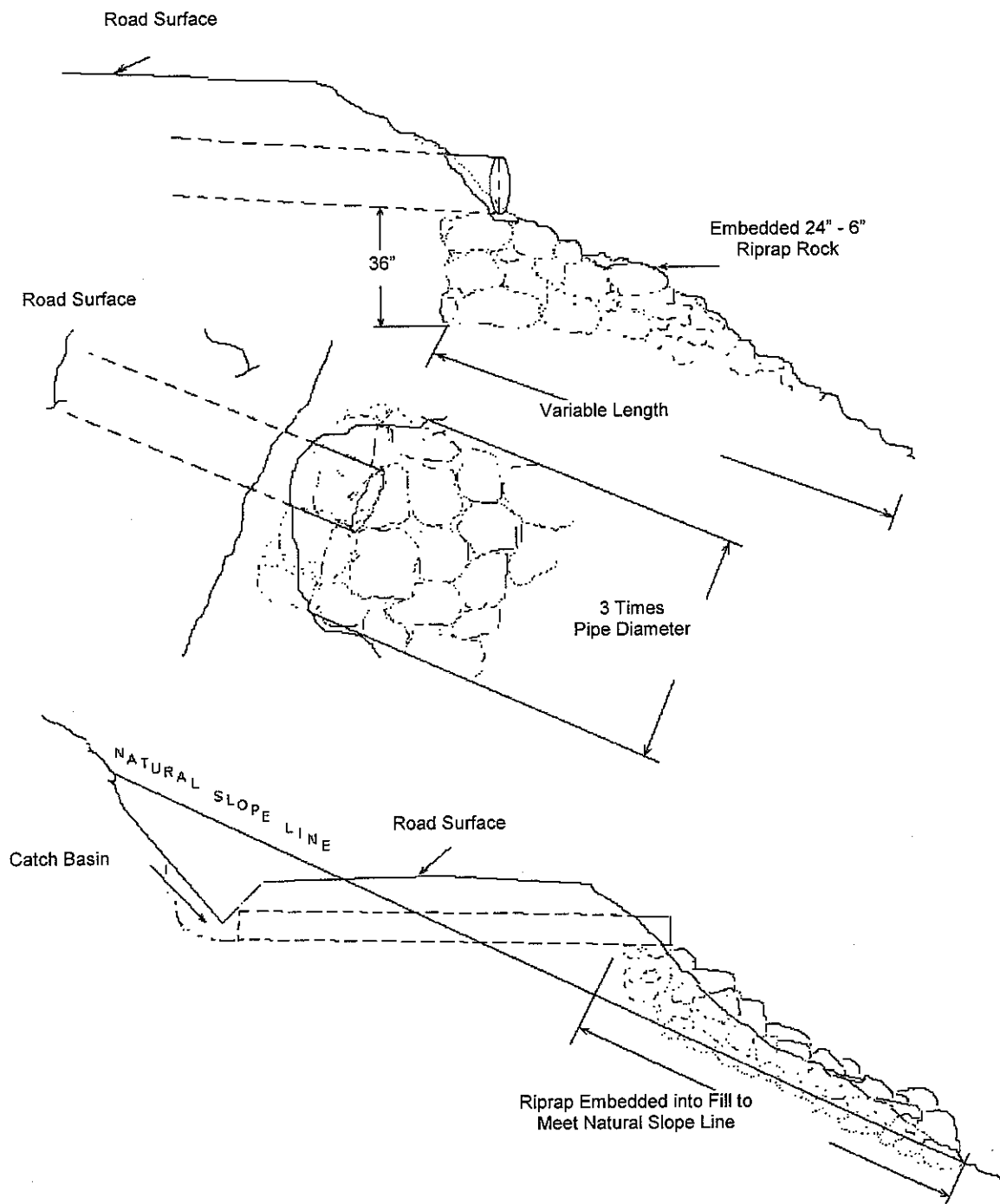
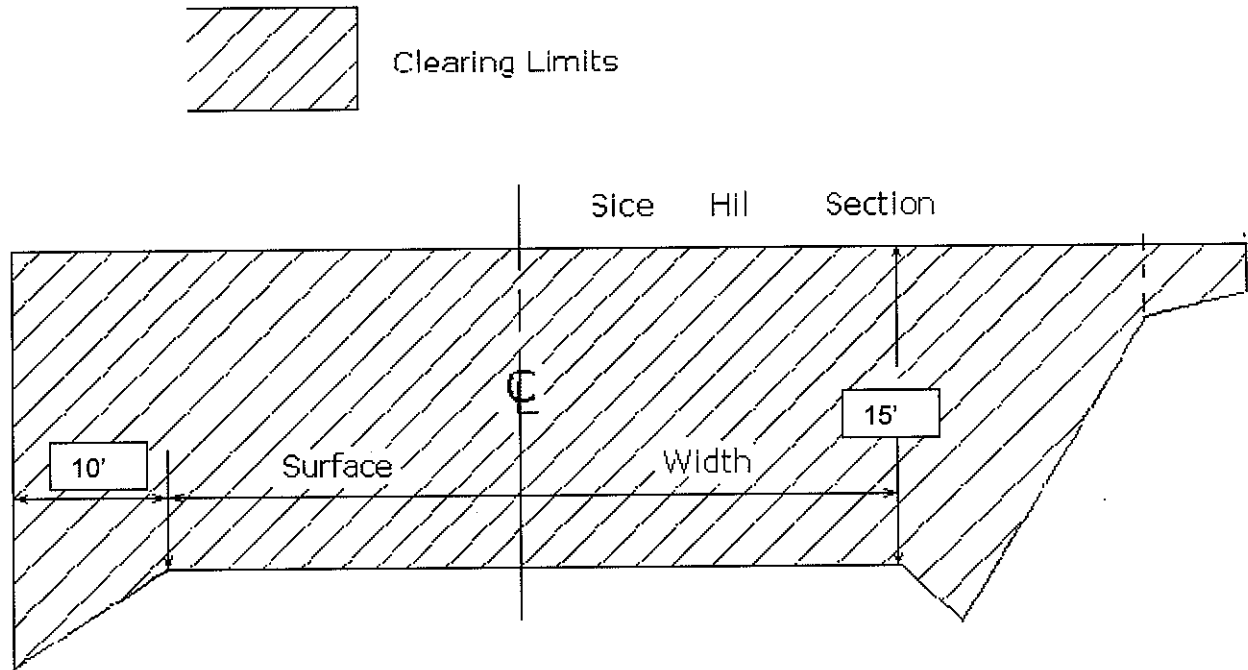


EXHIBIT I
ROAD BRUSHING SPECIFICATIONS



REQUIREMENTS

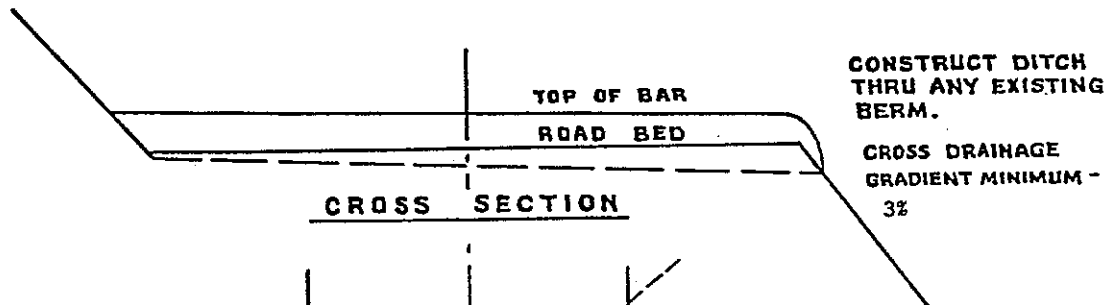
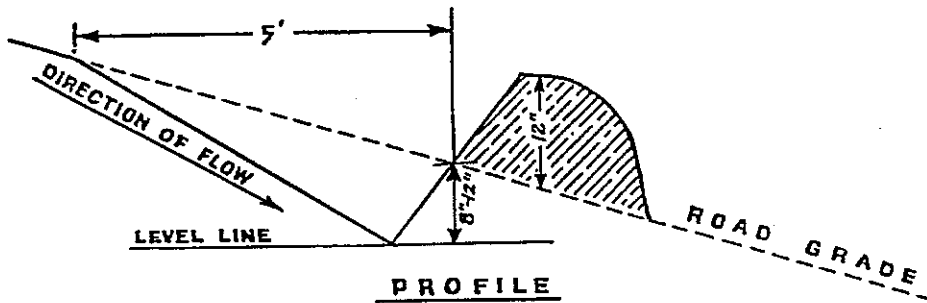
The minimum height of clearing shall be 15 feet from the road surface, and the minimum width of clearing on the upslope side(s) of the road shall be 15 feet horizontal distance from the shoulder of the road and 10 feet horizontal on the down slope side from the road shoulder. For cutslopes less than 6 feet in height, brushing shall extend 5 feet beyond the top of cutslope. For cutslopes greater than 6 feet in height, brushing shall extend 15 feet horizontal distance 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.

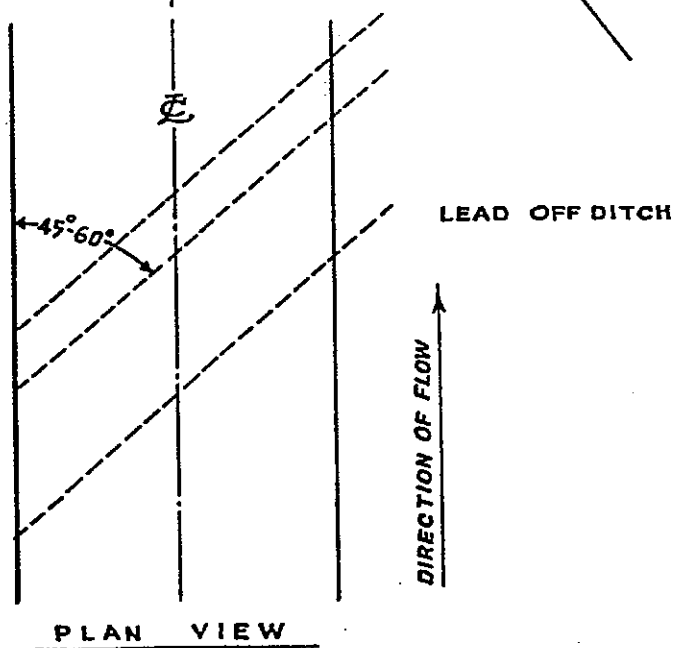
Debris resulting from the brushing operation shall be removed from the roadway, cutslope, ditches, water courses, culvert inlets and outlets and sediment catching basins. Debris shall be mulched or scattered downslope from the road or placed in other stable locations. Large debris, 6 inches or larger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

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

EXHIBIT J
 WATERBAR SPECIFICATIONS



SPACING OF WATERBARS	
ROAD GRADE	DISTANCE
≤ 5%	400 feet
6-10%	200 feet
11-15%	150 feet
16-20% or greater	100 feet



**WATERBAR SPECIFICATIONS
 FOR CROSS DITCHING #298**

EXHIBIT K
 SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required seed, fertilizer, and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed, fertilizer, and straw mulch to all waste areas and borrow pits resulting from Project Nos. 1 and 2.

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

Application Methods for Seed and Fertilizer

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

Application Rates for Seed and Fertilizer

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

SPECIES	MIXTURE	PURE LIVE SEED	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%

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

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

Application Rates for Mulch

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

Application Locations

All waste areas resulting from Project Nos. 1 and 2, and the cutslope on Road 4A to 4B from Station 7+75 to Station 10+25.

EXHIBIT L

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Description of Work to be Done

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

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

Piles - shall be located at least 75 feet apart and shall be no more than 75 feet long. Piles shall be located inside the project area designated for piling and shall be more than 75 feet from any edge or standing conifer tree. Piles shall be built to a height of 3 to 4 feet and then covered to prevent water from reaching the slash. STATE shall supply the materials used for covering the slash. Additional woody debris shall be piled on top of the covered piles to complete the piling, as directed by STATE. Logs and chunks which are suitable for firewood shall be piled separately from slash, near roads and landings and alongside the road in locations designated by STATE.

Conifer Trees - shall be saved, unless otherwise directed by STATE.

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

Residual Logs - An average of 600 cubic feet of hard conifer logs per acre. Log shall contain a minimum of 10 cubic feet of volume and be no shorter than 6 feet in length. Two logs per acre shall be at least 24 inches in diameter, on the large end, where available. Hard conifer logs must be in decay class one or two as indicated by intact bark and original wood color. Trees or logs shall be left well distributed across the unit.

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

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

EXHIBIT L

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Equipment Type, Equipment Operation, and Conduct of Work

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

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

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

Equipment	Rate	Hours	Appraised Value
Excavator	\$ 120.00 / hour	134.0	\$16,080.00
Log Loader	\$ 87.50 / hour	183.8	\$16,080.00

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

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

Work Scheduling - work shall be accomplished only during dry weather conditions, and started within 14 calendar days after completion of yarding activities on Areas 2, 3, and 6. Operations shall provide for continual operation until contract work is completed, unless interrupted by poor weather, fire closures, or other uncontrollable circumstances. Equipment breakdowns shall be repaired without undue delay, and provision shall be made for replacement of equipment to prevent prolonged delays. Piling operation shall not be allowed when operations might damage sites or affect stream flows. Any exception to these instructions must be authorized in writing by STATE.

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

PART IV: OTHER INFORMATION

State Timber Sale Contract
No. 341-07-43
Loose Goose

FOREST PRACTICES ACT "WRITTEN PLAN" For Project No. 1, Road Improvement Loose Goose Timber Sale

**Located in Section 3, T6N, R7W, W.M.
Clatsop County, Oregon.**

Protected Resources: Unnamed small Type N stream crossing with fill exceeding 15 feet in height. The fill is located on Wild Goose Road, designated as I2 to I3, at station 29+15. A "written plan" is required for construction/reconstruction of any fill over 15 feet high.

Current Condition: The existing road fills were inspected during a Road Maintenance Inventory. Upon completion of the inventory, the existing culverts were determined to be in poor condition and in need of replacement.

Structure Design: Drainage analysis and estimated flows were calculated for the stream crossing. The culvert was sized according to the results of the flow calculations. The culvert will be 16 gage aluminized steel in order to meet FPA requirements and improve pipe materials service life. A 1:1 beveled pipe inlet will be required to improve hydraulic efficiency and debris passage.

Resource Protection Measures:

- (1) Work will be performed only during dry weather periods, low water stream flows and between May 1 and October 31, annually. In addition, in-stream work will be conducted between July 1 and August 31, annually.
- (2) 24"-6" riprap rock will be used to armor both the inlet and outlet fill slopes to minimize erosion.
- (3) Machine activity in stream channels will be minimized. All excavation and riprap rock placement will be performed using a minimum 1½ cubic yard track mounted excavator.
- (4) Selected native earth materials free from woody debris will be used for backfilling. Fill material will be thoroughly compacted with specialized compaction equipment.
- (5) Excavated waste materials will be hauled to approved waste areas and left in a stable condition.
- (6) Straw mulch shall be applied to all exposed areas and bare soils. Applied mulch shall be a minimum of 2 inches deep and provide uniform cover.

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practices Act regarding the operations conducted when constructing a fill over 15 feet high. I agree to the protection measures listed on this plan:

Submitted: _____ Date: _____
Purchaser/Operator Contract Representative

Original: Salem

Copies: Operator, Contractor, District File, Salem, Engineering Unit, Jewell Unit

**FOREST PRACTICES ACT "WRITTEN PLAN"
For Harvest of Loose Goose Sale 341-07-43**

Landowner:

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

Protected Resources:

The following streams are located in Sections 2, 3, 10, and 11 of T6N, R7W, W.M., Clatsop County, Oregon.

Area 1 There is one Type F stream within Area 1. A small unnamed Type F tributary of Beneke Creek runs approximately 650 feet into the southeastern portion of Area 1. The Northern boundary of Area 1 is approximately 25 - 150 feet away from Walker Creek, which is classified as a medium Type F stream.

Area 2 There are no Type F streams within Area 2. The Southern boundary of Area 2 is approximately 100 - 300 feet away from a medium unnamed Type F tributary of Beneke Creek. The northeastern boundary of Area 2 is approximately 100-150 feet away from a small unnamed Type F tributary of Beneke Creek. The southeastern boundary of Area 2 is approximately 300 feet away from Beneke Creek, which is classified as a medium Type F stream.

Area 3 There are no Type F streams within or adjacent to Area 3.

Area 4 There are no Type F streams within or adjacent to Area 4.

Area 5 There are no Type F streams within Area 5. The Northern boundary of Area 5 is approximately 25 - 50 feet away from a small unnamed Type F tributary of Walker Creek. A portion of the southeastern boundary of Area 5 is approximately 25-50 feet away from Walker Creek, which is classified as a medium Type F stream.

Area 6 There are no Type F streams within Area 6. The Southern boundary of Area 6 is approximately 100 - 200 feet away from Walker Creek, which is classified as a medium Type F stream.

Specific Site Characteristics:

Unnamed Small Type F Tributary to Beneke Creek (Area 1): The streambed is approximately 6 to 10 feet wide. The stream has a meandering pattern with a low stream gradient. The stream banks vary from gentle to steep. The riparian vegetation is predominately red alder with some conifer. The stream banks have components of sword fern, salmonberry, vinemaple, shrubs and grasses.

Tree and Vegetation Retention:

The timber sale boundary for Areas 1 and 5 (partial cuts) are posted at least 25 feet from the Type F streams. A minimum of 130 ft² basal area will be left within the partial cut areas. The timber sale boundary for Areas 2 and 6 (modified clearcuts) are posted at least 100 feet from the Type F streams. There are numerous Type N streams throughout the sale areas that are tributaries to the above mentioned Type F streams. These Type N streams have 25 foot unposted stream buffers in the partial cut areas. In the modified clearcut areas the Type N stream buffers are posted at least 25 feet away.

Practices:

Along the above mentioned Type F streams, 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), except where required by cable corridors.
- 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.

State Timber Sale Contract
No. 341-07-43
Loose Goose

**FOREST PRACTICES ACT "WRITTEN PLAN"
For Harvest of Loose Goose Sale 341-07-43**

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: _____ Date: _____
Purchaser/Operator Contract Representative

Attachments: Logging Plan Map

X:\Jewell_Unit\Timber Sales\2007\Loose Goose\Presale\Written Plan-Loose Goose Harvest.doc

OREGON DEPARTMENT of FISH and WILDLIFE
FISH SCREENING PROGRAM
SMALL PUMP SCREEN SELF CERTIFICATION

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

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

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

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

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

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

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

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

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

For further information on fish screening please contact:

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

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

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

Applicant Signature:

Date: / / WRD File #

Printed Name and Address:

Phone: ())

Fax: ())