PART III: EXHIBITS

State Timber Sale Contract
No. 341-05-82
Military Green

EXHIBIT B

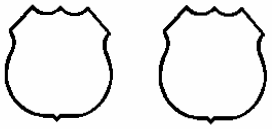
629-Form 341-203
Revised 06/97

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.: 341-05-82

(2) Sale Name: Military Green

(3) Contract Expiration Date: * Project Completion Dates: _____

(4) Purchaser: _____

(6) Purchaser Representatives:

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

(7) State Representatives:

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

(8) Name of Subcontractors & Starting Dates:

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

(9) Comments: _____

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

EXHIBIT B

INSTRUCTION SHEET FOR OPERATIONS PLAN

SUBMIT ONE COPY OF PLAN TO STATE

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

Item No. (from Page 1)

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

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

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

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

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

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

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

(1)	Cable landing, with numbers for sequence.
[A]	Tractor landing with alphabetical sequence.
_ _ _ _ _	Approximate setting boundary.
- - - - - - - -	Spur truck roads.
~~	Tractor yarding roads.
X	Temporary stream crossings.

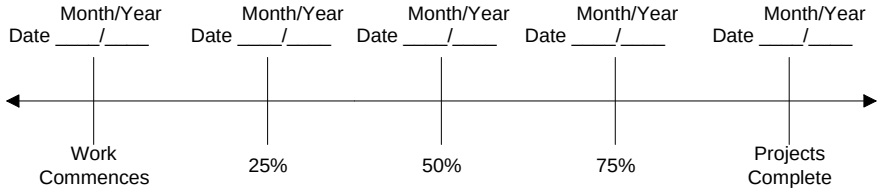
EXHIBIT B

OPERATIONS PLAN

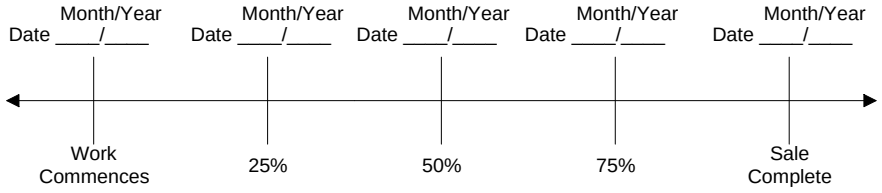
Completion Timeline

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: _____

STATE OF OREGON - DEPARTMENT OF FORESTRY

_____

Title _____

SUBMITTED BY:
PURCHASER

_____

Title _____

Original: Salem
cc: District File
Purchaser

EXHIBIT C

SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

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

(3) FROM: Astoria (04) Phone (503) 325-5451
(State Forestry District)
Address 92219 Hwy. 202, Astoria, OR 97301

(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 Military Green
COUNTY Clatsop

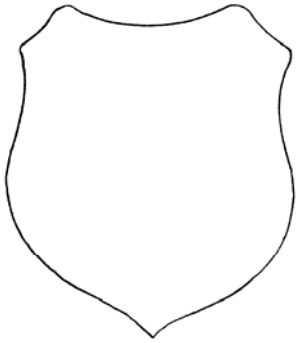
(13) STATE CONTRACT NUMBER 341-05-82

(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, 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	STATION TO STATION	DRAINAGE
16 feet	12 feet	1A to 1B	0+00 to 13+00	DITCH
16 feet	12 feet	1C to 1D	0+00 to 4+50	DITCH
16 feet	12 feet	1E to 1F	0+00 to 20+70	DITCH
16 feet	12 feet	1G to 1H	0+00 to 2+50	DITCH
16 feet	12 feet	1I to 1J	0+00 to 2+80	DITCH
16 feet	12 feet	2A to 2B	0+00 to 26+90	DITCH
16 feet	12 feet	2C to 2D	0+00 to 8+50	DITCH
16 feet	12 feet	2E to 2F	0+00 to 1+50	DITCH
16 feet	12 feet	3A to 3B	0+00 to 23+50	DITCH
14 feet	N/A	3A to 3B	23+50 to 43+40	OUTSLOPE
14 feet	N/A	3C to 3D	0+00 to 11+90	OUTSLOPE
16 feet	12 feet	3E to 3F	0+00 to 2+50	DITCH
16 feet	12 feet	4A to 4B	0+00 to 26+90	DITCH
16 feet	12 feet	4C to 4D	0+00 to 4+50	DITCH
20 feet	16 feet	I1 to I2	0+00 to 148+00	DITCH
16 feet	12 feet	I2 to I3	0+00 to 149+50	DITCH
16 feet	12 feet	I4 to I5	0+00 to 186+10	DITCH
16 feet	12 feet	I6 to I7	0+00 to 122+20	DITCH
16 feet	12 feet	I8 to I9	0+00 to 2+50	DITCH
16 feet	12 feet	I9 to I10	2+50 to 18+76	DITCH
16 feet	12 feet	I11 to I12	0+00 to 0+59	DITCH
16 feet	12 feet	A to B	0+00 to 5+86	DITCH

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

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

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

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 CLASSIFICATION. New construction – From the top of the cutslope to the toe of the fill. Improvement and reconstruction – Four feet back from the shoulder of the subgrade of 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 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.

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

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

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

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

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

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

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

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

DRAINAGE

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

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

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

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

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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

LANDINGS. Landings shall be constructed as posted in the field, no less than 50 feet wide and no more than 70 feet wide. 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 unfinished subgrades shall be waterbarred in accordance with Specifications in Exhibit L, and blocked from vehicular traffic prior to November 1, annually, and as directed by STATE.

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

(1) Excavated Materials. Excavated materials shall be utilized for road construction and hauled in where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with Exhibit D. Full bench road construction shall be performed in accordance with Exhibit D.

(2) Fill Armor and Energy Dissipator Construction. Where rock is used for fill armor, rock shall be placed and tamped at a 1½:1 slope, beginning at the fill toes. Where rock is used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with Exhibit I.

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

Segment	Station	Work Description
2A to 2B	3+00	Construct landing on right side of road.
4A to 4B	15+75	Begin full bench truck end haul. Utilize suitable fill material for fill construction between Stations 0+00 and 3+00 on Road 4C to 4D. Haul excess excavation material and clearing debris to waste area.
	17+30	Install culvert. Utilize 10 cubic yards of 24”-6” riprap rock to construct energy dissipator.
	19+35	End full bench truck end haul.
4C to 4D	0+00	Import fill material from Road Segment 4A to 4B to construct fill between Stations 0+00 and 3+00.
A to B	0+80	Begin lowering (cutting) existing NT60 road grade. Horizontal alignment does not change.
	1+95	Begin leaving existing NT60 road. Begin hauling waste excavation to the Nettle Stockpile site. Incorporate waste in stockpile site construction.
	2+32	Begin drifting excavation as needed. Haul waste excavation to the Nettle Stockpile site. Incorporate waste in stockpile site construction.
	5+86	Point B. Enter new quarry floor.

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 and Culvert Installation. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include, skewing the culvert and/or installing the pipe at gradients equal to or exceeding the drainage (or ditch) gradient. All woody debris encountered during fill excavation shall be removed. All waste materials shall be hauled to nearby waste areas and shall be uniformly sloped and compacted for drainage. Fill construction backfill shall consist of select materials and be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with Exhibit D. Crushed rock shall be used for backfilling excavation trenches less than 3 feet deep. Removed culverts shall be hauled to an approved refuse site off of STATE land.

(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) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic yard, track-mounted excavator.

(5) Subgrade Preparation and Application of Surfacing Rock.

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

(b) Cut out all potholes and/or washboard sections from the existing surfacing.

(c) Apply required patching and leveling rock, as directed by STATE.

(d) Process (grade and mix) the existing surfacing and added base rock. Provide for a crown of 4 to 6 percent, (½ inch per foot), and compact in accordance with Exhibit D.

(e) Upon completion of above required work, apply, process, and compact surfacing rock in accordance with specifications in Exhibit D.

(6) 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 I.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I1 to I2	88+65	Install culvert. Utilize 20 cubic yards of 1”-0” crushed rock for culvert bedding and backfill.
	94+75	Remove old culvert/fill and construct bridge according to specifications in Exhibit H.
	101+10	Install culvert marker.
I2 to I3	10+55	Install culvert. Utilize 20 cubic yards of 1”-0” crushed rock for culvert bedding and backfill. Utilize 10 cubic yards of 24”-6” riprap rock to construct an energy dissipater.
	12+80	Install culvert. Skew culvert at approximately 15 degrees from the existing outlet. Utilize 20 cubic yards of 1”-0” crushed rock for culvert bedding and backfill.
	33+45	Install culvert. Utilize 20 cubic yards of 1”-0” crushed rock for culvert bedding and backfill.
	41+60	Install culvert. Utilize 20 cubic yards of 1”-0” crushed rock for culvert bedding and backfill.
	67+00	Install culvert. Skew culvert at approximately 15 degrees from the existing outlet. Utilize 20 cubic yards of 1”-0” crushed rock for culvert bedding and backfill.
	72+90	Install culvert. Skew culvert at approximately 15 degrees from the existing outlet. Utilize 20 cubic yards of 1”-0” crushed rock for culvert bedding and backfill. Utilize 10 cubic yards of 24”-6” riprap rock to construct an energy dissipater.
	89+90	Install culvert. Utilize 20 cubic yards of 1”-0” crushed rock for culvert bedding and backfill.
I4 to I5	5+20	Install culvert. Utilize 20 cubic yards of 1”-0” crushed rock for culvert bedding and backfill. Install culvert marker.
	16+55	Install culvert. Utilize 20 cubic yards of 1”-0” crushed rock for culvert bedding and backfill.
	20+60	Install culvert marker.
	40+75	Install culvert marker.
	44+55	Install culvert marker.
	58+75	Install culvert marker.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I4 to I5	62+85	Fill reconstruction. Utilize 24 cubic yards of 1” -0” crushed rock for culvert bedding and backfill. Utilize 46 cubic yards of 4”-0” for base rock replacement. Utilize 36 cubic yards of 24”-6” riprap rock for fill armor and energy dissipator construction.
	76+50	Install culvert marker.
	80+65	Install culvert marker.
	86+35	Install culvert marker.
I8 to I9	0+68	Begin constructing a 60 foot radius curve leaving the Nettle Creek road and junctioning with the NT60 road. Include 6.7 feet of curve widening throughout the curve length. Do not change the grades of the Nettle Creek or NT60 roads. Do not change the existing junction heading down the hill.
	2+17	Install culvert. Utilize 20 cy of 1”-0” crushed rock for bedding.
	2+50	End construction of 60 foot radius curve.
I9 to I10	16+80	Construct turnout right.
I11 to I12	0+00	Begin construction of two way junction to entrance of the Nettle Stockpile Site.
	0+59	End construction of two way junction. Blend vertical alignment of two way junction to elevation of the Nettle Stockpile site with blended grade not to exceed 7 percent.

EXHIBIT D

END-HAULING REQUIREMENTS

POINT TO POINT	STA. TO STA.	WASTE AREA LOCATION	WASTE AREA TREATMENT
4A to 4B	15+75 to 19+35	1 and 2	1, 2, and 3

End-Haul Areas General Requirements

Material shall not be intentionally side cast.

Clearing and grubbing debris shall be end-hauled.

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

Containment

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

Trees and stumps may have up to 12 inches of material directly above them. Any amount of material exceeding the containment requirements shall be removed by whatever means necessary and end-hauled to a designated waste area.

Waste Area Location

(1) Waste Area No. 1, as shown on Exhibit A, is at Station 0+00 to 3+00 on Road Segment 4C to 4D.

(2) Waste Area No. 2, as shown on Exhibit A, is at the Old Military Rock Pit.

Waste Area Treatment

(1) Use suitable excess excavated materials as designed by STATE from road segments 4A to 4B to construct designed fill between stations 0+00 and 3+00 on Road Segment 4C to 4D. Compact fill according to Exhibit D specifications.

(2) Place excess excavated materials, end haul materials, and clearing and grubbing debris in the waste area in the Old Military Rock Pit. All placed materials shall be deposited in stable locations as directed by STATE, spread evenly, compacted, and adequate drainage established. Pile woody debris on top of waste area.

(3) Mulch and seed all waste areas in accordance to Exhibit K.

EXHIBIT D

ROAD SURFACING – PROJECT NO. 1

ROAD SEGMENT: 1A to 1B				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	1A to 1B		0+00 to 13+00		
				Volume (CY) per		**Number of**		
Base Rock	4"-0" Crushed	1A to 1B	8	Station	50	Stations	13.0	650
Curve Widening	4"-0" Crushed		8			Curves		70
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	4	88
Turnaround	4"-0" Crushed		8	TA	24	TA	1	24
Junctions	4"-0" Crushed		8	Junction	24	Junctions	1	24
Traction Rock	1" -0" Crushed	5+00 to 12+00	2	Station	13	Stations	7	91
Curve Widening	1" -0" Crushed		2			Curves		20
Turnouts	1" -0" Crushed		2	Turnout	10	Turnouts	3	30
Landing Rock	6"-0" Pit Run			Landing	80	Landings	2	160
Total Rock for Road Segment:		**1A to 1B**						1,157

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 4+50		
				Volume (CY) per		**Number of**		
Base Rock	4"-0" Crushed	1C to 1D	8	Station	50	Stations	4.5	225
Curve Widening	4"-0" Crushed		8			Curves		30
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Turnaround	4"-0" Crushed		8	TA	24	TA	1	24
Junctions	4"-0" Crushed		8	Junction	24	Junctions	1	24
Landing Rock	6"-0" Pit Run			Landing	50	Landings	1	50
Total Rock for Road Segment:		**1C-1D**						375

ROAD SEGMENT: 1E to 1F				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	1E to 1F		0+00 to 20+70		
				Volume (CY) per		**Number of**		
Base Rock	4"-0" Crushed	1E to 1F	8	Station	50	Stations	20.7	1035
Traction Rock	1" -0" Crushed	10+00-19+00	2	Station	13	Stations	9	117
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	3	66
Turnouts	1" -0" Crushed		2	Turnout	10	Turnouts	2	20
Turnaround	4"-0" Crushed			TA	24	TA	1	24
Junctions	4"-0" Crushed		8	Junction	24	Junctions	1	24
Landing Rock	6"-0" Pit-run			Landing	50	Landings	1	50
Total Rock for Road Segment:		**1E to 1F**						1,336

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 2+50		
				Volume (CY) per		**Number Of**		
Base Rock	4"-0" Crushed	1G to 1H	8	Station	50	Stations	2.5	125
Junction Rock	4"-0" Crushed		8	Junction	24	Junctions	1	24
Landing Rock	6"-0" Pit-run			Landing	50	Landings	1	50
Total Rock for Road Segment:		**1G to 1H**						199

EXHIBIT D

ROAD SURFACING – PROJECT NO. 1

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 2+80		
				Volume (CY) per		**Number Of**		
Base Rock	4"-0" Crushed	1I to 1J	8	Station	50	Stations	2.8	140
Junction Rock	4"-0" Crushed		8	Junction	24	Junctions	1	24
Landing Rock	6"-0" Pit-run			Landing	50	Landings	1	50
Total Rock for Road Segment:		**1I to 1J**						214
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 26+90		
				Volume (CY) per		**Number Of**		
Base Rock	4"-0" Crushed	2A to 2B	8	Station	50	Stations	26.9	1,345
Curve Widening	4"-0" Crushed		8			Curves		40
Traction Rock	1" -0" Crushed	0+50-4+50	2	Station	13	Stations	4	52
Traction Rock	1" -0" Crushed	9+00-25+00	2	Station	13	Stations	16	208
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	6	132
Turnouts	1" -0" Crushed		2	Turnout	10	Turnouts	4	40
Junction Rock	4"-0" Crushed		8	Junction	24	Junctions	1	24
Junctions	1" -0" Crushed		2	Junction	10	Junctions	2	20
Turnaround	4"-0" Crushed		8	TA	24	TA	1	24
Landing Rock	6"-0" Pit-run			Landing	50	Landings	1	50
Total Rock for Road Segment:		**2A to 2B**						1,935
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 8+50		
				Volume (CY) per		**Number Of**		
Base Rock	4"-0" Crushed	2C to 2D	8	Station	50	Stations	8.5	425
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Turnaround	4"-0" Crushed		8	TA	24	TA	1	24
Junction Rock	4"-0" Crushed		8	Junction	24	Junctions	1	24
Landing Rock	6"-0" Pit-run			Landing	50	Landings	1	50
Total Rock for Road Segment:		**2C to 2D**						545
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+50		
				Volume (CY) per		**Number Of**		
Base Rock	4"-0" Crushed	2E to 2F	8	Station	50	Stations	1.5	75
Junction Rock	4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Landing Rock	6"-0" Pit-run	2+00		Landing	50	Landings	1	50
Total Rock for Road Segment:		**2E to 2F**						149

EXHIBIT D

ROAD SURFACING – PROJECT NO. 1

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 23+50		
				Volume (CY) per		**Number Of**		
Base Rock	4"-0" Crushed	3A to 3B	8	Station	50	Stations	23.50	1,175
Curve Widening	4"-0" Crushed		8			Curves		30
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	3	66
Turnaround	4"-0" Crushed		8	TA	24	TA	1	24
Junction Rock	4"-0" Crushed		8	Junction	40	Junctions	1	40
Junction Rock	1"-0" Crushed		2	Junction	20	Junctions	1	20
Culvert backfill	1”-0” Crushed			Culvert	20	Culverts	1	20
Total Rock for Road Segment:		**3A to 3B**						1,375
ROAD SEGMENT: 3E to 3F				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	3E to 3F		0+00 to 2+50		
				Volume (CY) per		**Number Of**		
Base Rock	4"-0" Crushed	3E to 3F	8	Station	50	Stations	2.50	125
Junctions	4"-0" Crushed		8	Junction	24	Junctions	1	24
Landing Rock	6"-0" Pit-run			Landing	80	Landings	1	80
Total Rock for Road Segment:		**3E to 3F**						229
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 26+90		
				Volume (CY) per		**Number of**		
Base Rock	4"-0" Crushed	4A to 4B	8	Station	50	Stations	26.9	1,345
Curve Widening	4"-0" Crushed		8			Curves		60
Traction Rock	1” -0” Crushed	16+00-25+00	2	Station	13	Stations	9	117
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	5	110
Turnouts	1” -0” Crushed		2	Turnout	10	Turnouts	2	20
Junction Rock	4"-0" Crushed		8	Junction	24	Junctions	1	24
Turnaround	4"-0" Crushed		8	TA	24	TA	1	24
Landing Rock	6"-0" Pit-run			Landing	80	Landings	1	80
Energy Dissipator	24”-6” Rip Rap			Dissipator	10	Dissipators	1	10
Total Rock for Road Segment:		**4A to 4B**						1,790
ROAD SEGMENT: 4C to 4D				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size And Type**	**Location**	**Depth of Rock (inches)**	4C to 4D		0+00 to 4+50		
				Volume (CY) per		**Number of**		
Base Rock	4"-0" Crushed	4C to 4D	8	station	50	Stations	4.5	225
Traction Rock	1” -0” Crushed	0+00-3+00	2	Station	13	Stations	3	39
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Turnaround	4"-0" Crushed		8	TA	24	TA	1	24
Junction Rock	4"-0" Crushed		8	Junction	24	Junctions	1	24
Junctions	1” -0” Crushed		8	Junction	10	Junctions	1	10
Landing Rock	6"-0" Pit-run			Landing	50	Landings	1	50
Total Rock for Road Segment:		**4C to 4D**						394

EXHIBIT D

ROAD SURFACING – PROJECT NOS. 1 & 3

ROAD SEGMENT: I1 to I2 (Wage Road)				**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 148+00		
				Volume (CY) per		**Number of**		
Leveling Rock	1” -0” Crushed	I1-I2						500
Surfacing	1” -0” Crushed	I1-I2	4	Station	32	Stations	148	4,736
Curve Widening	1” -0” Crushed		4					190
Turnouts	1” -0” Crushed		4	Turnout	11	Turnouts	16	176
Junctions	1” -0” Crushed		4	Junction	20	Junction	8	160
Culvert backfill	1” -0” Crushed			Culvert	20	Culverts	1	20
Surfacing on Bridge	1” -0” Crushed	94+75						73
Crushed Rock for Bridge Footing	1” -0” Crushed	94+75						10
Surfacing for Bridge Approaches	4"-0" Crushed	94+75	12					123
Riprap for Bridge Footing	24”-12” Riprap	94+75						52
Riprap Armor	36”-6” Riprap	94+75						242
Total Rock for Road Segment:		**I1 to I2**						6,282

ROAD SEGMENT: I2 to I3 (Stanley/Green Mtn.)				**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 149+50		
				Volume (CY) per		**Number of**		
Culvert backfill	1” -0” Crushed			Culvert	20	Culverts	7	140
Leveling Rock	1” -0” Crushed	I2-I3						900
Energy Dissipator	24”-6” Rip Rap			Dissipator	10	Dissipators	2	20
Total Rock for Road Segment:		**I2 to I3**						1,060

ROAD SEGMENT: I4 to I5 (Nettle Creek Rd.)				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I4 to I5		0+00 to 186+10		
				Volume (CY) per		**Number of**		
Leveling Rock	1” -0” Crushed	I4-I5						300
Surfacing	1” -0” Crushed	I4-I5	3	Station	19	Stations	186.1	3,536
Curve Widening	1” -0” Crushed		3					140
Turnouts	1” -0” Crushed		3	Turnout	11	Turnouts	15	165
Junctions	1” -0” Crushed		3	Junction	20	Junction	11	220
Culvert backfill	1” -0” Crushed			Culvert	20	Culverts	2	40
Culvert bedding	1” -0” Crushed	62+85		Culvert	24	Culverts	1	24
Fill Surface Rock	4"-0" Crushed	62+85						46
Energy Dissipator	24”-6” Rip Rap	62+85		Dissipator	10	Dissipators	1	10
Fill Armor	24”-6” Rip Rap	62+85						26
Total Rock for Road Segment:		**I4 to I5**						4,507

EXHIBIT D

ROAD SURFACING – PROJECT NO. 1

ROAD SEGMENT: I6 to I7 (Alices Restaurant)				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I6 to I7 **Volume (CY) per**		0+00 to 122+20 **Number of**		
Leveling Rock	1" -0" Crushed	I6-I7						100
Surfacing	1" -0" Crushed	I6-I7	3	Station	19	Stations	122.2	2,322
Curve Widening	1" -0" Crushed		3					110
Turnouts	1" -0" Crushed		3	Turnout	11	Turnouts	21	231
Junctions	1" -0" Crushed		3	Junction	20	Junction	5	100
Total Rock for Road Segment:		**I6 to I7**						2,863
ROAD SEGMENT: I8 to I9				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I8 to I9 **Volume (CY) per**		0+00 to 2+50 **Number of**		
Base Course	4"-0" crushed	0+68 – 2+50	10	Station	63	Stations	1.82	114
Curve Widening	4"-0" crushed		10	Curve	24	Curves	1	24
Surface Course	1"-0" crushed	0+68 – 2+50	4	Station	25	Stations	1.82	46
Curve Widening	1"-0" crushed		4	Curve	10	Curves	1	10
Bedding Rock	1"-0" crushed						20	20
Total Rock for Road Segment:		**I8 to I9**						214
ROAD SEGMENT: I9 to I10				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I9 to I10 **Volume (CY) per**		2+50 to 18+76 **Number of**		
Base Course	4"-0" crushed		4	Station	25	Stations	16.26	407
Curve Widening	4"-0" crushed		4	Curve	25	Curves	5	125
Turnouts	4"-0" crushed		4	Turnout	11	Turnouts	2	22
Turnouts	4"-0" crushed		8	Turnout	22	Turnouts	1	22
Turnaround	4"-0" crushed		4	TA	7	TA	1	7
Surface Course	1"-0" crushed		4	Station	25	Stations	16.26	407
Curve Widening	1"-0" crushed		4	Curve	25	Curves	5	125
Turnouts	1"-0" crushed		4	Turnout	11	Turnouts	3	33
Turnaround	1"-0" crushed		4	TA	7	TA	1	7
Total Rock for Road Segment:		**I9 to I10**						1154
ROAD SEGMENT: I11 to I12				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I11 to I12 **Volume (CY) per**		0+00 to 0+59 **Number Of**		
Base Course	4"-0" crushed		8	Station	50	Stations	0.59	30
Surface Course	1"-0" crushed		4	Station	25	Stations	0.59	15
Tapers	4"-0" crushed		8	Taper	12	Tapers	2	24
Tapers	1"-0" crushed		4	Taper	6	Tapers	2	12
Total Rock for Road Segment:		**I11 to I12**						80

EXHIBIT D

ROAD SURFACING – PROJECT NO. 1

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 5+86		
				Volume (CY) per		**Number of**		
Base Course	4"-0" crushed	0+80 – 5+86	10	Station	63	Stations	5.06	319
Surface Course	1”-0” crushed	0+80 – 5+86	4	Station	25	Stations	5.06	127
Total Rock for Road Segment:		**A to B**						446

Total Rock for Project Nos. 1 and 3

36"-12"	**24"-12"**	**24”-6”**	**6”-0”**	**4"-0"**	**1"-0"**	**TOTAL**
242	52	66	720	9,407	15,819	26,306

STOCKPILE SURFACING FOR PROJECT NO. 2

ROAD SEGMENT: Nettle Stockpile Site				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	Stockpile Site		n/a		
				Volume (CY) per		**Number Of**		
Base Course	6”-0” pit-run		8	Station	50	Stations	17.5	875
Total Rock for Stockpile Site:		**Nettle Stockpile Site**						875

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 600 cubic yards per 8-hour shift, unless otherwise approved by STATE. A penalty of $10 for each 10 cubic yards which are not delivered during a single shift shall be billed, and payment shall be required prior to final acceptance of the project by STATE.

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

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

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

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

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All road segments that require rock surfacing.	1, 3, or 5
Nettle Stockpile Site Construction	1 or 5

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

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All road segments	1, 2 or 3, and 4
Nettle Stockpile Site Construction	1 or 5

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

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

EXHIBIT D

COMPACTION EQUIPMENT OPTIONS

(1) Vibratory Rollers. The drum shall have a smooth surface, a diameter not less than 48 inches, a width not less than 58 inches, and a turning radius of 15 feet or less. Vibration frequency shall be regulated in steps to 1400, 1500, and 1600 VPM, corresponding to engine speeds of 1575, 1690, and 1800 RPM. The centrifugal force developed shall be 7 tons at 1600 VPM. It shall be activated by a power unit of not less than 25 horsepower. The vibratory roller shall be self-propelled and operated at speeds ranging from 0.9 mile to 1.8 miles per hour, as directed by STATE.

(2) Rubber-Tired Skidders. A rubber-tired skidder weighing a minimum of 20,000 pounds shall be operated over the fill layers so that the entire layered surface comes in contact with the tires. Skidders with oversized tires (high flotation) are not acceptable for compaction.

(3) Tampingfoot Compactors. Tampingfoot or sheepsfoot compactors shall exert a minimum pressure of 250 pounds per square inch on the ground area in contact with the tamping feet. The compactor shall cover a minimum width of 60 inches per pass and weigh a minimum of 16,000 pounds.

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

(5) Vibratory Grid Compactors. The roller shall have a grid surface and have an operating weight of 32,000 pounds or more. The rock shall be worked with a grader weighing at least 20,000 pounds during the grid rolling process. All rock shall come in contact with the vibratory grid compactor.

EXHIBIT E

CULVERT SPECIFICATIONS

All culvert materials shall be furnished and installed by PURCHASER, unless otherwise specified in the Contract. All 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. Culverts shall be constructed of double-walled polyethylene and 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.

All culverts 24 inches in diameter or greater shall have 1:1 beveled inlets.

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. The culvert trench shall be excavated wide enough 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.

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 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.

EXHIBIT E

CULVERT SPECIFICATIONS

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

The ends of each culvert shall be free of logs and debris which would restrict the free flow of water. The intake end of relief culverts shall be provided with a sediment catching basin 3 feet in diameter at the bottom. The outlet end of any culvert which would allow water to erode embankment soil shall be provided with a half round or other approved slope protection device. Construct lead-off ditches away from culvert outlets where the slope gradients restrict the free flow of water.

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

The intake ends of culverts in fills less than 3 feet shall be marked by driving white fiberglass posts within 6 inches of the downgrade side. Posts shall be a minimum of 6 feet long and 2 ½ inches wide, with the spade driven 2 feet into the ground.

Tamping is required.

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

EXHIBIT E

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
1	18	40	CPP	1A to 1B	1+20
2	18	30	CPP	1A to 1B	4+20
3	18	30	CPP	1E to 1F	8+70
4	18	40	CPP	1E to 1F	15+75
5	18	40	CPP	2A to 2B	16+20
6	18	40	CPP	2A to 2B	19+30
7	18	40	CPP	3A to 3B	0+00 (across Military Road)
8	18	34	CPP	3A to 3B	2+50
9	18	30	CPP	3A to 3B	8+75
10	18	30	CPP	3A to 3B	15+70
11	18	30	CPP	4A to 4B	7+50
12	18	34	CPP	4A to 4B	17+70
13	18	40	CPP	4A to 4B	21+50
14	18	30	CPP	4C to 4D	2+90
15	18	36	CPP	I1 to I2	88+65
16	18	30	CPP	I2 to I3	10+55
17	18	30	CPP	I2 to I3	12+80
18	18	30	CPP	I2 to I3	33+45
19	18	30	CPP	I2 to I3	41+60
20	18	40	CPP	I2 to I3	67+00
21	18	36	CPP	I2 to I3	72+90
22	18	32	CPP	I2 to I3	89+80
23	18	40	CPP	I4 to I5	5+20
24	18	40	CPP	I4 to I5	16+55
25	24	42	CPP	I4 to I5	62+85
26	18	38	CPP	I8 to I9	2+17
27	18	50	CPP	I11 to I12	0+10

EXHIBIT F

ROCK PIT DEVELOPMENT AND USE

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

(a) Location of benches and roads to benches.
(b) Location of road segment A to B in relation to projected quarry floor.
(c) Disposal site for woody debris, overburden and reject material.
(d) Time lines for rock quarry use.
(e) Erosion Control measures.

(2) PURCHASER shall schedule and coordinate quarry and stockpile usage with other existing or planned STATE contracts.

(3) Pit site shall be left in a condition free from overburden and debris. Access roads to the pit, and the pit floor, shall be cleared at the termination of use. Overburden shall be removed for a distance of 20 feet beyond the developed rock source. Trees removed for Quarry development will be felled, bucked, and decked at a site acceptable to the STATE adjacent to the quarry.

(4) Controlled blasting techniques shall be utilized for any blasting operations, and shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain as much material as possible within the quarry development area. PURCHASER shall maintain a comprehensive blasting log that contains all pertinent data for all blasting operations. The blasting log shall be submitted to the STATE after the completion of all blasting activity. The blasting log is intended for STATE record keeping purposes only.

(5) PURCHASER shall conduct the operation relative to the disposal of waste material in such manner that silt, rock, debris, dirt, or clay shall not be washed, conveyed, or otherwise deposited in any stream.

(6) Clear and grub the rock source, quarry floor, stockpile site and waste areas, as shown on Exhibit F. All woody debris, including stumps and slash shall be piled and disposed of by burning, as directed by STATE. PURCHASER, shall obtain a FPA Burn Permit prior to debris disposal and provide all necessary resources for burning operations.

(7) Develop a quarry floor and the rock source. Usable overburden materials shall be hauled and used for fill to construct the Nettle Stockpile Site. Surplus and waste overburden materials will be hauled or pushed to the designated waste area shown on Exhibit F and windrowed for future quarry rehabilitation, as directed by STATE.

(8) Construct the Nettle Stockpile Site, as shown on Exhibit F. The stockpile site shall be surfaced with 6”-0” pit run rock a minimum of 8 inches deep and shall be sloped for drainage. The finished dimensions of the stockpile site shall be 175 feet x 120 feet. STATE will mark each corner and stake the finished stockpile floor elevation(s).

(9) PURCHASER, shall provide and maintain a 500 gallon fire truck, which meets FPA requirements, during all phases of quarry development activity.

(10) 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.

EXHIBIT F

ROCK PIT DEVELOPMENT AND USE

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

(12) Oversized material that is produced or encountered during development shall be broken down and utilized for crushing or for required riprap rock as directed by the STATE.

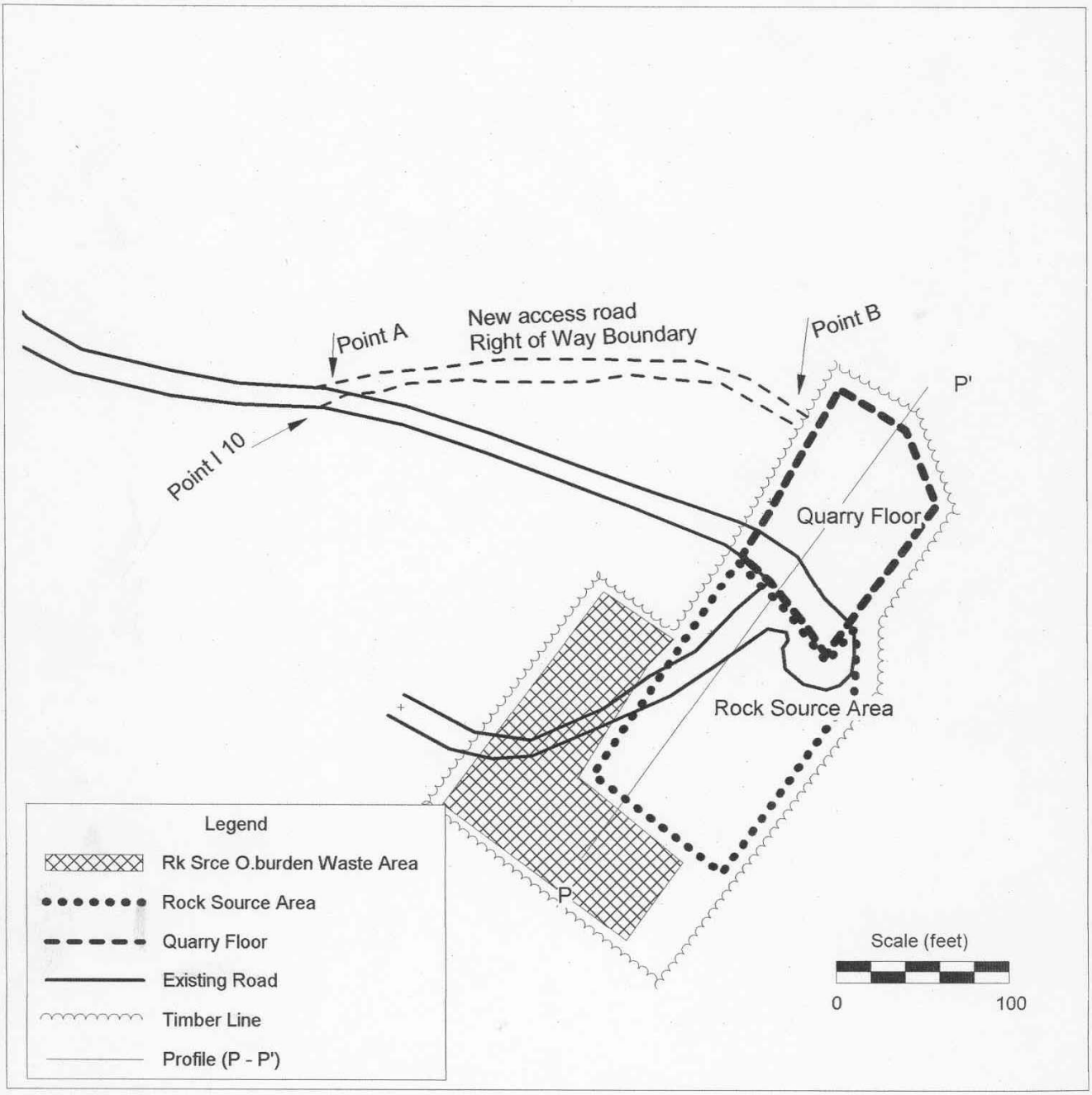
(13) Proper winterization and storm-water control measures such as water barring, drainage, utilization of filter bales, mulching and/or blocking access shall be utilized and such measures maintained to protect the watershed and project work, as directed by STATE.

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

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

(16) The quarry floor shall be developed to provide for drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained. Quarry access roads shall be cleared and blocked upon completion of quarry use as directed by STATE.

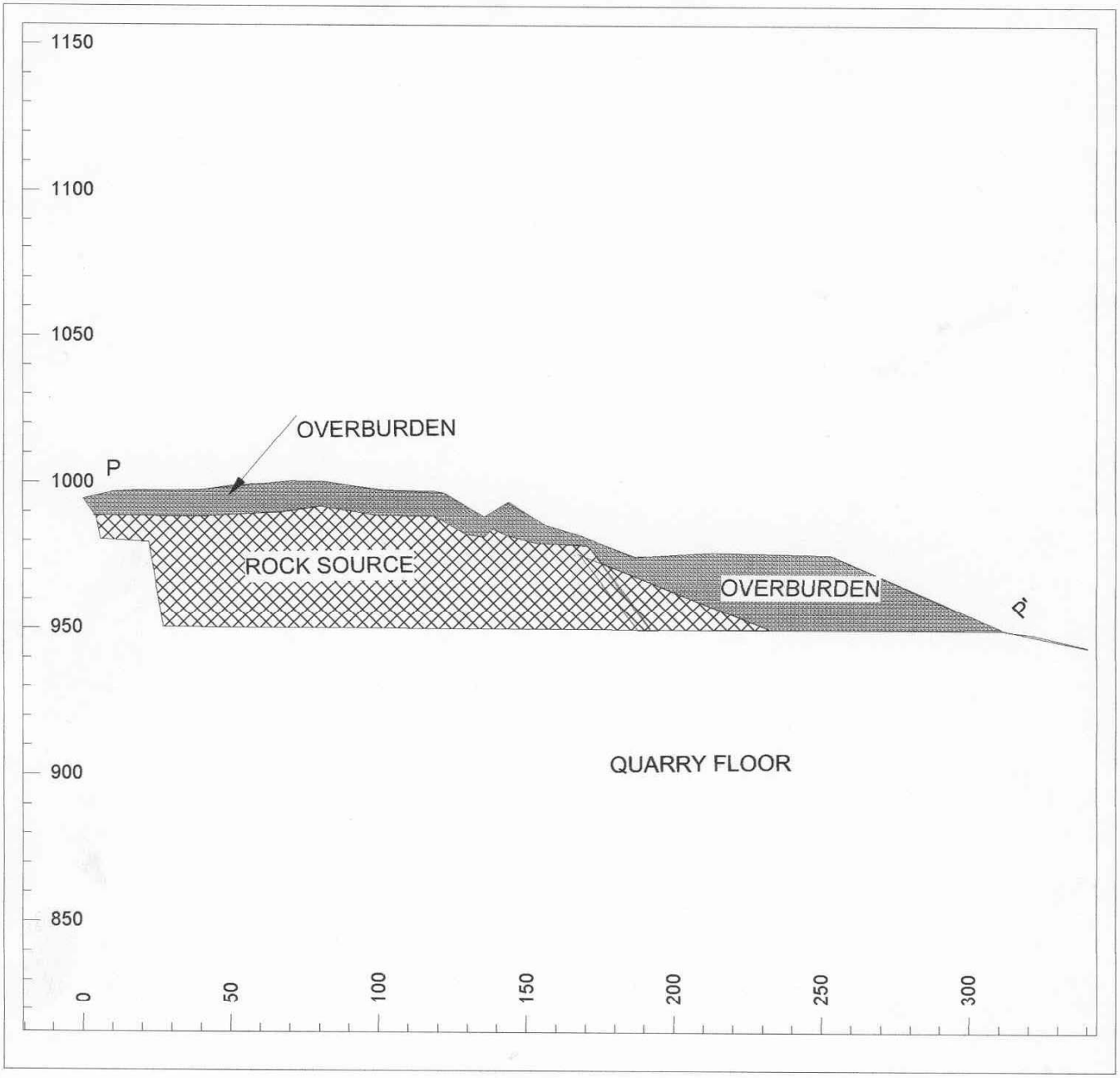
EXHIBIT "F"
ROCK PIT DEVELOPMENT AND USE



Oregon Department of Forestry
Astoria District
Engineering Unit

Nettle Quarry
NE1/4, Sec 29, T5N, R6W
Clatsop County, Oregon

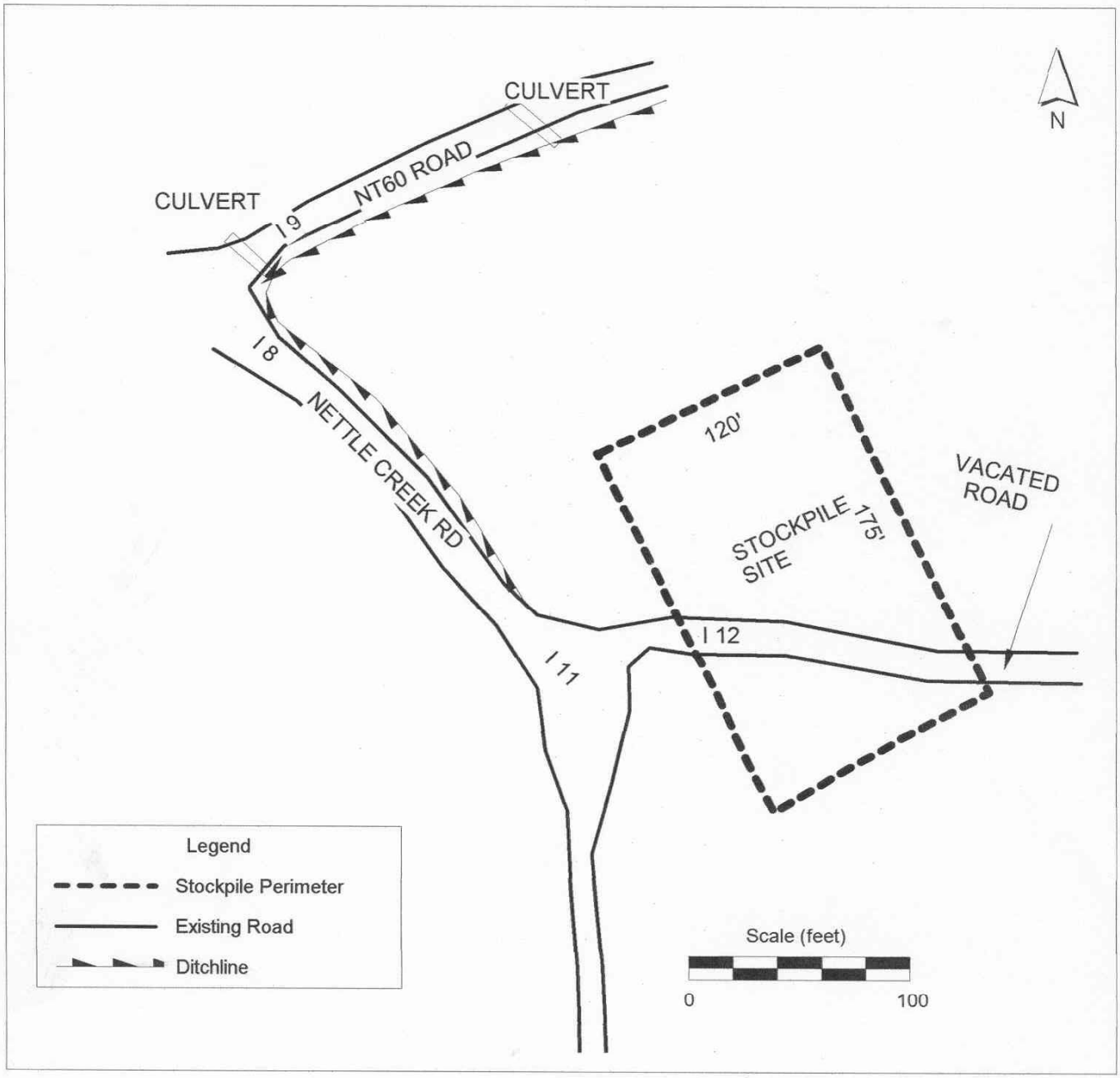
EXHIBIT "F"
ROCK PIT DEVELOPMENT AND USE



Oregon Department of Forestry
Astoria District
Engineering Unit

Nettle Quarry
NE1/4, Section 29, T5N, R6W
Clatsop County, Oregon

EXHIBIT "F"
ROCK PIT DEVELOPMENT AND USE



Oregon Department of Forestry
Astoria District
Engineering Unit

Nettle Stockpile Site
N1/2, Section 29, T5N, R6W
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 1/4" sieve, 40% to 60% shall pass the No. 10 sieve.

For 1"-0"	Passing	1½ " sieve	100%
	Passing	1" sieve	90-100%
	Passing	1/2" 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.

For 4"-0"	Passing	5" sieve	100%
	Passing	4” sieve	90-100%
	Passing	2" sieve	55-75%
	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 gradings shall be as set forth in AASHTO T 27.

EXHIBIT G

PIT-RUN AND RIPRAP ROCK SPECIFICATIONS

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

Control of gradation shall be by visual inspection by STATE.

For 24”-6” Riprap — A minimum of 50 percent or more of the material shall measure at least 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.

For 24"-12" 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.

For 36”-12” Riprap — A minimum of 50 percent or more of the material shall measure at least 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

BRIDGE CONSTRUCTION SPECIFICATIONS

BRIDGE DESIGN. PURCHASER shall design and construct one shop assembled "U80, 80 ton GVW", prefabricated steel bridge superstructure, complete with a W-beam guardrail system. The bridge shall have a span long enough to preserve a minimum natural stream channel width of 16 feet under the bridge. The bridge shall be delivered in 2 modules with bolt-up connections. The road and bridge location(s), alignment and elevations are shown on Page 3.

36"-12" riprap rock armor shall be used to protect stream banks, retain road approach embankments and prevent scour of the bridge and roadway. The bridge superstructure shall be designed in accordance with AASHTO Standard Specifications for Highway Bridges, 17th Edition – 2002. Backwalls shall be placed and have a positive connection joining the backwalls to the modular bridge sections, to retain roadway embankment(s). Backwalls shall be made of galvanized steel.

The bridge deck running surface width shall be 16 feet between the guardrails. The steel decking shall be galvanized corrugated steel and shall be placed perpendicular to the direction of travel. The deck shall have a positive connection joining the deck panels to the modular bridge sections. A weathering steel side dam shall be furnished and extended at least 6 inches above the top of the deck. A lift of 1"-0"crushed rock shall be applied as a running surface. The rock shall be applied to a depth of 4 inches above the top of the highest corrugation. Compaction of the rock shall be with a roller without using vibrations from the drum.

All structural steel shall be of domestic (USA) manufacture and shall conform to the requirements of ASTM Specification A588 Weathering Steel with exterior surfaces of girders being blast cleaned prior to shipment to assure uniform weathering.

Any spread footings used for bridge construction shall be constructed of reinforced Class 4,000 concrete and pre-cast off site. Reinforcing steel shall conform to ASTM A 706, No. 6 Grade 40 minimum and utilized in accordance with industry standards. The design shall include a graded footing foundation constructed with a 24"-12" riprap rock base and a 1"-0" crushed rock leveling course.

PURCHASER is responsible for performing all necessary Site Investigation(s). Site Investigation(s) shall be made prior to any project design and shall include, but not be limited to:

(1) Sub-surface exploration.

(2) Determination of the depth and orientation of stream bedload, erodible rock (soft, decomposed or fractured) and scour resistant bedrock foundation materials.

(3) Determination of the scour potential and bearing capacity of bedrock foundation materials.

BRIDGE PLANS. PURCHASER shall submit bridge plans to STATE for approval, prior to commencement of any work on the project. The plans shall include design calculations, scaled drawings, elevations and section drawings for the structure, including sizes and dimensions of bridge components. The plans shall also include a description of dewatering methods, special tools, equipment, the required lifting capacity and the general process to install and connect the bridge components. Plans must contain all information necessary for the administration and inspection of the project by STATE. The plans shall be stamped and signed by a professional engineer licensed in Oregon.

EXHIBIT H

BRIDGE CONSTRUCTION SPECIFICATIONS

BRIDGE CONSTRUCTION

(1) Work shall be conducted only during periods of low water flows and between July 1 and August 31, annually. STATE shall be notified a minimum of 48 hours prior to beginning work. STATE has prepared the required FPA "Written Plan" for this work. Oil Spill response materials shall be on site before the work begins.

(2) Remove existing embankment and culvert to accommodate the work area for bridge construction. Existing embankment(s) shall be excavated to the natural stream course level. All woody debris encountered during excavation shall be removed. Excavated debris and materials unsuitable for embankment construction shall be end hauled to the designated waste area, as shown on Exhibit A. The existing, removed culvert shall be hauled to an approved refuse site off of STATE land.

(3) Waste materials shall be sloped for drainage and stability, as directed by STATE. Prior to hauling waste materials, the waste area shall be cleared of large woody debris. The debris shall be piled adjacent to the waste area. All exposed excavation areas and waste materials shall be mulched with straw. Applied mulch shall be a minimum of 2 inches deep and provide a uniform cover. Large woody debris shall be redistributed over the waste area after all waste materials have been hauled.

(4) Construct the bridge and the bridge approach embankments in accordance with approved bridge plans. Bridge approach embankments shall consist of select materials, hauled in where necessary, and shall be thoroughly compacted in accordance with Exhibit D.

(5) Utilize 242 cubic yards of 36"-12" riprap rock for road approach embankment protection and for upstream bank protection. Apply riprap as shown on page 3 and 4, as directed by STATE. Riprap rock shall be placed and tamped at a 1½:1 slope, beginning at the toe(s).

(6) A minimum 2 cubic-yard, track-mounted large class excavator shall be used for all excavation, stream channel development, and riprap placement.

(7) Upon completion of the above required work, apply, process, and compact surfacing rock in accordance with Exhibit D. Utilize 123 cubic yards of 4"-0" crushed rock for bridge approach surfacing base restoration and 73 cubic yards of 1"-0" crushed rock for deck surfacing and road surfacing, to provide for a smooth and uniform transition from the existing road surfacing, restored road surfacing and the bridge deck/running surface. Compact crushed rock in accordance with Exhibit D, except for the crushed rock on the bridge deck. **Do not use vibrations to compact the rock on the deck.**

(8) PURCHASER is responsible for scheduling, supervision and certification of the bridge construction work, including, but not limited to:

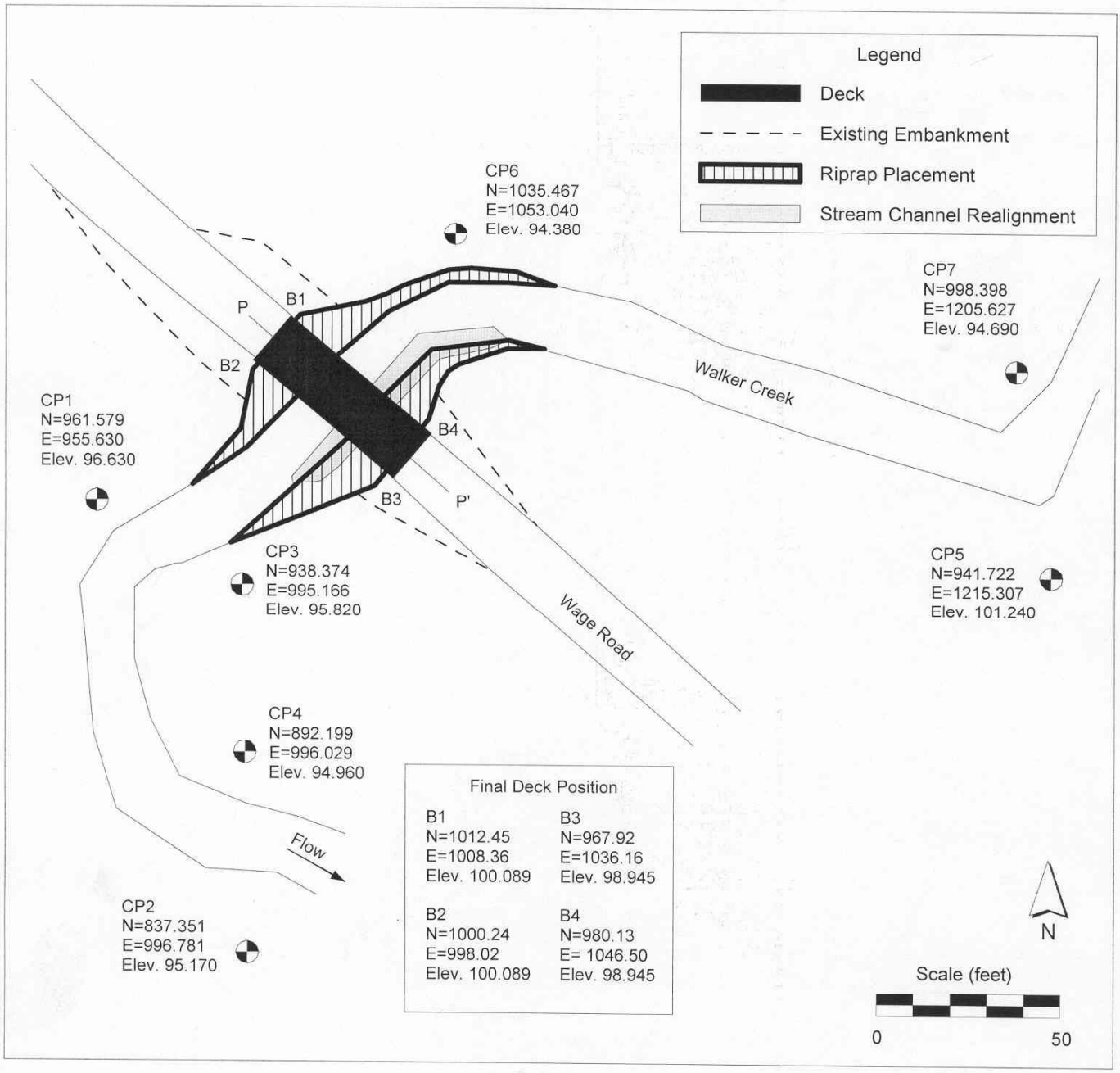
(a) Coordination of the site investigation(s), bridge design and bridge construction work.

(b) Performing any necessary field surveys and staking.

(c) Scheduling and supervision of construction work.

(d) Upon completion of the project, the engineer shall issue written certification that construction work was completed in accordance with the approved Bridge Plans.

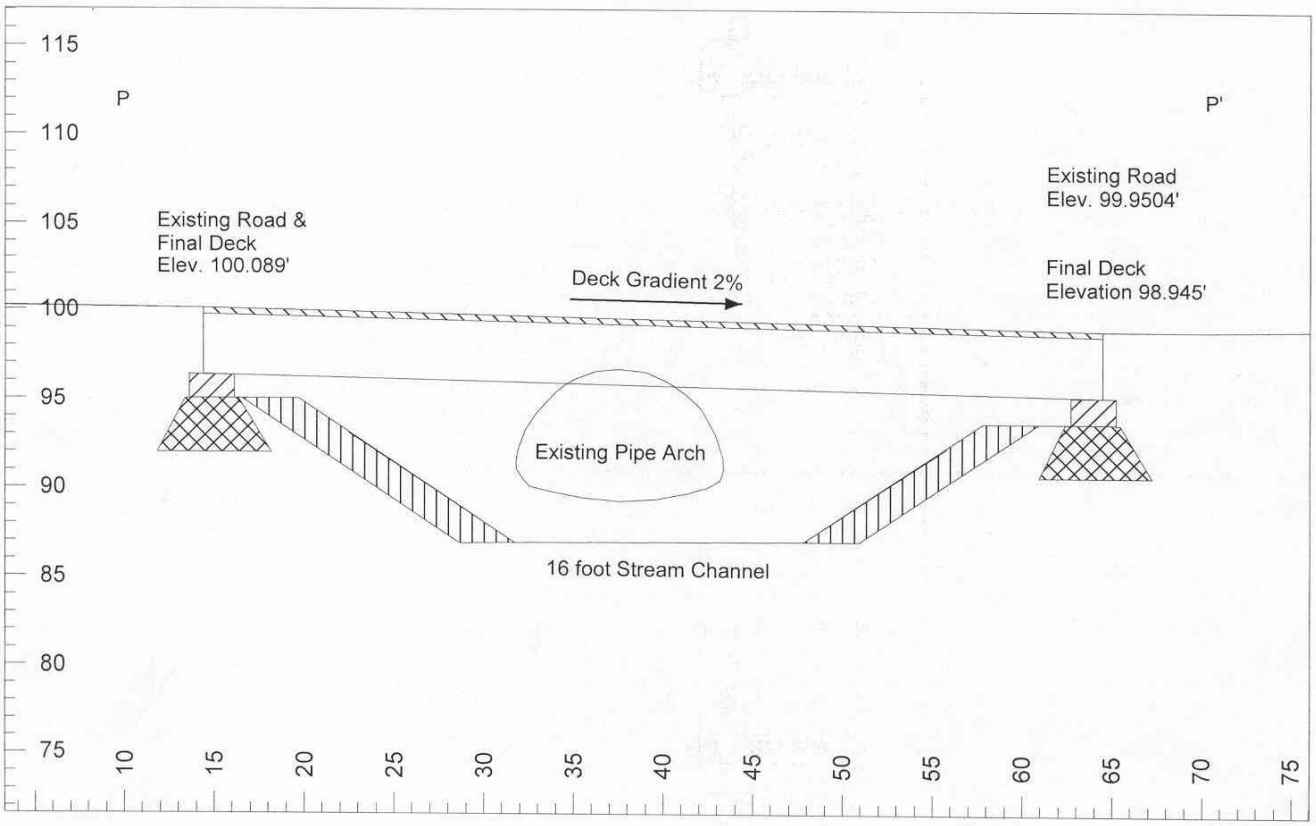
EXHIBIT "H"
BRIDGE CONSTRUCTION SPECIFICATIONS



Oregon Department of Forestry
Astoria District
Engineering Unit

Wage Road Bridge Site
Point I1 to Point I2, Station 94+75
Walker Creek
NW1/4, Section 20, T5N, R6W, W. M.
Clatsop County, Oregon

EXHIBIT "H"
BRIDGE CONSTRUCTION SPECIFICATIONS



Legend

- Crushed Rock Running Surface
- Riprap Placement
- Precast Footing
- Graded Footing Foundation

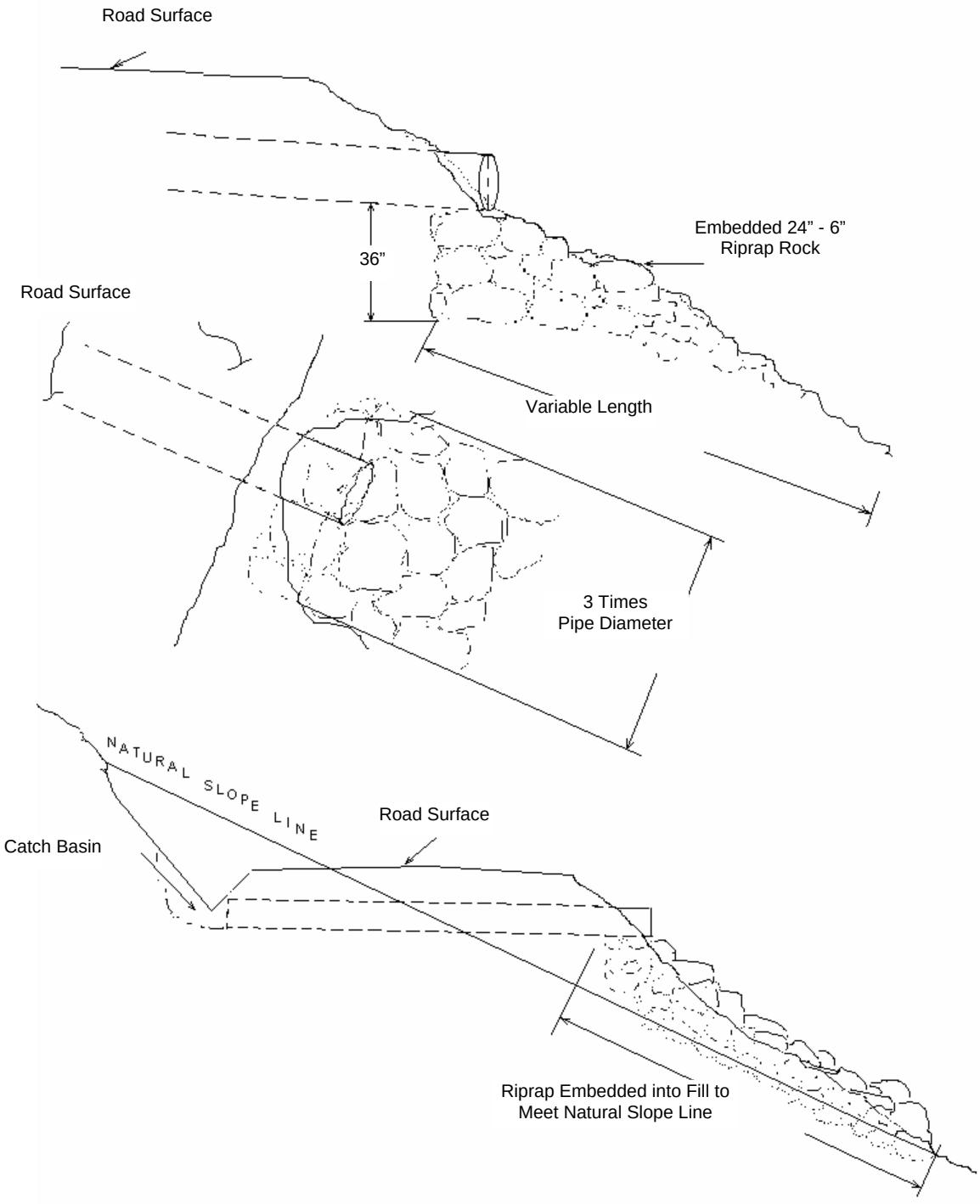
Oregon Department of Forestry
Astoria District
Engineering Unit

Wage Road Bridge Site
Point I1 to Point I2, Station 94+75
Walker Creek
NW1/4, Section 20, T5N, R6W, W. M.
Clatsop County, Oregon

State Timber Sale Contract
No. 341-05-82
Military Green

EXHIBIT I

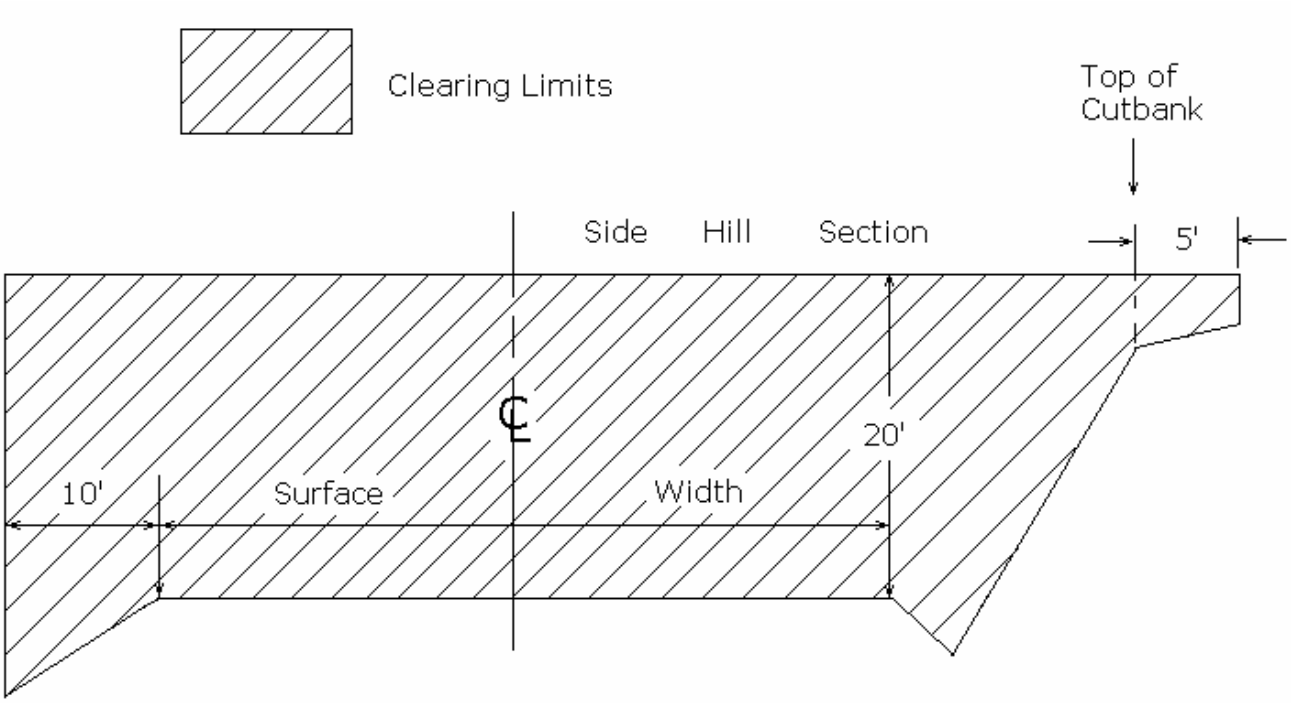
TYPICAL EMBEDDED ENERGY DISSIPATOR



State Timber Sale Contract
No. 341-05-82
Military Green

EXHIBIT J

LOGGING ROAD BRUSHING SPECIFICATIONS



REQUIREMENTS

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

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

Debris resulting from the brushing operation shall be removed from the roadway, cutslope, ditches, and water courses and may be scattered downslope from the road or placed in other stable locations. Large debris, 6inches 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.

EXHIBIT K

GRASS SEEDING AND MULCHING

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

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

Application Methods for Grass Seed

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

Application Rates for Seed

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

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

Seeding and Mulching

Apply grass seed and straw mulch to all waste areas, and all bare soils resulting from Project No. 3.

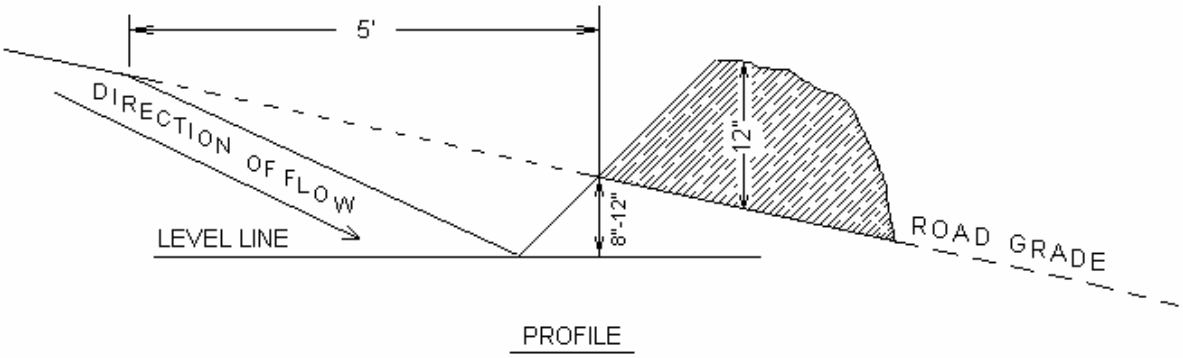
Apply straw mulch to all bare soils resulting from Project No. 5.

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

State Timber Sale Contract
No. 341-05-82
Military Green

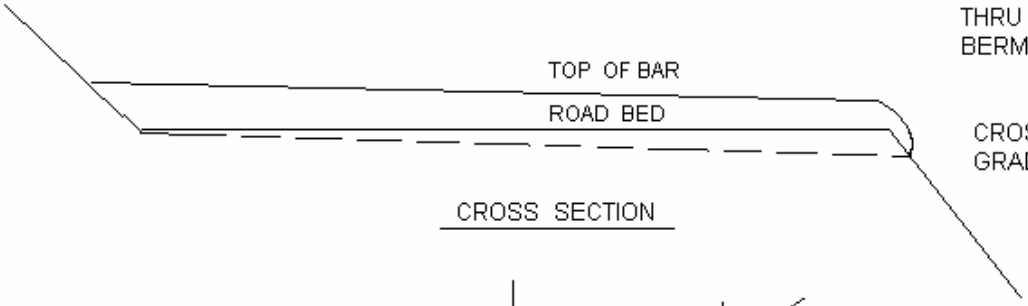
EXHIBIT L

WATERBAR SPECIFICATIONS



PROFILE

CONSTRUCT DITCH THRU ANY EXISTING BERM.

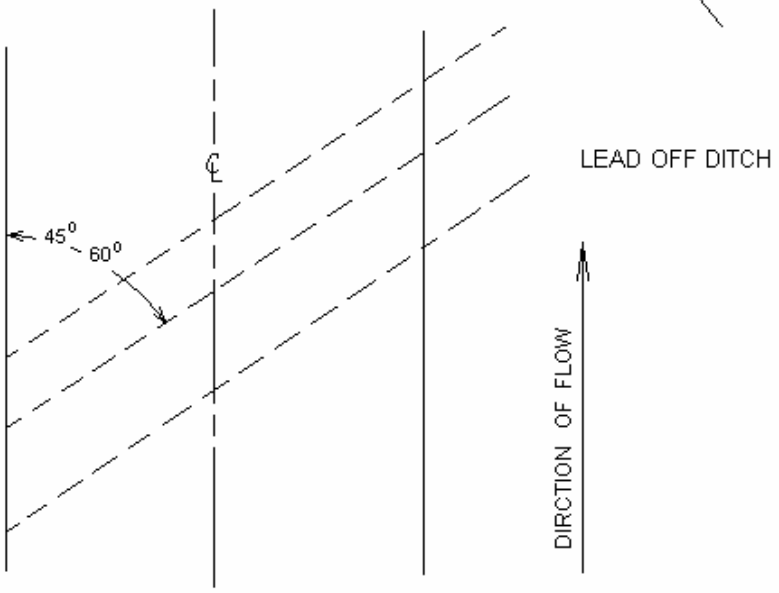


CROSS DRAINAGE GRADIENT MINIMUM 3%

CROSS SECTION

SPACING OF WATERBARS:

AS DIRECTED BY STATE.



PLAN VIEW

WATERBAR SPECIFICATIONS
FOR CROSS DITCHING #298

EXHIBIT M

STREAM ENHANCEMENT INSTRUCTIONS

GENERAL INSTRUCTIONS

(a) Stream enhancement structures will be created between enhancement points SE1 and SE3 as shown on Exhibit A.

(b) Work shall be conducted only during periods of low water flows and between July 1 and August 31, annually unless otherwise approved in writing by STATE. STATE shall be notified a minimum of 48 hours prior to beginning work.

(c) Stream crossings will be limited to those necessary to access the sites and whenever possible equipment will operate from the banks to minimize stream disturbance. Turbidity shall not exceed 10% above natural stream turbidities as a result of work. The turbidity may be exceeded for a limited duration (per OAR 340-41), provided all practicable erosion control measures have been implemented. Oil spill response materials will be on site before work begins.

(d) Trees required for stream enhancement work shall be obtained from locations on the Buster Creek Road and adjacent spurs, or at other locations acceptable to STATE. Trees are marked with an orange painted "S".

(e) Trees shall be uprooted, cut to length, and delivered to the project site, as directed by STATE. Trees will be transported by log truck, or other means so that roads are not damaged (i.e. trees cannot be dragged on road surface).

(f) Access routes will be selected to minimize disturbance to the riparian area, and equipment transporting trees to the sites will take care to avoid damage to existing in-stream logs, riparian or other trees**.** Trees that are cleared to gain access will be placed in the creek or used to block access trails.

(g) A minimum 1½ cubic-yard, track-mounted excavator (or a log loader) shall be used for all log placement.

(h) All access trails will be blocked, water barred, de-compacted, and mulched upon completion, as directed by STATE.

SPECIFIC INSTRUCTIONS

Location	Work Description
Site No. 1	Materials: Three 45-foot logs with attached root wads, three 45-foot logs without root wads, and three tops. Place root wad end of three logs into stream channel with the small end onto the banks. Place logs and tops in and around the trees with root wads as directed by State.
Site No. 2	Materials: Two 45-foot logs with attached root wads, two 45-foot logs without root wads, and two tops. Place root wad end of three logs into stream channel with the small end onto the banks. Place logs and tops in and around the trees with root wads as directed by State.
Site No. 3	Materials: Three 45-foot logs with attached root wads, three 45-foot logs without root wads, and three tops. Place root wad end of three logs into stream channel with the small end onto the banks. Place logs and tops in and around the trees with root wads as directed by State.

EXHIBIT N

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

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 N

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	42	$ 3,990.00
Log Loader	$ 70.00 / hour	57	$ 3,990.00

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 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

FOREST PRACTICES ACT "WRITTEN PLAN"
For Project No. 3, Wage Road Bridge Construction
Military Green Timber Sale

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

Protected Resources: Walker Creek, a large Type F fisheries resource, located in the NW¼ of Section 20, T5N, R6W, W.M., Clatsop County, Oregon. A written plan is required for any activities within 100 feet of any Type F streams.

Situation: A large pipe arch culvert stream crossing located on Wage Road is deteriorating. 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. Current FPA guidelines contained in the Draft Oregon Road/Stream Crossing Restoration Guide: Spring 1999 were used as minimum standards for developing alternative stream crossing solutions.

Drainage Area and Bridge Design: The stream crossing structure will be a modular steel bridge which provides for a 16-foot wide waterway under the bridge.

Existing Stream Gradient:	0.3%
Size of Watershed:	2,060 acres
Minimum Stream Width:	16 feet
Stream Bed Material:	Silt, Sand, Gravel
50-Year Peak Flow/Mi.^{2} :	200 cfs
50-Year Peak Flow:	644 cfs
Flow Capacity of Structure:	644 cfs
	150 ft^2 wetted cross sectional area
	34 ft wetted perimeter (w/ 3 ft clearance)

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 August 31, annually.
- Minimum 2 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.
- De-watering of the construction site during removal of the pipe arch and development of the 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.
- A combination of steel bridge components and riprap rock will be used to construct backwalls and embankment armor to protect the road embankments and stream banks.
- Use of pre cast concrete footing components will be preventing contamination of water from mixing and pouring concrete on site.
- Oil Spill response materials shall be on site before the work begins.

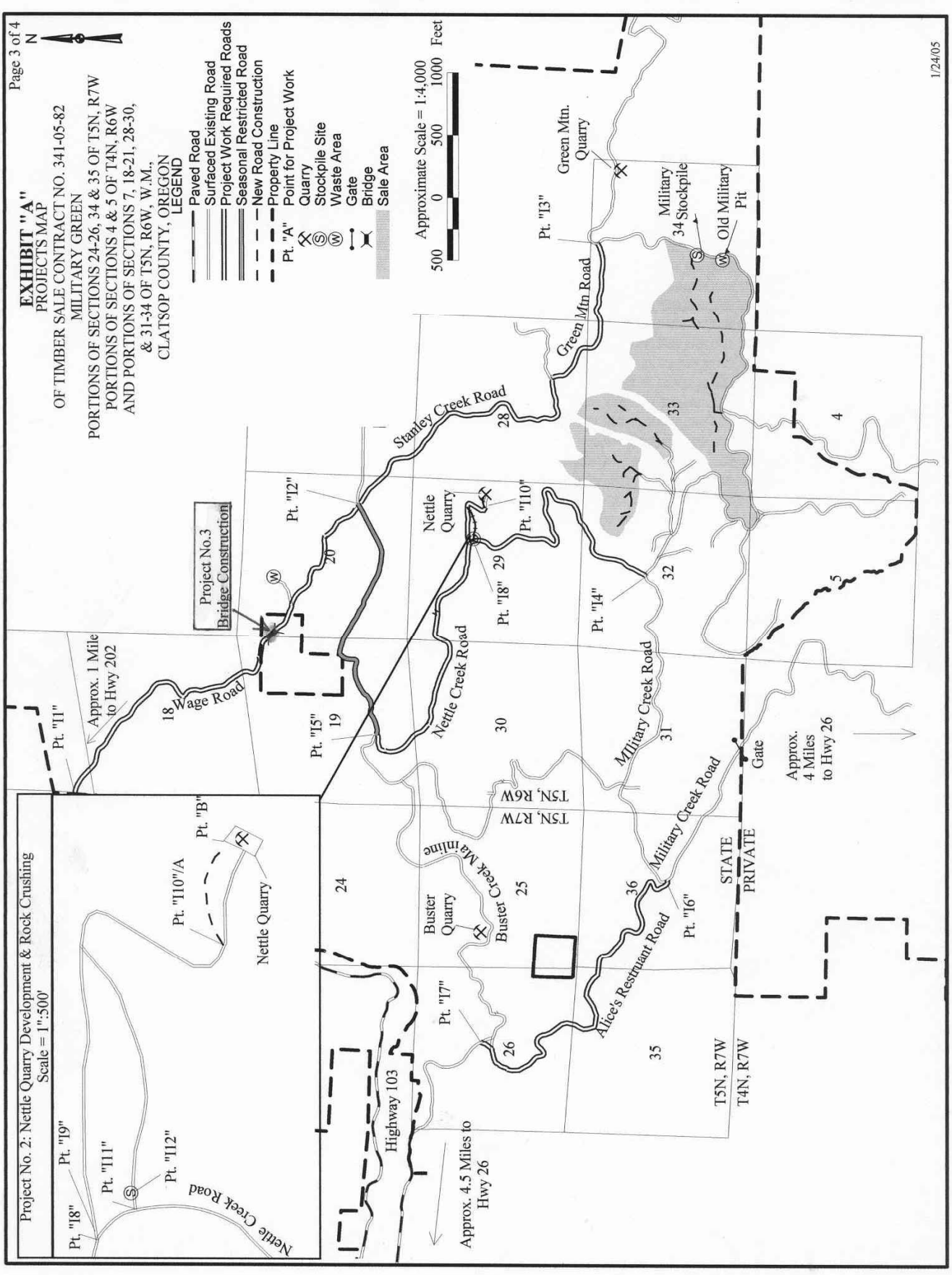
FOREST PRACTICES ACT "WRITTEN PLAN"
For Project No. 3, Wage Road Bridge Construction
Military Green Timber Sale

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

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

State Timber Sale Contract
No. 341-05-82
Military Green



State Timber Sale Contract
No. 341-05-82
Military Green

FOREST PRACTICES ACT "WRITTEN PLAN"
For Harvesting
Military Green Timber Sale

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

Protected Resources:
The following stream is located in Section 28 of T5N, R6W, W.M., Clatsop County, Oregon.

Area 7 Stanley Creek, is designated as a Medium, Type F stream 5 to 10 feet wide, where it runs north and away from the northeastern sale boundary of Area 7.

Specific Site Characteristics:
Stanley Creek (Area 7): The streambed is approximately 6 to 10 feet wide where it runs north of Area 7. There is a waterfall at this point posing a barrier to fish passage. The stream beyond the waterfall has a relatively low stream gradient. A narrow flood plain accompanies the streams active channel. The stream banks are relatively gentle and riparian vegetation is mostly red alder, shrubs, and conifers.

Tree and Vegetation Retention:
FPA defines the RMA width of a Medium Type F stream as 70 feet. The timber sale boundary for Area 1 is posted at least 100 feet from the Type F stream. There is also a large green tree retention area between Area 7 and Stanley Creek. There are several Type N streams that run adjacent to the sale area that are tributaries to Stanley Creek. These Type N streams have 50 to 100 foot wide posted stream buffers.

Practices:
Along the Type F stream mentioned above, as well as any live streams within the timber sale, the following practices are required, under the timber sale contract, to protect the streams and streamside areas:

- No trees will be felled within stream buffers (RMA's).
- 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 nor within 50 feet of any stream.
- 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.
- The cable lines must be pulled out of the RMA's when changing corridors.

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

Submitted: _____ Date: _____
Purchaser/Operator Contract Representative

Attachments: Logging Plan Map

State Timber Sale Contract
No. 341-05-82
Military Green