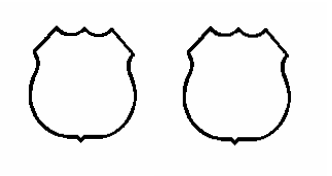
PART III: EXHIBITS

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.: 341-05-64

(2) Sale Name: Bigfoot Combination

(3) Contract Expiration Date: 10-31-07 Project Completion Dates: 10-31-06

(4) Purchaser: _____ _____

(6) Purchaser Representatives:

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

(7) State Representatives:

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

(8) Name of Subcontractors & Starting Dates:

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

(9) Comments: _____

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

EXHIBIT B

INSTRUCTION SHEET FOR OPERATIONS PLAN

SUBMIT ONE COPY OF PLAN TO STATE

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

Item No. (from Page 1)

(5) All sales require you to use a brand furnished by STATE. If the State brand has not been assigned when the plan is submitted, it will be furnished and assigned later. Complete drawing. If more than one brand is assigned to the sale, complete both drawings.

(6) The contract requires you to have a designated representative available on the sale area or work location who is authorized to receive in your behalf any notice or instruction given by STATE and to take action in regard to performance under the contract. If logging and project work is widely separated, a representative is required for each.

(7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.

(8) Show names of subcontractors to be used for any or all phases of the operations. If subcontractors are not known, or are changed later, give notification to the STATE representative prior to commencement of work by subcontractor.

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

(10) The STATE representative will furnish extra copies of Exhibit A of the contract for your use in preparing the operations map. The map shall use the following legend and show:

1. Landing locations, approximate setting boundaries, and probable sequence of logging the settings. Number the settings in sequence.
2. Locations of spur roads planned for construction, other than those required by the timber sale contract. Provide spur road specifications.
3. Location of proposed tractor yarding roads. Show if and how marked on the ground.
4. Location of temporary stream crossings.
5. List the sequence of performing project work.
6. Location of rock sources - attach pit development plans.

Cable landing, with numbers for sequence.

Tractor landing with alphabetical sequence.

_ _ _ _ _ Approximate setting boundary.

- - - - - - - - Spur truck roads.

Tractor yarding roads.

X Temporary stream crossings.

Original: Salem
cc: District File
Purchaser

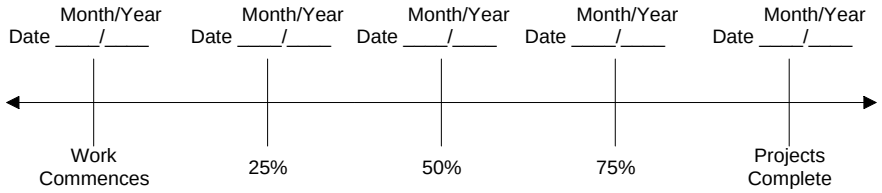
EXHIBIT B

OPERATIONS PLAN

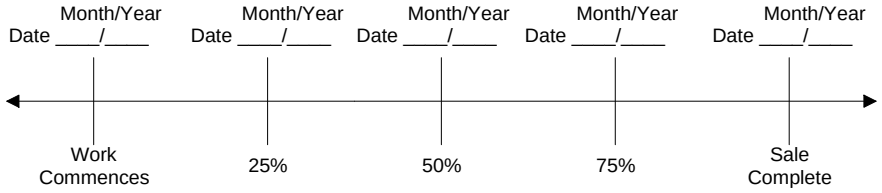
Completion Timeline

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

Projects



Harvest & Other Requirements



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

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

APPROVED: Date: _____

STATE OF OREGON - DEPARTMENT OF FORESTRY

_____

Title _____

SUBMITTED BY:
PURCHASER

_____

Title _____

EXHIBIT C

SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

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

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

(4) PURCHASER: _____
Address _____

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

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

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

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

(8) PENCIL BUCK YES ☐ NO ☒
back to Minimum Scaling Diameter _____

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

(10) **APPROVED SCALING LOCATIONS**	**Species**	**Yard**	**Truck**

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

_____
State Forester's Representative

(12) SALE NAME Bigfoot Combination
COUNTY Clatsop

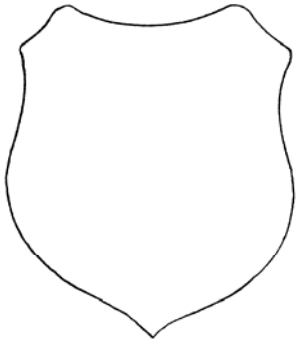
(13) STATE CONTRACT NUMBER 341-05-64

(14) SCALE: westside ☒ eastside ☐ cubic foot ☐

(15) STATE BRAND REGISTRATION NUMBER _____

(16) BUREAU BRAND CODE NUMBER _____

(17) STATE BRAND INFORMATION:
(COMPLETE)



(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: _____

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

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

(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.

Distribution: ORIGINAL: Salem / COPIES: TPSO (4), Purchaser, Operator, District, Sunset Mgmt. Unit

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	STA. TO STA.	DITCH REQ.	OUTSLOPE
14 feet	N/A (Dirt)	1A to 1B	0+00 to 8+30	NO	YES
16 feet	12 feet	2A to 2B	0+00 to 6+85	YES	NO
16 feet	12 feet	6A to 6B	0+00 to 7+30	YES	NO
16 feet	12 feet	6C to 6D	0+00 to 16+20	YES	NO
14 feet	N/A (Dirt)	7A to 7B to 7C	0+00 to 8+30	NO	YES
16 feet	12 feet	7D to 7E	0+00 to 25+50	YES	NO
16 feet	12 feet	7F to 7G	0+00 to 2+20	YES	NO
16 feet	12 feet	7H to 7I	0+00 to 3+80	YES	NO
14 feet	N/A (Dirt)	7J to 7K	0+00 to 2+10	NO	YES
16 feet	12 feet	9A to 9B	0+00 to 13+00	YES	NO
16 feet	12 feet	10A to 10B	0+00 to 29+80	YES	NO
16 feet	12 feet	10C to 10D	0+00 to 19+50	YES	NO
16 feet	12 feet	I1 to I2	0+00 to 282+00	YES	NO
16 feet	12 feet	I3 to I4	0+00 to 140+35	YES	NO
16 feet	12 feet	I5 to I6	0+00 to 64+20	YES	NO

CLEARING. This work shall consist of clearing, removing, and disposing of all trees, snags, down timber, brush, surface objects, and protruding obstructions within the clearing limits.

Where clearing limits have not been staked, the clearing limits shall extend 10 feet back of the top of the cutslope and 10 feet out from the toe of the fill slope, or as directed by STATE. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing debris shall not be left lodged against standing trees.

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

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

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

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 through openings in the timber outside of the cleared right-of-way, except 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.

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

Ditch. Construct "V" ditch 3 feet wide and to a depth of 1 foot below subgrade. Subgrade shall be crowned at 4 to 6 percent.

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.

EXHIBIT "D"

FOREST ROAD SPECIFICATIONS

GRADING	Back Slopes	Fill Slopes
Rock	Vertical to 1/4:1	Not steeper
Common - side slopes 50% and over	3/4:1	than 1½:1
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 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 listed in Exhibit D, and/or as marked in the field.

SEASONAL WINTERIZATION: All unrocked roads or unfinished subgrades shall be waterbarred in accordance with specifications in Exhibit L, and blocked to vehicular traffic, prior to November 1, annually, and as directed by STATE.

GENERAL ROAD CONSTRUCTION SPECIFICATIONS:

(1) Excavated Material. All suitable excavated materials from the road construction and alignment shall be utilized for road and fill construction, and hauled in where necessary. Surplus excavated material and waste material shall be hauled to 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) Geotextile Road Fabric. Install fabric in accordance with specifications in Exhibit I.

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS:

Segment	Station	Work Description
10A to 10B	0+00 to 3+00	Install fabric in accordance to specifications in Exhibit I.

EXHIBIT "D"

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

(1) Timber Removal. Remove all trees within posted Right of Way Boundary or individually marked with an orange "X", as specified in Section 2210, Designated Timber.

(2) Existing Underground Utility Lines. Prior to conducting any activity near underground utility lines, PURCHASER shall notify Knappa Water Association at 92755 Allen Road, Astoria, Oregon, (503) 458-6461. The operator shall not conduct any excavation within 5 feet of any underground utility lines. PURCHASER shall conduct activities near these utility lines of Knappa Water Association, and shall be responsible for any damage to the utility lines resulting from Purchaser's activities. PURCHASER shall coordinate with the above listed utility in the field locating underground utilities.

(3) 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 pipe 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 O. 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.

(4) Additional Requirements for Type F Stream Fill Construction. Additional requirements are indicated on Exhibit H.

(5) Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels. Install a culvert marker at each newly installed culvert and at each existing culvert that is missing a marker that could be reached by a grader blade. Markers shall meet specifications in Exhibit E.

(6) Riprap Rock Use. 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 dissipater, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, as specified in Exhibit J.

(7) Equipment. All excavation, riprap placement, and sidecast pullback shall be performed using a minimum 1 ½ cubic yard, track-mounted excavator.

(8) Sidecast Pullback. Excavate/pullback previously sidecast materials below the road at designated locations. Developed slopes shall be pulled back to a 1½:1 slope or to natural ground contours. The beginning position for sidecast pullback shall be no greater than 20 feet vertical distance from the existing road surface, in accordance with specifications in Exhibit N. Excavated materials shall be hauled to a designated waste area, as directed by STATE.

EXHIBIT "D"

FOREST ROAD SPECIFICATIONS

(9) Subgrade Preparation and Application of New Surfacing Rock.

(a) Complete culvert installations, fill reconstructions, roadside brushing, and other specified work prior to the application of new surfacing rock.

(b) Cut out all chuckholed and/or washboarded sections from the existing surfacing.

(c) Apply required base 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, 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.

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

Segment	Station	Work Description
I1 to I2	0+00	Point I1.
	0+00-17+00	Remove all trees marked with an orange “X”.
	61+01	Remove all trees marked with an orange “X”.
	68+08	Utilize 50 cubic yards of 24”-6” riprap to construct an energy dissipator.
	77+20	Replace existing culvert. Utilize 30 cubic yards of 1½”-0” crushed rock for culvert backfill.
	101+88	Point I3. Junction with Bigfoot Road.
	111+35	Begin road re-alignment and sidecast pullback.
	112+67	Construct turnout right.
	116+15	End road re-alignment and sidecast pullback.
	167+62	Junction with West Big Noise Road.
	177+25	Replace existing culvert. Install new culvert with inlet 26 feet up the road while maintaining the existing outlet location. Utilize 50 cubic yards of 1½”-0” crushed rock for culvert backfill and trench backfill.
180+00	Point I5	Junction with Bigfoot Ridge Road.
	241+83	Fill reconstruction and culvert replacement. Finished subgrade width shall be 20 feet. Utilize 70 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill. Utilize 60 cubic yards of 24”-6” riprap rock for fill slope armor. Utilize 20 cubic yards of 24”-6” riprap rock to construct an embedded energy dissipator. Utilize 63 cubic yards of 4”-0” crushed rock for base rock replacement.

EXHIBIT "D"

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I1 to I2	244+62	Fill reconstruction and culvert replacement. Finished subgrade width shall be 18 feet. Utilize 100 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. Utilize 130 cubic yards of 24"-6" riprap rock for fill slope armor. Utilize 20 cubic yards of 24"-6" riprap rock to construct an embedded energy dissipator. Utilize 63 cubic yards of 4"-0" crushed rock for base rock replacement.
	249+10	Fill reconstruction and culvert replacement. Finished subgrade width shall be 18 feet. Utilize 70 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. Utilize 70 cubic yards of 24"-6" riprap rock for fill slope armor. Utilize 20 cubic yards of 24"-6" riprap rock to construct an embedded energy dissipator. Utilize 63 cubic yards of 4"-0" crushed rock for base rock replacement.
	273+55	Utilize 10 cubic yards of 24"-6" riprap to construct an energy dissipator.
	279+86	Replace existing culvert. Utilize 30 cubic yards of 1½"-0" crushed rock for culvert bedding/backfill.
	282+00	Point I2.
I3 to I4	0+00	Point I3.
	0+45	Replace existing culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert backfill.
	20+45	Remove culvert from the junction of the vacated road.
	25+11	Replace existing culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert backfill. Utilize 10 cubic yards of 24"-6" riprap to construct an energy dissipator.
	39+30	Construct turnout left.
	59+10	Type F Stream Culvert Installation. Fill reconstruction and culvert replacement. Install in accordance with Exhibit H.
	65+76	Replace existing culvert. Utilize 30 cubic yards of 1½"-0" crushed rock for culvert backfill.
	90+15	Fill reconstruction and culvert replacement. Finished subgrade width shall be 18 feet. Utilize 70 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. Utilize 50 cubic yards of 24"-6" riprap rock for fill slope armor. Utilize 20 cubic yards of 24"-6" riprap rock to construct an embedded energy dissipator. Utilize 50 cubic yards of 4"-0" crushed rock for base rock replacement.
	98+51	Replace existing culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert backfill.
	102+50	Remove all trees marked with an orange "X".

EXHIBIT "D"

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

Segment	Station	Work Description
I3 to I4	103+70	Fill reconstruction and culvert replacement. Finished subgrade width shall be 18 feet. Utilize 70 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill. Utilize 50 cubic yards of 24”-6” riprap rock for fill slope armor. Utilize 10 cubic yards of 24”-6” riprap rock to construct an embedded energy dissipator. Utilize 50 cubic yards of 4”-0” crushed rock for base rock replacement.
	120+30	Establish a ditch to provide drainage of spring water to the stream ahead.
	124+75	Replace existing culvert. Utilize 30 cubic yards of 1½”-0” crushed rock for culvert bedding/backfill.
	127+40	Replace existing culvert. Utilize 30 cubic yards of 1½”-0” crushed rock for culvert bedding/backfill.
	138+50	Replace existing culvert. Utilize 20 cubic yards of 1½”-0” crushed rock for culvert backfill.
	140+35	Point I4.
I5 to I6	0+00	Point I5.
	26+70	Replace existing culvert. Install culvert with outlet 18 feet down the road while maintaining the existing inlet location. Utilize 30 cubic yards of 1½”-0” crushed rock for culvert backfill and trench backfill.
	31+60	Replace existing culvert. Utilize 30 cubic yards of 1½”-0” crushed rock for culvert backfill. Utilize 10 cubic yards of 24”-6” riprap rock to construct an energy dissipator.
	33+50	Replace existing culvert. Utilize 30 cubic yards of 1½”-0” crushed rock for culvert backfill. Utilize 30 cubic yards of 24”-6” riprap rock for fill slope armor.
	34+90	Replace existing culvert. Utilize 30 cubic yards of 1½”-0” crushed rock for culvert bedding/backfill.
	45+50	Replace existing culvert. Install new culvert with outlet 6 feet down the road while maintaining the existing inlet location. Utilize 30 cubic yards of 1½”-0” crushed rock for culvert backfill and trench backfill.
	64+20	Point I4.

EXHIBIT "D"

ROAD SURFACING

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 Volume (CY) per		0+00 to 8+30 Number of		
Junctions	4"-0" Crushed	0+00	N/A	junction	20	junctions	1	20
Total Rock for Road Segment:			1A to 1B					20
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 **Volume (CY) per**		0+00 to 6+85 **Number of**		
Base Rock	4"-0" Crushed	0+00 to 6+85	8	station	50	stations	6.85	343
Traction Rock	¾"-0" Crushed	1+20 to 4+60	N/A					65
Junctions	4"-0" Crushed	0+00	8	junction	36	junctions	1	36
Junctions	1 ½"-0" Crushed	0+00	3	junction	24	junctions	1	24
Curve Widening	4"-0" Crushed	1+00 to 2+00	8	station	11	station	1.00	11
Turn-Arounds	4"-0" Crushed		8	TA	24	TAs	1	24
Landings	6"-0" Pit-run	2B	N/A	landing	60	landings	1	60
Total Rock for Road Segment:			2A to 2B					563
ROAD SEGMENT	**4A Landing**		**POINT TO POINT**			**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	4A **Volume (CY) per**		0+00 **Number of**		
Base Rock	4"-0" Crushed	4A	8	station	70	Landing	1	70
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 **Volume (CY) per**		0+00 to 7+30 **Number of**		
Base Rock	4"-0" Crushed	0+00 to 7+30	8	station	50	stations	7.30	365
Junctions	4"-0" Crushed	0+00	8	junction	36	junctions	1	36
Junctions	1 ½"-0" Crushed	0+00	3	junction	24	junctions	1	24
Turn-Arounds	4"-0" Crushed	6+50	8	TA	24	TAs	1	24
Landings	6"-0" Pit-run	6B	N/A	landing	60	landings	1	60
Total Rock for Road Segment:			6A to 6B					509
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 **Volume (CY) per**		0+00 to 16+20 **Number of**		
Base Rock	4"-0" Crushed	0+00 to 16+20	8	station	50	stations	16.20	810
Traction Rock	¾"-0" Crushed	1+00 to 15+10	2	station	13	stations	14.10	183
Turnouts	4"-0" Crushed	4+30, 11+50	8	turnout	22	turnout	2	44
Turnouts	¾"-0" Crushed	4+30, 11+50	2	turnout	11	turnout	2	22
Junctions	4"-0" Crushed	0+00	8	junction	36	junction	1	36
Junctions	¾"-0" Crushed	0+00	3	junction	24	junction	1	24
Curve Widening	4"-0" Crushed	3+90, 5+20	8	station	11	station	2.00	22
Curve Widening	¾"-0" Crushed	3+90, 5+20	3	station	11	station	1.00	11
Turn-Arounds	4"-0" Crushed		8	TA	24	TAs	1	24
Landings	6"-0" Pit-run	6D	N/A	landing	60	landings	1	60
Total Rock for Road Segment:			6C to 6D					1,236

EXHIBIT "D"

ROAD SURFACING

ROAD SEGMENT 7A to 7B to 7C			Depth of Rock (inches)	POINT TO POINT 7A to 7B to 7C Volume (CY) per		Sta. to Sta. 0+00 to 8+30 Number of		TOTAL VOLUME (CY)
Application	**Rock Size and Type**	**Location**						
Junctions	4"-0" Crushed	0+00	N/A	junction	20	junctions	1	20
Total Rock for Road Segment:			7A to 7B to 7C					20
ROAD SEGMENT 7D to 7E			Depth of Rock (inches)	POINT TO POINT 7D to 7E Volume (CY) per		Sta. to Sta. 0+00 to 25+50 Number of		TOTAL VOLUME (CY)
Application	**Rock Size and Type**	**Location**						
Base Rock	4"-0" Crushed	0+00 to 25+50	8	station	50	stations	25.50	1,275
Turnouts	4"-0" Crushed	10+90, 15+70, 18+75	8	turnout	22	turnout	3	66
Junctions	4"-0" Crushed	0+00	8	junction	36	junction	1	36
Junctions	1½"-0" Crushed	0+00	3	junction	24	junction	1	24
Curve Widening	4"-0" Crushed	4+15, 5+45	8	station	11	station	2.00	22
Turn-Arounds	4"-0" Crushed		8	TA	24	TAs	1	24
Landings	6"-0" Pit-run	7E	N/A	Landing	80	Landings	1	80
Total Rock for Road Segment:			7D to 7E					1,527
ROAD SEGMENT 7F to 7G			Depth of Rock (inches)	POINT TO POINT 7F to 7G Volume (CY) per		Sta. To Sta. 0+00 to 2+20 Number of		TOTAL VOLUME (CY)
Application	**Rock Size and Type**	**Location**						
Base Rock	4”-0” Crushed	0+00 to 2+20	8	station	50	stations	2.20	110
Junctions	4”-0” Crushed	0+00	8	junction	36	junctions	1	36
Landings	6”-0” Pit-run	7G	N/A	Landing	80	Landings	1	80
Total Rock for Road Segment:			7F to 7G					226
ROAD SEGMENT 7H to 7I			Depth of Rock (inches)	POINT TO POINT 7H to 7I Volume (CY) per		Sta. To Sta. 0+00 to 3+80 Number of		TOTAL VOLUME (CY)
Application	**Rock Size and Type**	**Location**						
Base Rock	4”-0” Crushed	0+00 to 3+80	8	station	50	stations	3.80	190
Junctions	4”-0” Crushed	0+00	8	junction	36	junctions	1	36
Turn-Arounds	4"-0" Crushed		8	TA	24	TAs	1	24
Landings	6”-0” Pit-run	7I	N/A	Landing	80	Landings	1	80
Total Rock for Road Segment:			7H to 7I					330
ROAD SEGMENT 7J to 7K			Depth of Rock (inches)	POINT TO POINT 7J to 7K Volume (CY) per		Sta. To Sta. 0+00 to 2+10 Number of		TOTAL VOLUME (CY)
Application	**Rock Size and Type**	**Location**						
Junctions	4”-0” Crushed	2O	N/A	junction	20	junctions	1	20
Total Rock for Road Segment:			7J to 7K					20

EXHIBIT "D"

ROAD SURFACING

ROAD SEGMENT 9A to 9B			Depth of Rock (inches)	POINT TO POINT 9A to 9B Volume (CY) per		Sta. To Sta. 0+00 to 13+00 Number of		TOTAL VOLUME (CY)
Application	**Rock Size and Type**	**Location**						
Base Rock	4”-0” Crushed	0+00 to 13+00	8	station	50	stations	13.00	650
Turnouts	4”-0” Crushed	4+50, 7+50	8	turnout	22	turnouts	2	44
Junctions	4”-0” Crushed	0+00	8	junction	36	junctions	1	36
Junctions	1 ½” Crushed	0+00	3	junction	24	junctions	1	24
Turn-Arounds	4"-0" Crushed		8	TA	24	TAs	1	24
Landings	6”-0” Pit-run	9B	N/A	Landing	80	Landings	1	80
Total Rock for Road Segment:			9A to 9B					858
ROAD SEGMENT 10A to 10B			Depth of Rock (inches)	POINT TO POINT 10A to 10B Volume (CY) per		Sta. To Sta. 0+00 to 29+80 Number of		TOTAL VOLUME (CY)
Application	**Rock Size and Type**	**Location**						
Base Rock	4”-0” Crushed	0+00 to 29+80	8	station	50	stations	29.80	1,490
Traction Rock	¾"-0" Crushed	2+00 to 9+50	2	station	13	stations	7.50	98
Turnouts	4”-0” Crushed	7+30, 10+11, 17+00, 24+00	8	turnout	22	turnouts	4	88
Turnouts	¾"-0" Crushed	7+30	2	turnout	11	turnouts	1	11
Junctions	4”-0” Crushed	0+00	8	junction	36	junctions	1	36
Junctions	1½” Crushed	0+00	3	junction	24	junctions	1	24
Turn-Arounds	4"-0" Crushed		8	TA	24	TAs	1	24
Landings	6”-0” Pit-run	10B	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			10A to 10B					1,831
ROAD SEGMENT 10C to 10D			Depth of Rock (inches)	POINT TO POINT 10C to 10D Volume (CY) per		Sta. to Sta. 0+00 to 19+50 Number of		TOTAL VOLUME (CY)
Application	**Rock Size and Type**	**Location**						
Base Rock	4"-0" Crushed	0+00 to 19+50	8	station	50	stations	19.50	975
Turnouts	4”-0” Crushed	5+50, 9+40, 15+00	8	turnout	22	turnouts	3	66
Junctions	4"-0" Crushed	0+00	8	junction	36	junctions	1	36
Curve Widening	4"-0" Crushed	14+60 to 15+50	8	station	11	stations	2.00	22
Turn-Arounds	4"-0" Crushed		8	TA	24	TAs	1	24
Landings	6”-0” Pit-run	10D	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			10C to 10D					1,183

EXHIBIT "D"

ROAD SURFACING

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 **Volume (CY) per**		0+00 to 101+88 **Number of**		
Surface Rock	1½ " – 0" Crushed	0+00 to 101+88	4	station	25	stations	101.88	2,547
Turnouts	1½ " – 0" Crushed	0+00 to 101+88	4	turnout	11	turnouts	12	132
Junction	1½ " – 0" Crushed		4	junction	25	junctions	5	125
Leveling Rock	1½ " – 0" Crushed	0+00 to 282+00						300
Energy Dissipator	24"-6" Riprap	68+08		dissipator	50	dissipator	1	50
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 **Volume (CY) per**		101+88 to 282+00 **Number of**		
Base Rock (Fills)	4"-0" Crushed	241+83, 244+62, 249+10	10	fill	63	fills	3	189
Base Rock (Realignment)	4"-0" Crushed	111+35 to 116+15	10	station	63	stations	4.80	302
Surface Rock	1½ " – 0" Crushed	101+88 to 282+00	3	station	19	stations	180.12	3,422
Turnouts (Realignment)	4"-0" Crushed	112+67	10	turnout	28	turnouts	1	28
Turnouts	1½ " – 0" Crushed	101+88 to 282+00	3	turnout	8	turnouts	30	240
Junction	1 1/2"-0" Crushed		3	junction	19	junctions	6	114
Turnaround	4"-0" Crushed	282+00	3	turnaround	12	turnarounds	1	12
Fill Armor	24"-6" Riprap	241+83						60
Fill Armor	24"-6" Riprap	244+62						130
Fill Armor	24"-6" Riprap	249+11						70
Embedded Dissipator	24"-6" Riprap	241+83, 244+62, 249+10		dissipator	20	dissipator	3	60
Energy Dissipator	24"-6" Riprap	273+55		dissipator	10	dissipator	1	10
Bedding/Backfill	1½ " – 0" Crushed							350
Total Rock for Road Segment:		I1 to I2						8,142

EXHIBIT "D"

ROAD SURFACING

ROAD SEGMENT I3 to I4				***POINT TO POINT***		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I3 to I4 **Volume (CY) per**		0+00 to 140+35 **Number of**		
Base Rock (Fills)	4"-0" Crushed	59+10, 90+15, 103+70	10	fill	63	fills	3	189
Surface Rock	1½ " – 0" Crushed	0+00 to 130+75	3	station	19	stations	130.75	2,484
Turnouts	4"-0" Crushed	39+30	8	turnout	22	turnouts	1	22
Turnouts	1½ " – 0" Crushed	0+00 to 130+75	3	turnout	8	turnouts	22	176
Junction	1½ " – 0" Crushed		3	junction	19	junctions	8	152
Leveling Rock	1½ " – 0" Crushed	0+00 to 130+75						150
Energy Dissipator	24"-6" Riprap	25+11		dissipator	10	dissipators	1	10
Embedded Dissipator	24"-6" Riprap	59+10, 90+15, 103+70						60
Streambed Rock	24"-6" Riprap	59+10						40
Fill Armor	24"-6" Riprap	59+10, 90+15, 103+70						200
Bedding/Backfill	1½ " – 0" Crushed							410
Total Rock for Road Segment:		I3 to I4						3,893
ROAD SEGMENT: I5 to I6				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I5 to I6 **Volume (CY) per**		0+00 to 64+20 **Number of**		
Surface Rock	1½ " – 0" Crushed	0+00 to 64+20	3	station	19	stations	64.20	1,220
Turnouts	1½ " – 0" Crushed	0+00 to 64+20	3	turnout	8	turnouts	12	96
Junction	1½ " – 0" Crushed		3	junction	19	junctions	2	38
Leveling Rock	1½ " – 0" Crushed	0+00 to 64+20						150
Bedding/Backfill	1½ " – 0" Crushed							155
Energy Dissipator	24"-6" Riprap	31+60		dissipator	10	dissipators	1	10
Fill Armor	24"-6" Riprap	33+50						30
Total Rock for Road Segment:		I5 to I6						1,699

ROCK TOTALS	**24"-6"**	**6"-0"**	**4"-0"**	**1½"-0"**	**3/4"-0"**
22,126	**730**	**620**	**7,981**	**12,381**	**413**

Additional rock for curve widening is required and has been included in the volume estimates.

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

EXHIBIT "D"

ROCK ACCOUNTABILITY

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

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

Rock Checking. All rock spreading shall be done only when a STATE representative is present. STATE shall issue a receipt for each load delivered, and rock shall be measured without allowance for shrinkage or shakedown during hauling. Total truck measure volume for each road segment shall be as shown on Exhibit D. Deliver at least 700 cubic yards per 8-hour shift, unless otherwise approved by STATE. A penalty of $10.00 for each 10 cubic yards which are not delivered during a single shift shall be billed, and payment shall be required prior to final acceptance of the project by STATE.

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

Depth shall be determined in the most compacted area of the surface cross section. If additional rock is required because of insufficient depth, it shall be added by truck measure to those areas that were slighted. The conversion from compacted yardage to truck yardage is 1.3 multiplied by the compacted yardage equals truck yardage.

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

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

EXHIBIT "D"

COMPACTION AND PROCESSING REQUIREMENTS

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All Road Segments that Require Rock Surfacing	1

Fills. Embankments and fills shall be placed in (approximately) horizontal layers not more than 8 inches in depth. Each layer shall be separately, and thoroughly, compacted. Compaction equipment shall be operated over the entire width of each layer until visible deformation of the layers ceases or, in the case of a sheepsfoot roller, the roller "walks out." A minimum of 3 passes shall be made over the entire width and length of each layer. A pass is defined as traveling a fill layer in one direction and then back over that same layer again.

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All Road Segments	1 or 2 or 3; and 4

Crushed Rock. The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of crushed rock shall be moistened or dried to a uniform moisture content suitable for maximum compaction and compacted in layers not to exceed 8 inches in depth except where installation of road fabric is required. When more than 1 layer is required, each shall be shaped and compacted before the succeeding layer is placed. Any irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform. Each layer shall be compacted with a minimum of 3 passes over the entire width and length of the road. A pass is defined as traveling a road section in one direction and then back over that same section again. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All Road Segments that Require 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) 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.

(3) 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 surface comes into contact with the tires. Skidders with oversized tires (high floatation) are not acceptable for compaction.

(4) Vibratory Hand-Operated or Backhoe-Mounted Tamper. Vibratory hand held or hydraulic tampers shall be used for compaction of backfill around culverts. The tamper shoe dimensions shall be a minimum of 10” X 13” and capable of a centrifugal force of 2,250 pounds.

EXHIBIT "E"

CULVERT SPECIFICATIONS

All culvert materials shall be furnished and installed by PURCHASER, unless otherwise specified in the contract. Culverts shall conform to the material and fabricating requirements of Sections 2410 and 2420 of the "Standard Specifications for Highway Construction" prepared by the Highway Division of the Oregon State Department of Transportation. All culverts shall be constructed with of double-walled polyethylene except for Culvert Nos. 26, 27, 31, and 33, which shall be constructed of aluminized steel, as specified pages 2, 3, and 4 of Exhibit E. Double-walled polyethylene pipe shall meet the requirements of AASHTO M-294-901, Type S. Corrugation types and shapes other than those meeting the above minimum Highway requirements, shall be approved in writing by STATE. This specification applies to high density polyethylene corrugated pipe with an integrally formed smooth interior. Clean, reworked material may be used.

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 over 3 inches, and other objects which would dent or damage the pipe during installation or use. If tamping is required, the trench shall be excavated wide enough to permit working on each side of pipe. Bedrock shall be excavated as required to provide a uniform foundation for the full length of the culvert.

A bedding of granulated material or job-excavated soil 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.

Transporting of the pipe shall be done carefully. Dragging or allowing free fall from trucks or into trenches shall not be permitted. Damage to bituminous coating shall be repaired before the pipe is covered.

On new installations, joining shall be done with bands of like material and corrugations. Manufacturers' instructions shall be followed for prefabricated pipe assembly.

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

Tamping is required as specified in Exhibit D and shall be done in 8-inch lifts, 1 pipe diameter each side of the pipe to 85 percent density or over, and to the minimum fill height as specified below.

Fill heights, if not shown on a road plan and profile, shall be in accordance with those shown in Drawing No. 2094, "Fill Height Tables," prepared by the Highway Division of the Oregon State Department of Transportation. Any deviation must be approved by STATE.

Minimum height of cover over top of culvert to subgrade when road is to be rocked shall be as follows: 12" for aluminized steel culverts 18” to 36”, 18” for aluminized steel culverts 42” to 96”, and 12" for polyethylene culverts (add 6" for roads which will not be rocked). Minimum vertical cover for other steel 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. Culverts in Type F streams must allow free passage of fish as provided in the Oregon Forest Practice Rules. The intake end of relief culverts shall be provided with a sediment catching basin 3 feet in diameter at the bottom.

EXHIBIT "E"

CULVERT SPECIFICATIONS

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

The outlet end of any culvert which would allow water to erode embankment soil into waters of the State shall be provided with a downspout or other approved slope protection device.

All coupling band designs shall be in accordance with the minimum requirements of the Highway Division (Drawing Nos. 2091-A and B), or as approved by STATE.

Culverts Nos. 26 and 31 shall have 3" x 1" corrugations.

Culverts Nos. 27 and 33 shall have 2 2/3" x ½" corrugations.

Following are the minimum standard gauges for pipe and coupling bands. All other designs shall be in accordance with the minimum requirements of the Highway Division (Drawing Nos. 2091-A and B), or as approved by STATE.

	Pipe Gauge	Band Gauges	Band Widths (")			Hugger Band Widths (")	
Dia.	Aluminized Steel	Aluminized Steel	Annular	Helical	Dimpled	Annular	Helical
12-15	16	16	7	12	12	13 1/8	10 1/2
18-24	16	16	12	12	12	13 1/8	10 1/2
30-36	16	16	12	12	*12	13 1/8	10 1/2
42	14	16	12	12	NA	13 1/8	10 1/2
48	14	16	24	24	NA	13 1/8	10 1/2
54	14	16	24	24	NA	13 1/8	10 1/2
60	12	16	24	24	NA	13 1/8	10 1/2
66-72	12	16	24	24	NA	13 1/8	10 1/2
78	12	16	24	24	NA	13 1/8	10 1/2
84	12	16	24	24	NA	14 3/4	10 1/2
90-120	12	16	26	26	NA	NA	NA
(3"x1")							

*Up to 33"

The intake ends of culverts 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 be a minimum of 2½ inches in width, with the spade driven 2 feet into the ground.

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

Culvert No. 31 requires 1:1 step beveling on both the inlet and outlet ends. All other culverts 24 inches in diameter or larger shall be 1:1 beveled inlets.

EXHIBIT "E"

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
1	18	40	1A to 1B	0+00
2	18	40	2A to 2B	0+00
3	18	30	2A to 2B	7+00
4	18	30	6A to 6B	2+10
5	18	30	6C to 6D	5+50
6	18	30	6C to 6D	8+50
7	18	30	6C to 6D	12+50
8	18	30	7D to 7E	9+30
9	18	30	7D to 7E	14+30
10	18	30	7D to 7E	16+70
11	18	30	7D to 7E	20+15
12	18	30	7D to 7E	24+15
13	18	30	9A to 9B	4+00
14	18	30	9A to 9B	11+00
15	18	30	10A to 10B	5+80
16	18	30	10A to 10B	9+00
17	18	30	10A to 10B	16+00
18	18	30	10A to 10B	22+00
19	18	30	10A to 10B	27+00
20	18	30	10C to 10D	5+00
21	18	30	10C to 10D	10+20
22	18	30	10C to 10D	16+00
23	18	40	I1 to I2	77+20
24	18	40	I1 to I2	177+25
25*	24	60	I1 to I2	241+83
26*	60 (12 gauge Aluminized Steel)	76	I1 to I2	244+62
27*	48 (12 gauge Aluminized Steel)	54	I1 to I2	249+10

EXHIBIT "E"

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
28	24	35	I1 to I2	279+86
29	18	30	I3 to I4	0+45
30	18	30	I3 to I4	25+11
31*	103 X 71(12 gauge Aluminized Steel)	57	I3 to I4	59+10
32	24	40	I3 to I4	65+76
33*	48 (12 gauge Aluminized Steel)	50	I3 to I4	90+15
34	18	30	I3 to I4	98+51
35*	24	50	I3 to I4	103+70
36	24	30	I3 to I4	124+75
37	24	30	I3 to I4	127+40
38	18	30	I3 to I4	138+50
39	18	40	I5 to I6	26+70
40	18	35	I5 to I6	31+60
41	24	40	I5 to I6	33+50
42	24	40	I5 to I6	34+90
43	18	30	I5 to I6	45+50

*Indicates culverts that do not require markers.

EXHIBIT "F"

ROCK QUARRY DEVELOPMENT AND USE

(1) PURCHASER shall prepare a written development plan for the pit areas. The plan shall be submitted to STATE for approval prior to conducting any operation in either pit area. The plan shall include, but not be limited to:

- (a) Location of benches and roads to benches.
- (b) Disposal site for debris and overburden.
- (c) Time lines for rock quarry use.
- (d) Erosion Control measures.

(2) Pit sites shall be left in a condition free from overburden and debris. Access roads to the pit, and the pit floor, shall be cleared at the termination of use. Overburden shall be removed for a distance of 20 feet beyond the developed rock source.

(3) 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.

(4) 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.

(5) All overburden material shall be hauled to the designated waste area shown on Exhibit A and disposed of as directed by STATE.

(6) Clear and grub the rock source area. All woody debris, including stumps and slash shall be disposed of as directed by STATE.

(7) Benches shall be constructed at intervals of 40 feet or less in height and shall be a minimum of 20 feet in width. Any gravel or talus slopes shall be left with a working face at an angle of 60 degrees or less. Said bench shall be easily accessible with tractors.

(8) Pit face shall be developed in a uniform manner.

(9) Oversized material that is existing, produced or encountered during development shall be broken down and utilized for crushing.

(10) Proper winterization and storm-water control measures such as water barring, drainage, utilization of filter bales, mulching and/or blocking access shall be utilized and such measures maintained to protect the watershed and project work, as directed by STATE.

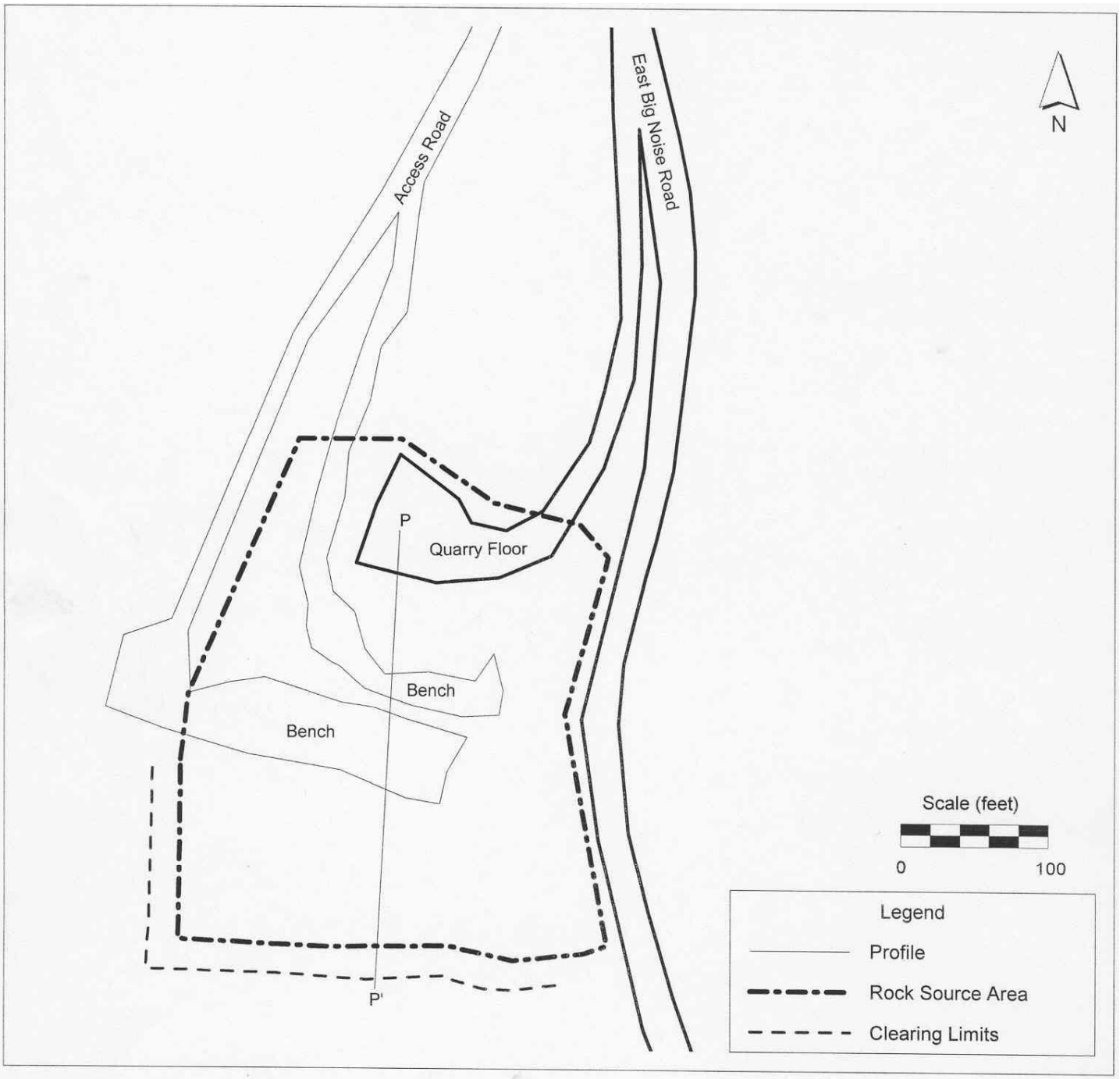
(11) PURCHASER shall notify STATE 5 days prior to the start of quarry development activities.

(12) 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 bench access road shall be cleared, water barred and blocked upon completion of quarry use as directed by STATE.

(13) All quarry backslopes shall be left in a stable condition.

EXHIBIT "F"

ROCK QUARRY DEVELOPMENT AND USE

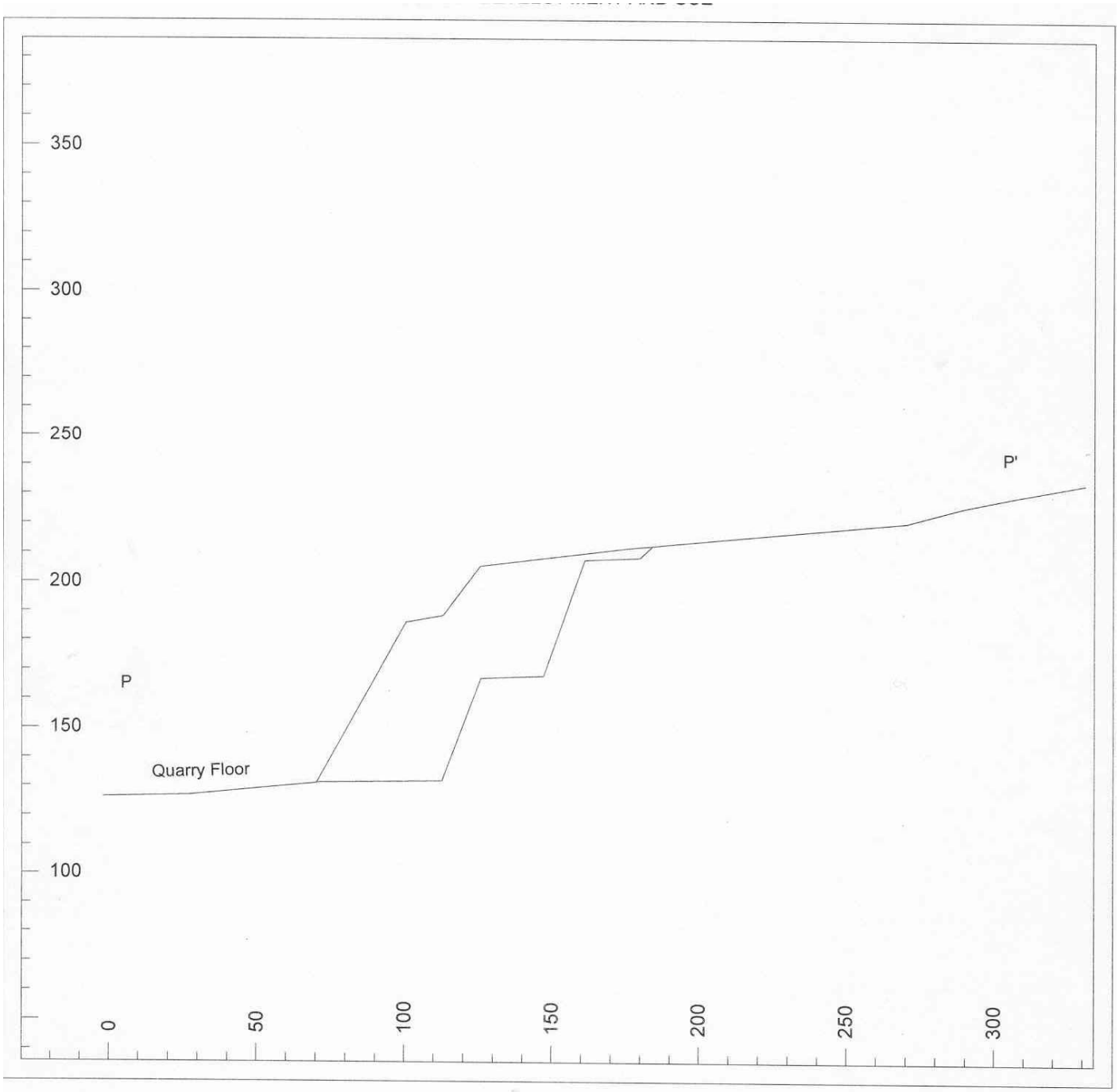


Oregon Department of Forestry
Astoria District
Engineering Unit

Big Noise Quarry
NW1/4, Section 1, T7N, R7W, W. M.
Clatsop County, Oregon

EXHIBIT "F"

ROCK QUARRY DEVELOPMENT AND USE



Oregon Department of Forestry
Astoria District
Engineering Unit

Big Noise Quarry
NW1/4, Section 1, T7N, R7W, W. M.
Clatsop County, Oregon

EXHIBIT "G"

CRUSHED ROCK SPECIFICATIONS

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

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

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

Hardness - Test Method AASHTO T 96 35% Maximum

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

For 3/4"-0"	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 ¼" sieve, 40% to 60% shall pass the No. 10 sieve.

For 1½"-0"	Passing	2" sieve	100%
	Passing	1½" sieve	95-100%
	Passing	3/4" sieve	60-90%
	Passing	1/4" sieve	35-50%

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

For 4"-0"	Passing	5" sieve	100%
	Passing	4" sieve	90-100%
	Passing	2" sieve	60-90%
	Passing	1/4" sieve	15-35%

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

EXHIBIT "G"

PIT-RUN AND RIPRAP ROCK SPECIFICATIONS

Grading Requirements

For 6"-0" Pit-Run	Passing	10" sieve	100%
	Passing	6" sieve	65%

For 24”-6” Rip Rap Rock — 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"

BIGFOOT CREEK TYPE F STREAM CROSSING

(1) Type "F" stream fill reconstruction must allow free passage of fish as provided in the Oregon Forest Practice Rules. Modifications of the existing culvert geometry shall be required to allow free passage of fish.

(2) Work shall be conducted only during periods of low water flows and between July 1 and September 15, annually. STATE shall be notified a minimum of 48 hours prior to beginning work. STATE has prepared a "Written Plan" for this work.

(3) A minimum of 1½ cubic yard, track mounted excavator shall be used for all excavation, stream development/preparation, and riprap replacement. Use of an on site hydraulic rock hammer may be required for the breaking of rock strata encountered during the development of the culvert bed. Oil Spill response materials shall be on site before the work begins.

(4) Excavated debris and soil materials unsuitable for fill construction shall end-hauled to "Waste Areas" as directed by STATE. The existing removed culvert shall be hauled to an approved refuse site off of STATE land.

(5) Waste materials shall be sloped for drainage and stability, as directed by STATE. Grass seed and straw mulch shall be applied to all exposed areas, bare soils and waste materials as directed by STATE. Applied mulch shall be a minimum of 2 inches deep and provide a uniform cover, in accordance with specifications in Exhibit O.

(6) Remove existing fill, culvert, and any logs or woody debris.

(7) De-watering of the work site shall be accomplished prior to the removal of any additional fill material for the development of the culvert bed and stream channel. The work site shall be de-watered by the use of cofferdams, temporary diversion ditches and/or drainage structures. A de-watering plan must be developed, approved, and employed prior to beginning in-stream work.

(8) Remove additional fill and logs or woody debris for the development of the new culvert bed. The development of the new culvert bed will **NOT** be situated the same as the old culvert bed. The location of the new culvert will be calculated by using reference points set in the field. The inlet of the new pipe will be set by referencing to Reference Point 1 (HD = 41.76 feet at an Azimuth = 143 degrees and a Vertical Offset of –20.34 feet). The outlet end of the new culvert will be set by referencing to Reference Point 1 (HD = 62.50 feet at an Azimuth = 81 degrees and a Vertical Offset of –24.19 feet). Utilize 100 cubic yards of 1½"- 0" crushed rock for the culvert bed and for backfill.

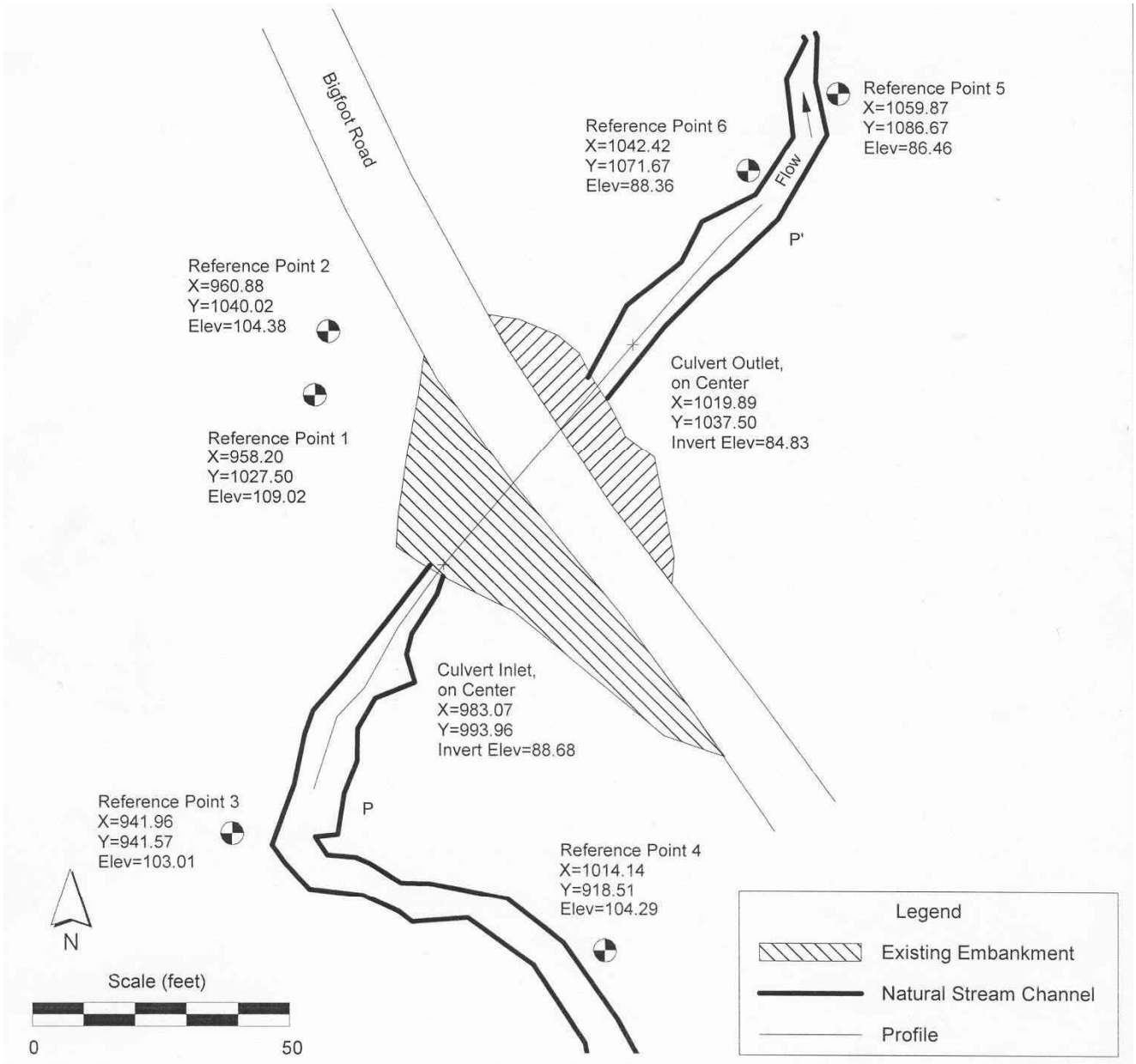
(9) Develop the stream channel for a distance of 25 feet upstream of the inlet of the new culvert and 25 feet downstream of the outlet. The stream channel width will be 8-feet and stream channel banks shall be sloped at 1½:1.

(10) Native (excavated) stream sediment materials and 24"-6" riprap rock shall be placed in the culvert barrel to a depth of 20 inches. Excavated boulders or riprap rock shall be placed and embedded at the outlet of the new culvert to allow additional stream sediment materials to settle in the barrel of the culvert.

(11) Fill Reconstruction backfill shall consist of select materials and be obtained from Big Noise Quarry, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with Exhibit D. Utilize 100 cy of 24"-6" riprap for armoring fill slopes. The riprap rock shall be placed and tamped at a 1½:1 slope for a minimum thickness of 2 feet beginning at the toes. Finished sub-grade width shall be 18-feet with a 14-foot running surface. A minimum of 63 cubic yards 4"-0" base rock will be utilized to restore the base surfacing course for a compacted depth of 10 inches. Crushed rock will be processed and compacted in accordance with Exhibit D.

EXHIBIT “H”

BIGFOOT CREEK TYPE F STREAM CROSSING

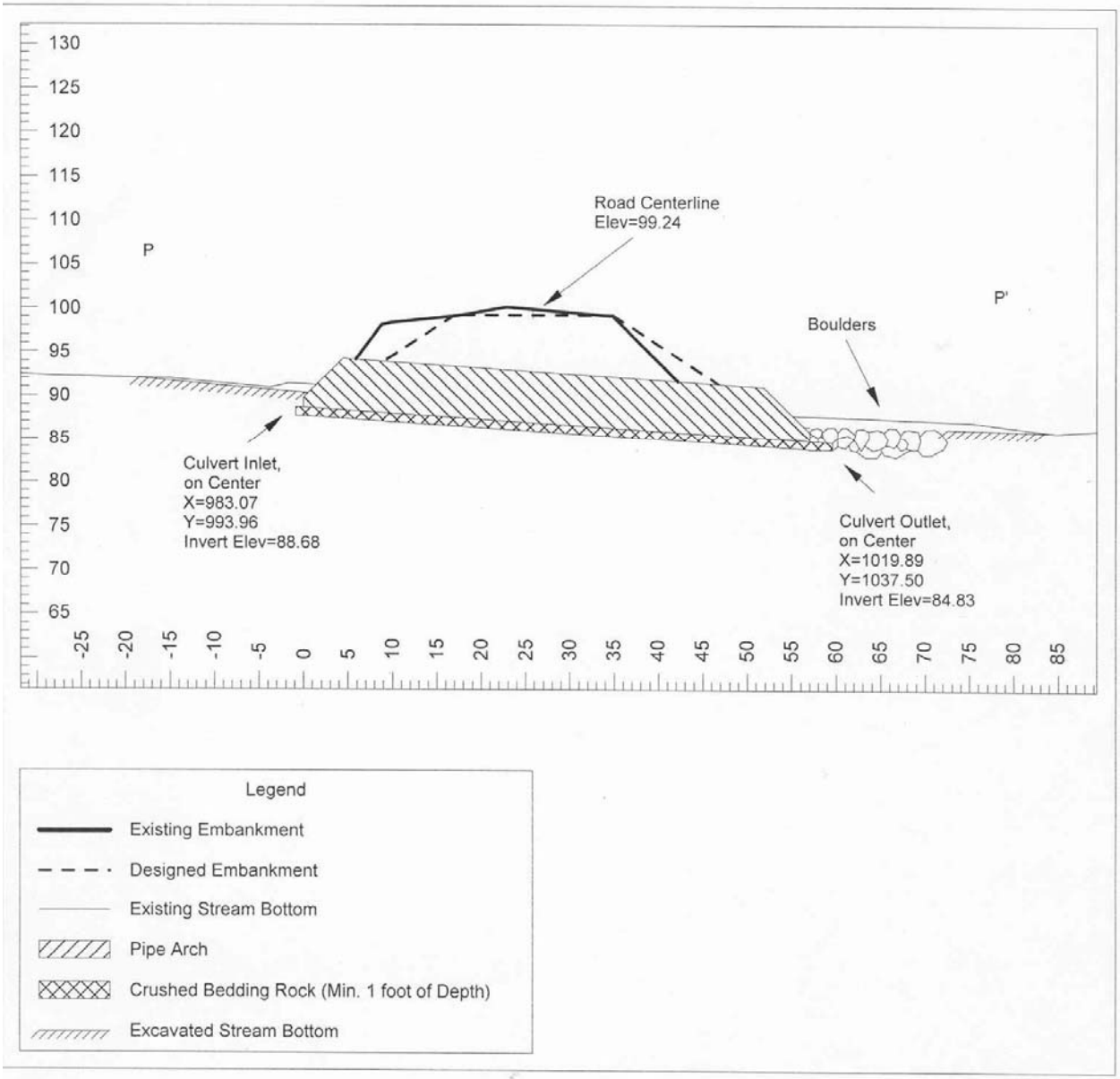


Oregon Department of Forestry
Astoria District
Engineering Unit

Point I3 to Point I4
Station 59+10
Bigfoot Creek
NW1/4, Section 36, T8N, R7W, W. M.
Clatsop County, Oregon

EXHIBIT “H”

BIGFOOT CREEK TYPE F STREAM CROSSING



Oregon Department of Forestry
Astoria District
Engineering Unit

Point I3 to Point I4
Station 59+10
Bigfoot Creek
NW1/4, Section 36, T8N, R7W, W. M.
Clatsop County, Oregon

State Timber Sale Contract
No. 341-05-64
Bigfoot Combination

EXHIBIT "I"

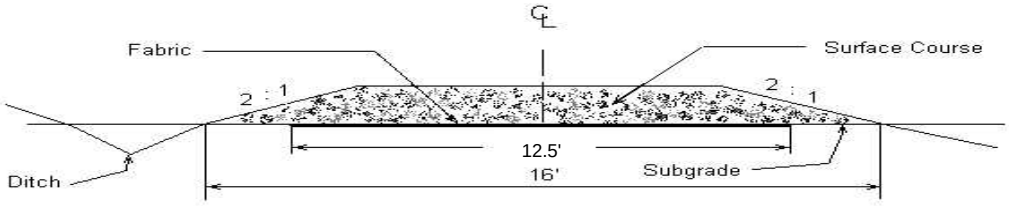
FABRIC SPECIFICATIONS

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

(1)	Grab Tensile	300 lbs.	ASTM D1682
(2)	Modulus Load at 10% Elongation	140 lbs.	ASTM D1682
(3)	Mullen Burst	600 lbs.	ASTM D751
(4)	Width – 12 feet		

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

(1) Typical cross section:



(2) Subgrade surface shall be leveled and smoothed to remove humps and depressions which exceed 6 inches in height and depth. Small pieces of woody debris shall be removed or pushed below subgrade surface. Light vegetation (grass, weeds, leaves, and fine woody debris) may be left in place.

(3) Fabric shall be installed directly on the prepared surface. Longitudinal and traverse joints shall be overlapped at least 3 feet.

(4) Surfacing course material shall be placed to the designated thickness in one lift and spread in the direction of fabric overlap. Hauling and spreading equipment shall not be operated on the fabric until the total thickness of surfacing course material is placed.

(5) Torn, punctured, or separated sections of the fabric shall be repaired, by installing a fabric patch over the break prior to placing the surfacing course material. The patch shall be at least 4 feet larger in horizontal dimensions than the break to be repaired.

(6) Fabric failures resulting after rock placement and as evidenced by subgrade pumping or roadbed distortion shall be corrected. Correction measures shall consist of: (1) removing at least three-quarters the depth of surfacing course material in the affected area, (2) placing a fabric patch over the affected area with a minimum 4-foot overlap around the circumference of the area, and (3) replacing enough rock to cover the patch and blend in with the rest of the road.

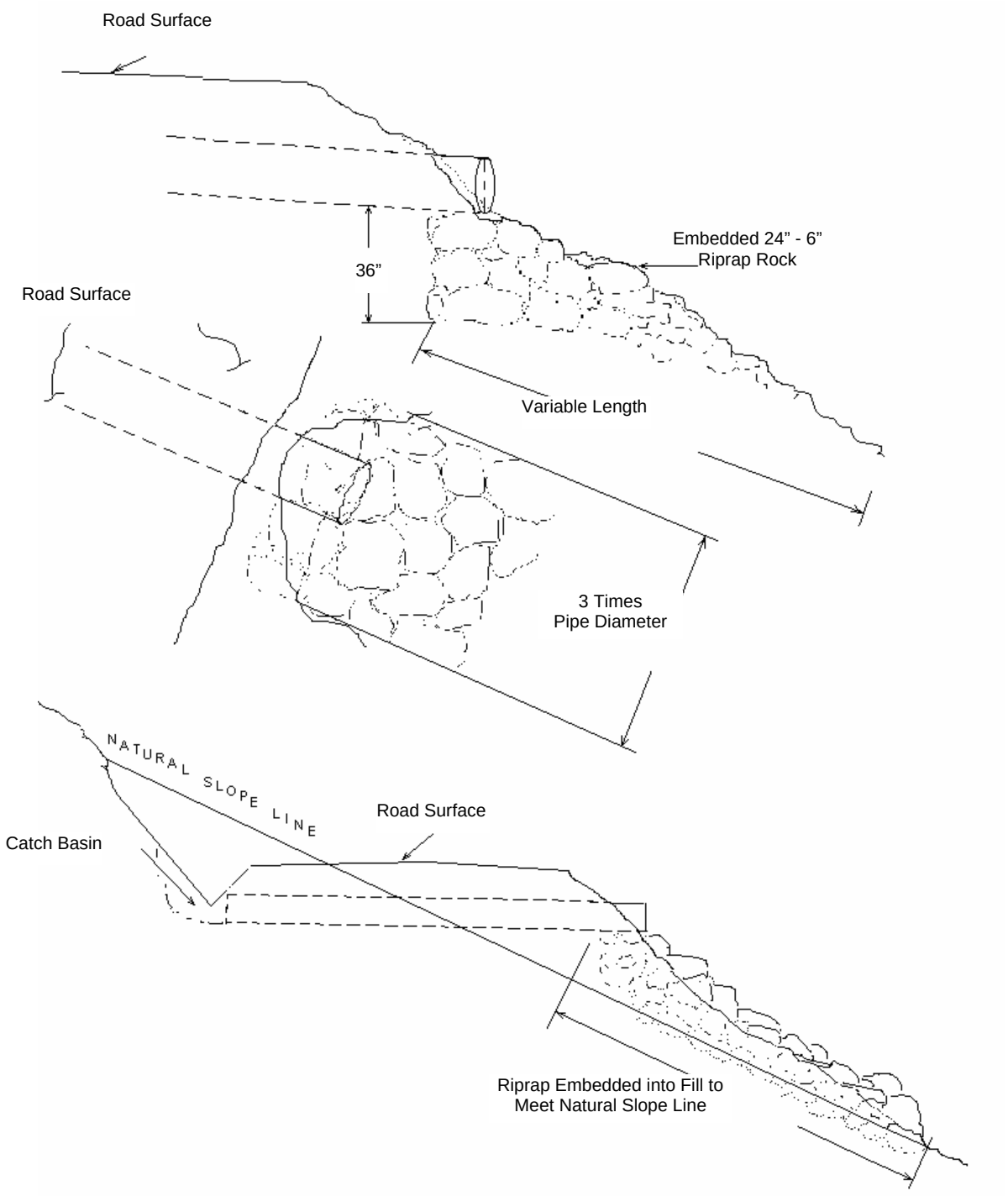
(7) Should STATE determine that installation of fabric on roads or portions of roads is not necessary, PURCHASER shall deliver an equivalent amount of road fabric to STATE.

(8) Install fabric at the following locations: 10A to 10B, station 0+00 to 3+00.

State Timber Sale Contract
No. 341-05-64
Bigfoot Combination

EXHIBIT "J"

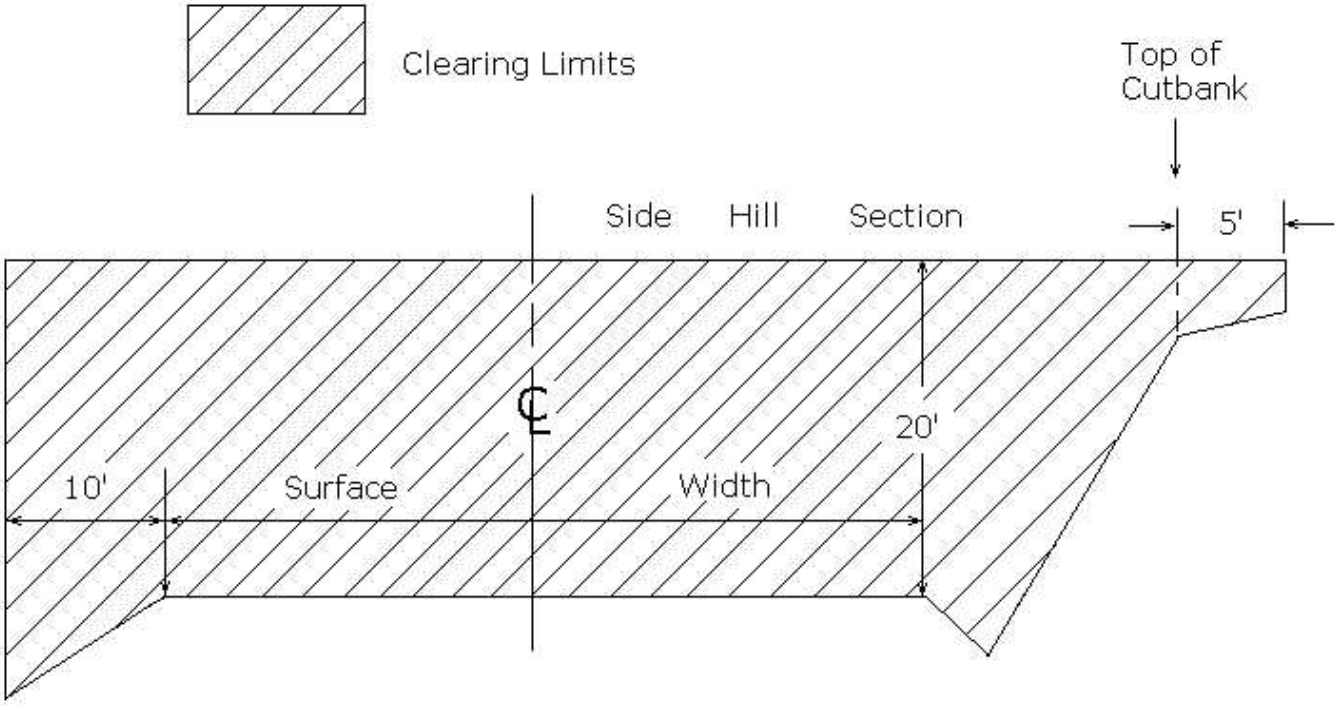
TYPICAL ENERGY DISSIPATOR



State Timber Sale Contract
No. 341-05-64
Bigfoot Combination

EXHIBIT "K"

LOGGING ROAD BRUSHING SPECIFICATIONS



REQUIREMENTS

Clear roadside brush on road segments as shown on Exhibit A.

The minimum height of clearing shall be 20 feet from the road surface, and the minimum width of clearing on the cutslope side of the road shall be 15 feet horizontal distance from the shoulder of the road, 5 feet beyond the top of the cutbank, and 10 feet horizontal on the down slope side from the road shoulder. On road surfaces, all brush and trees shall be cut flush to the road surface.

Brush and trees shall be cut to a maximum height of 6 inches above the ground surface or obstructions such as rocks or existing stumps.

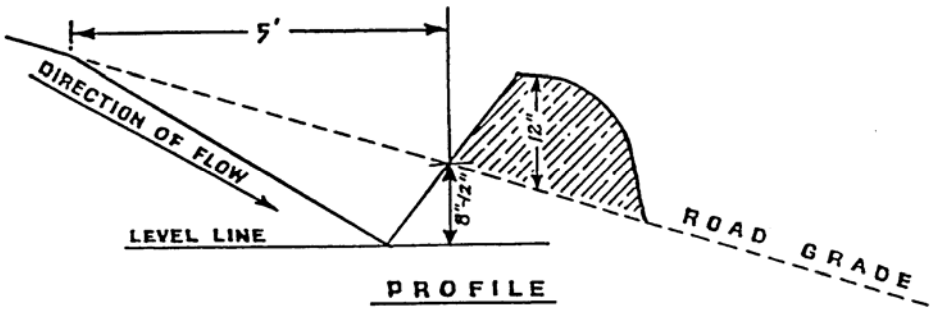
Debris resulting from the brushing operation shall be removed from the roadway, cutslope, ditches, and water courses and may be scattered downslope from the road or placed in other stable locations. Large debris, 6 inches or larger in diameter, shall be cut into lengths of 6 feet or less to facilitate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

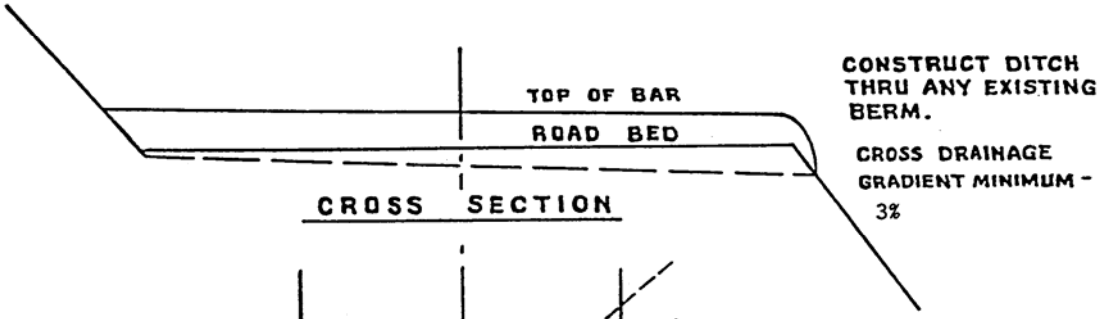
Conifer trees larger than 6 inches in diameter at stump height, located within clearing limits but outside of the ditchline or shoulder, shall not be cut down, but shall be limbed for road visibility.

State Timber Sale Contract
No. 341-05-64
Bigfoot Combination

EXHIBIT "L"

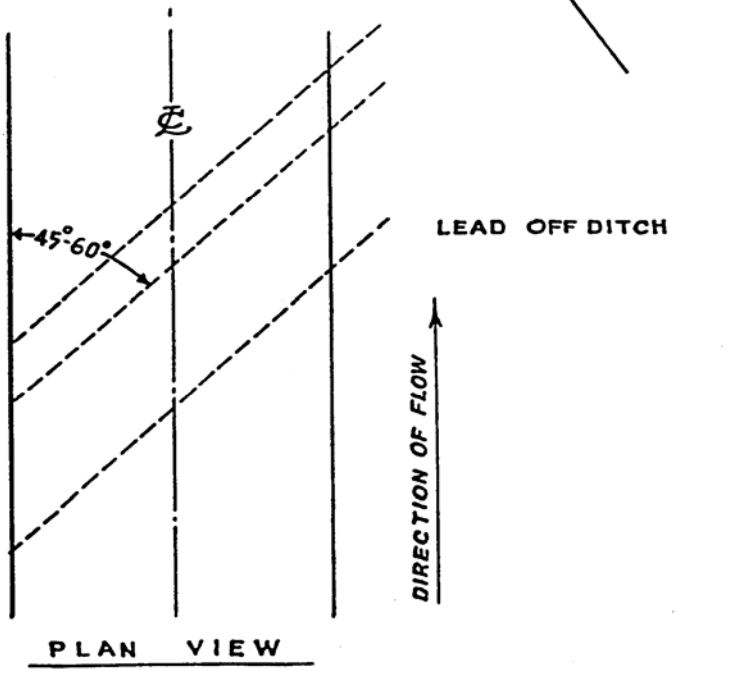
WATERBAR SPECIFICATIONS





SPACING OF WATERBARS

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



WATERBAR SPECIFICATIONS
FOR CROSS DITCHING #298

EXHIBIT "M"

ROAD VACATING AND FILL REMOVAL SPECIFICATIONS

PROJECT REQUIREMENTS AND GENERAL SPECIFICATIONS

(1) Timber Removal. Remove all trees within posted Right of Way Boundary or individually marked with an orange "X", as specified in Section 2210, Designated Timber.

(2) Culvert Removal. Remove drainage structures and culverts. Removed culverts shall be hauled to an approved refuse site off of State Land.

(3) Fill Removal and Stream Channel Development. Remove fills to the natural stream course level(s). Stream channel(s) shall be excavated/developed to a width of 4 feet. Developed stream banks shall be sloped at natural contours or no steeper than 1½:1, as directed by STATE.

(4) Use of Excavated Materials.

(a) Fill Excavation. Excavated materials shall be placed on the interior (cut) side of the road a minimum of 10 feet from the top of the developed stream bank, and utilized to restore the cutslope to natural contours, or to a minimum 10% outsloped surface for drainage. Any excess material will be hauled to a designated waste area, as directed by STATE.

(b) Woody Debris may be incorporated in embankment material, and/or placed on the surface of the compacted embankment material.

(c) Block Roads. Use excavated material from fill removals to block roads from vehicle access, as directed by STATE.

(5) Erosion Control. All excavated material and bare soil shall utilize grass seed and straw mulch approved by STATE and in accordance with the specifications in Exhibit O. Applied mulch shall be a minimum of 2 inches deep and provide a uniform cover.

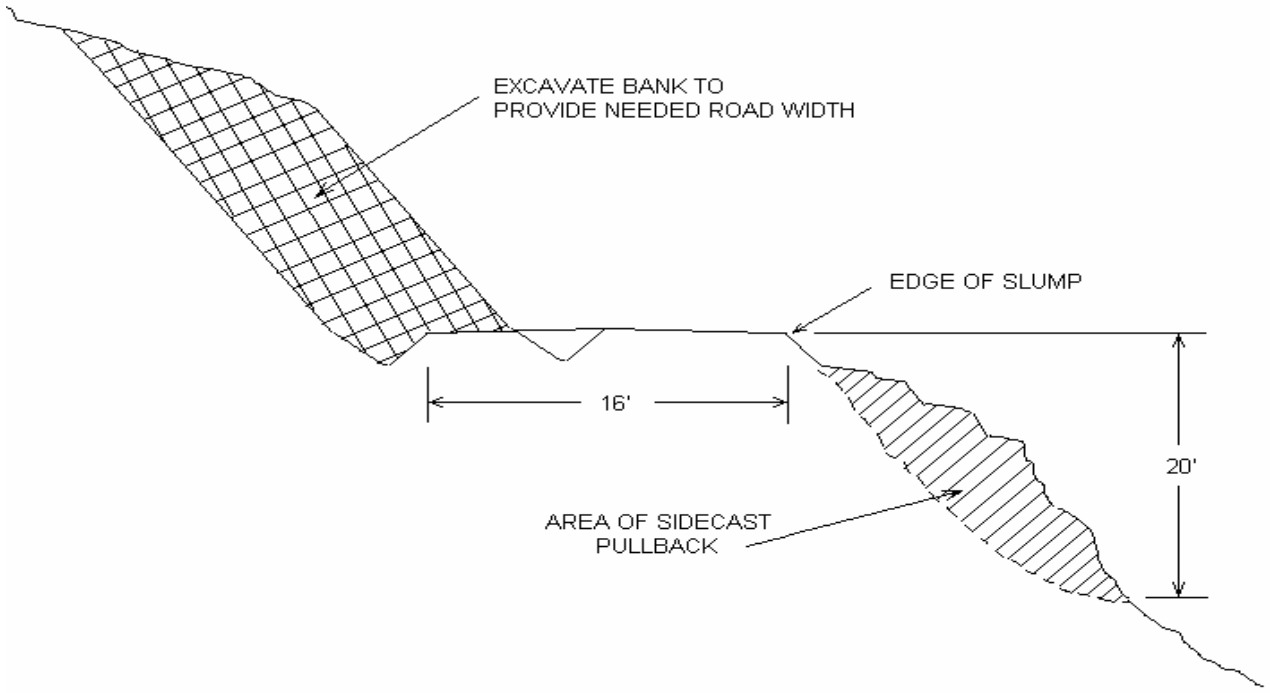
(6) Construct Waterbars as directed by STATE. Construct waterbars according to the specifications in Exhibit L.

(7) Equipment. A minimum 1½ cubic-yard, track mounted excavator shall be used for all excavation, culvert removal, streambed preparation, road blocking, and waterbarring, unless otherwise approved in writing by STATE.

(8) Dry Conditions. All work shall be performed during dry conditions acceptable to STATE.

EXHIBIT “N”

TYPICAL CROSS SECTION VIEW OF SIDECAST PULLBACK AND ROAD REALIGNMENT



(No Scale)

EXHIBIT "O"

GRASS SEEDING AND MULCHING

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

Seeding Seasons. Seeding shall be performed only from March 1 through June 15 and August 15 through October 31. Seeding materials shall not be applied during windy weather or when the ground is excessively wet or frozen. Work shall be performed during each specified seeding season on all completed and previously untreated sections. PURCHASER shall notify STATE 24 hours prior to seeding.

Application Methods for Grass Seed

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

Application Rates for Seed

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

SPECIES	MIXTURE	PURE LIVE SEED	POISON AND/OR REPELLENT	GERMINATION
Annual Rye	33%	95%	0	>90%
Orchard Grass	33%	95%	0	>90%
Perennial Rye	34%	95%	0	>90%

Seeding and Mulching. Apply grass seed and straw mulch to all waste areas. Applied straw mulch shall be a minimum of 2 inches deep and provide a uniform cover.

EXHIBIT “P”

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 slash 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 at least 700 cubic feet of hard conifer logs per acre, where conifer logs are available, to be selected by PURCHASER. Logs shall contain a minimum of 10 cubic feet of volume and be no shorter than 6 feet in length. At least 2 of the selected down logs must be 24 inches in diameter at the large end, where available. Hard conifer logs must be in decay class 1 or 2, as indicated by intact bark and original wood color. Down logs shall be well distributed across the area.

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 “P”

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	$ 95.00 / hour	219.0	$ 20,805.00
Log Loader	$ 70.00 / hour	297.2	$ 20,805.00

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 1, 4, 5, 7, and 9. 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. Operations shall not be allowed as described in Section 2580, “Seasonal Restrictions,” of the Contract, or during any other period 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

FOREST PRACTICES ACT "WRITTEN PLAN"
For Harvest of State Timber Bigfoot Combination Timber Sale
Portions of Sections 1 and 6, T7N, R7W, and
portions of Section 36, T8N, R7W, W.M., Clatsop County, Oregon

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

Protected Resources:

Gnat Creek - Large, Type F stream

Specific Site Characteristics:

Gnat Creek flows along the eastern boundary of Areas 3, 9, and 10.

- Areas 3 and 10 are partial harvests, with targeted basal areas of 140 to 170 square feet. Type F stream buffers are posted 100 to 200 feet from the streams.
- Area 9 is a modified-clearcut (T3 unit), and has a posted buffer of 100 to 200 feet from the stream. Approximately 400 feet of the boundary of the unit follows Gnat Creek.

Tree and Vegetation Retention:

Vegetation within the buffers consists of a combination of conifers, hardwoods, and shrubs. In all of the specified harvest areas, all trees and shrubs within the posted buffers will be retained.

Practices:

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

- No trees will be felled within posted stream buffers (RMA's).
- Trees adjacent to the posted stream buffers (RMA's) will be felled away from or parallel to the streams to prevent trees from entering the aquatic areas.
- 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.
- Cable corridors must be at least 100 feet apart where they cross the RMA's.
- Trees that fall or slide into Type F RMA's shall not be removed without prior approval from STATE.

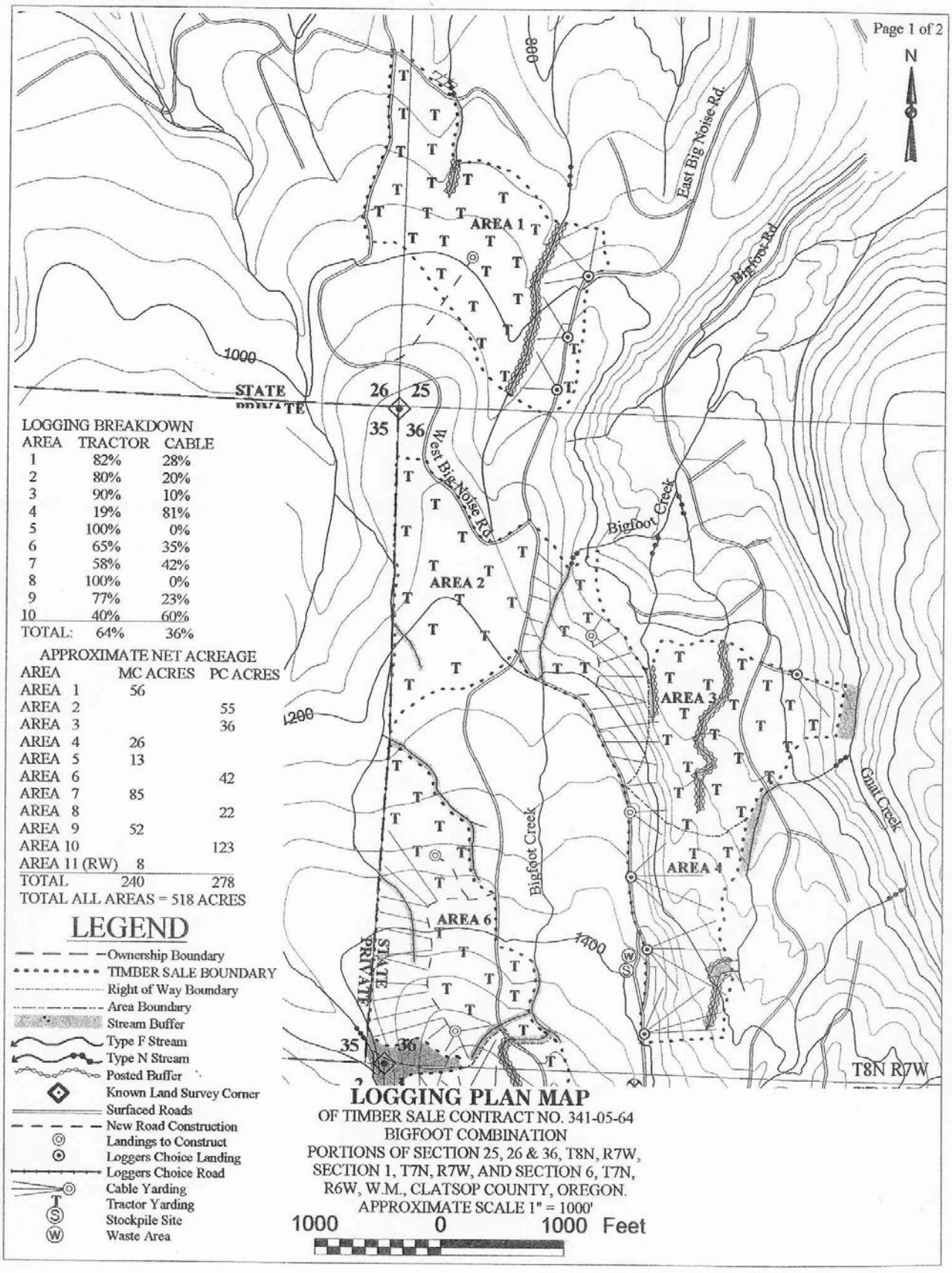
I, the undersigned, submit this written plan in compliance with the requirements of the Forest Practices Act, regarding the planned operations to be conducted within 100 feet of Type F streams. I agree to the protection measures listed in this plan.

Submitted by: _____ Date: _____
Operator/ Purchaser

Reviewed by: _____ Date: _____
State Lands Forester

Attachments: Logging Plan Map

Original: Salem
Copies: Operator, Operator, District File, Sunset Unit



LOGGING BREAKDOWN

AREA	TRACTOR	CABLE
1	82%	28%
2	80%	20%
3	90%	10%
4	19%	81%
5	100%	0%
6	65%	35%
7	58%	42%
8	100%	0%
9	77%	23%
10	40%	60%
TOTAL:	64%	36%

APPROXIMATE NET ACREAGE

AREA	MC ACRES	PC ACRES
AREA 1	56	
AREA 2		55
AREA 3		36
AREA 4	26	
AREA 5	13	
AREA 6		42
AREA 7	85	
AREA 8		22
AREA 9	52	
AREA 10		123
AREA 11 (RW)	8	
TOTAL	240	278

TOTAL ALL AREAS = 518 ACRES

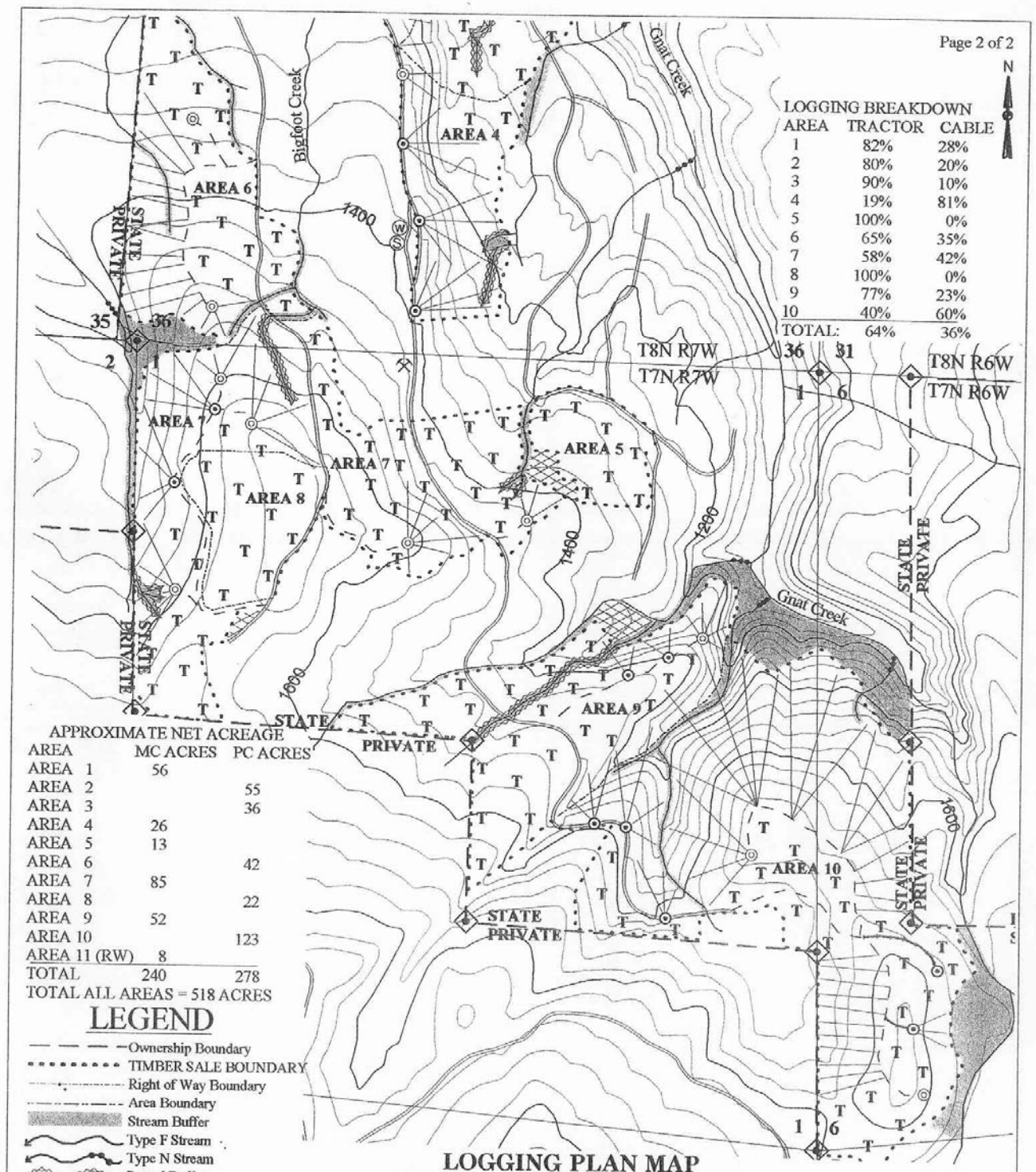
LEGEND

- Ownership Boundary
- TIMBER SALE BOUNDARY
- Right of Way Boundary
- Area Boundary
- Stream Buffer
- Type F Stream
- Type N Stream
- Posted Buffer
- Known Land Survey Corner
- Surfaced Roads
- New Road Construction
- Landings to Construct
- Loggers Choice Landing
- Loggers Choice Road
- Cable Yarding
- T Tractor Yarding
- (S) Stockpile Site
- (W) Waste Area

LOGGING PLAN MAP

OF TIMBER SALE CONTRACT NO. 341-05-64
BIGFOOT COMBINATION
PORTIONS OF SECTION 25, 26 & 36, T8N, R7W,
SECTION 1, T7N, R7W, AND SECTION 6, T7N,
R6W, W.M., CLATSOP COUNTY, OREGON.
APPROXIMATE SCALE 1" = 1000'

1000 0 1000 Feet



LOGGING PLAN MAP

OF TIMBER SALE CONTRACT NO. 341-05-64
BIGFOOT COMBINATION
PORTIONS OF SECTION 25, 26 & 36, T8N, R7W,
SECTION 1, T7N, R7W, AND SECTION 6, T7N,
R6W, W.M., CLATSOP COUNTY, OREGON.
APPROXIMATE SCALE 1" = 1000'

FOREST PRACTICES ACT "WRITTEN PLAN"
For Project No. 2, East Big Noise Road System Road Improvement
Bigfoot Combination Timber Sale

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

Protected Resources: Bigfoot Creek tributary of Gnat Creek, a small Type F fisheries resource, located in the NW¼ of Section 36, T8N, R7W, W.M., Clatsop County, Oregon. A written plan is required for any activities within 100 feet of any Type F streams and on fills over 15 feet in depth.

Situation: A galvanized-steel-culvert stream crossing located on Bigfoot Road is deteriorating and is a partial blockage to fish. Resource management objectives for this stream crossing project include providing cost effective long-term access, meeting or exceeding FPA requirements, enhancement of fisheries habitat, and protection of water quality and riparian areas.

Drainage Area and Structure Design: The existing culvert will be replaced with an 103"x71"X57', 12 gage aluminized steel pipe arch, embedded 20", with step beveled ends. The stream crossing will utilize a streambed simulation strategy and preserve a natural stream channel (waterway), a minimum of 8 feet wide. The stream crossing meets and exceeds the requirements of the FPA for type F stream crossings. It will take sufficient time and flow conditions for the predicted stream-bed to develop inside and above the stream crossing. The new fill height will be 16 feet.

Existing Stream Gradient:	7%
Size of Watershed:	164 acres
Minimum Stream Width:	8 feet
Stream Bed Material:	Sand, Gravel, Cobble
50-Year Peak Flow/Mi.^{2}:	200 cfs
50-Year Peak Flow:	51 cfs
Flow Capacity of Structure:	168 cfs

Practices:

- Machine activity in stream channels will be minimized.
- In stream work shall be conducted during periods of low water flows and between July 1 and September 15, annually.
- Minimum 1½ cubic yard track mounted excavator type equipment shall be used for embankment excavation, stream channel development and riprap placement.
- Excavated embankment materials will be hauled to approved waste areas, sloped for drainage and left in a stable condition.
- Erosion control measures shall be applied to all exposed excavation areas, bare soils and waste materials.
- Riprap rock will be used to armor embankments and stream banks.
- Native (excavated) stream sediment materials shall be placed in the pipe arch barrel. Excavated boulders or riprap rock shall be placed and embedded at the outlet of the new pipe arch to facilitate the development of the stream channel inside the barrel of the pipe arch culvert.
- The de-watering of the installation area during development of the pipe arch bed and stream channel will be accomplished by use of cofferdams, temporary diversion ditches, and/or drainage structures.
- An erosion-control plan will be developed and followed to prevent sediment from entering the stream during construction work.

FOREST PRACTICES ACT "WRITTEN PLAN"
For Project No. 2, East Big Noise Road System Road Improvement
Bigfoot Combination Timber Sale

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

Reviewed: _____ Date: _____
State Lands Forester

Attachments: Exhibit A, Exhibit H

Original: Salem
Copies: Operator, Contractor, District File, Salem, Engineering Unit, Sunset Unit

FOREST PRACTICES ACT "WRITTEN PLAN"
For Project No. 5, Road Vacating
Bigfoot Combination Timber Sale

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

Protected Resources:

Unnamed Tributary of Rock Creek, which is designated as a Medium Type F stream, is located within 100 feet of the road vacating project in Section 26, T8N, R7W, W.M., Clatsop County, Oregon.

Situation: The existing Rock Creek Crossover road crosses an unnamed tributary of Rock Creek, a medium Type F stream. The existing culvert is a blockage to fish.

In this project, Rock Creek Crossover road will be vacated and put to bed, fill will be removed and the stream channel will be restored, as shown in Exhibit K. Removal of vegetation and trees within the RMA will be necessary in order to satisfactorily complete sidecast and fill removal in some areas. Removal of trees and vegetation within the RMA will be minimized in order to protect riparian resources and will be left on-site, in stable locations. Further detailed work specifications for this project are included as Project No. 5 of the Bigfoot Combination Timber Sale Contract shown/described in Exhibits A and M.

Specific Site Characteristics:

Unnamed Tributary of Rock Creek. The active bank-full channel width is approximately 4 feet in width. Streamside vegetation is dominated by mature alder, with a minor component of conifer trees.

Resource Protection Measures:

(1) Work will be performed only during dry weather periods, low water stream flows, and between July 1 and September 15, annually.

(2) Machine activity in stream channels will be minimized. All excavation and removed fill placement will be performed using a minimum 1 ½ cubic-yard track-mounted excavator.

(3) De-watering of existing fills and development of the stream channel will be accomplished by use of coffer dams, temporary diversion ditches, or drainage structures and/or damming and pumping.

(4) Disturbance to existing vegetation will be minimized. Trees removed within the RMA will not be removed as designated timber and will be left in the RMA, in stable locations.

(5) Excavated fill materials will be used for recontouring slopes or placed in approved waste areas and left in a stable condition.

(6) Bare soils shall be grass seeded and/or mulched with a straw mulch approved by STATE. Applied mulch shall be a minimum of 2 inches deep and provide a uniform cover.

(7) An erosion-control plan will be developed and followed to prevent sediment from entering the stream during construction work.

Aquatic Protection: Debris entering the RMA or aquatic area will be removed by the end of operations each day or as soon as possible and placed in a stable location, unless an alternate practice is approved by STATE.

FOREST PRACTICES ACT "WRITTEN PLAN"
For Project No. 5, Road Vacating
Bigfoot Combination Timber Sale

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

Reviewed: _____ Date: _____
State Lands Forester

Attachments: Exhibit A and M

Original: Salem
cc: Operator, Purchaser, District file, Salem, Eng. Unit, Sunset Unit