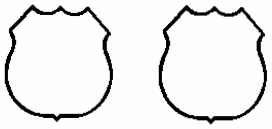
PART III: EXHIBITS

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.: 341-09-24

(2) Sale Name: Progeny Split

(3) Contract Expiration Date: October 31, 2010

Project Completion Dates: Project Nos. 1, 2, and 3 by October 31, 2009 and Project Nos. 4, 5, and 6 by October 31, 2010.

(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.

Explanation of Item No. (from Page 1)

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

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

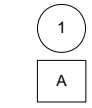
(7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.

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

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

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

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



Cable landing, with numbers for sequence.

Tractor landing with alphabetical sequence.

_ _ _ _ _ Approximate setting boundary.

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

Tractor yarding roads.

X Temporary stream crossings.

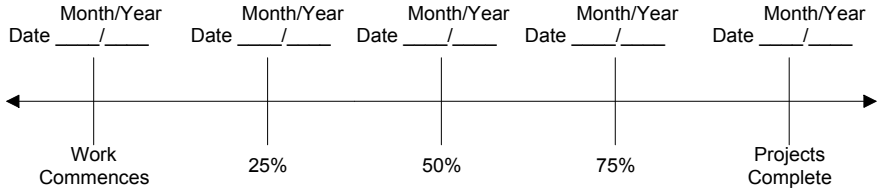
EXHIBIT B

OPERATIONS PLAN

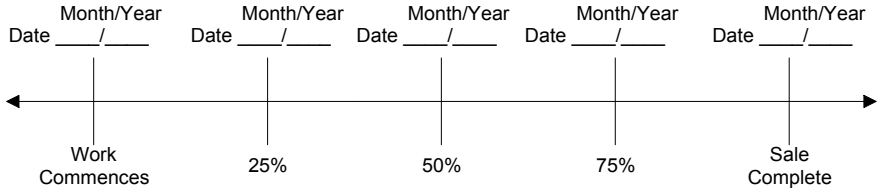
Completion Timeline

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: PURCHASER, Operator, District File, Sunset Unit, Engineering Unit, Reforestation Unit

EXHIBIT C

SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

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

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

(4) PURCHASER: _____
Address _____

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

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

	YES	NO
(6) WESTSIDE SCALE: Actual taper all logs over 40' scaling length	☒	☐
(7) EASTSIDE SCALE: *Actual taper butt logs over 40' scaling length	☐	☒
(8) PENCIL BUCK back to Minimum Scaling Diameter _____	☐	☒
(9) ADD-BACK VOLUME -- 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 Progeny Split
COUNTY Clatsop

(13) STATE CONTRACT NUMBER 341-09-24

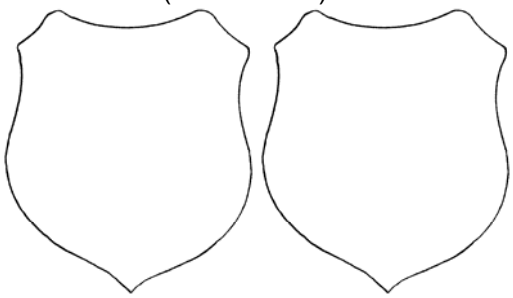
(14) SCALE: westside ☒ eastside ☐ cubic foot ☐

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

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

(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 17+70	Ditch
12 feet	N/A	1A to 1B	17+70 to 26+40	Outslope
16 feet	12 feet	1C to 1D	0+00 to 8+00	Ditch
16 feet	12 feet	1E to 1F	0+00 to 11+15	Ditch
16 feet	12 feet	4A to 4B	0+00 to 8+50	Ditch
16 feet	12 feet	4C to 4D	0+00 to 1+80	Ditch
16 feet	12 feet	4E to 4F	0+00 to 3+00	Ditch
16 feet	12 feet	4G to 4H	0+00 to 1+50	Ditch
16 feet	12 feet	4I to 4J	0+00 to 4+50	Ditch
16 feet	12 feet	5A to 5B	0+00 to 2+50	Ditch
16 feet	12 feet	I1 to I2	0+00 to 140+20	Ditch
16 feet	12 feet	I3 to I4	0+00 to 10+00	Ditch
16 feet	12 feet	I5 to I6	0+00 to 36+40	Ditch
16 feet	12 feet	I7 to I8	0+00 to 2+00	Ditch
16 feet	12 feet	I9 to I10	0+00 to 30+90	Ditch

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

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

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

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

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

GRUBBING CLASSIFICATION.

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

Improvements and reconstructions - as marked in the field.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

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

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

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

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

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

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

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

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

DRAINAGE

Subgrade. Subgrade shall be crowned at 4 to 6 percent (½ inch per foot).

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

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

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

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

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

GRADING	Back Slopes	Fill Slopes
Rock	Vertical to ¼ :1	Not steeper
Common - side slopes 50% and over	¾ :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 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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

SEASONAL WINTERIZATION. All unrocked roads or unfinished subgrades shall be waterbarred in accordance with Specifications in Exhibit K, and blocked from vehicular traffic prior to October 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. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with Exhibit D.

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

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

(4) Subgrade Preparation and Application of Surfacing Rock.

(a) Complete culvert installations, drainage ditches, ditchouts, fill construction, and other specified work prior to the application of surfacing rock.

(b) Subgrade shall be crowned at 4 to 6 percent (½ inch per foot).

(c) Upon completion of above required work, apply, process, and compact surfacing rock in accordance with specifications in Exhibit E. Final road surface shall be crowned at 4 to 6 percent (½ inch per foot).

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

Segment	Station	Work Description:
4L	0+00	End haul excess material to Point 4I.
4I-4J	0+00	Begin utilizing waste material from Point 4L for subgrade construction.
	0+50	End utilizing waste material from Point 4L for subgrade construction.

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 "C", as specified in Section 2210, Designated Timber.

(2) 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.

(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 culvert at gradients equal to or exceeding the drainage (or ditch) gradient. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. All woody debris encountered during fill excavation shall be removed. All waste materials shall be hauled to nearby waste areas and shall be uniformly sloped and compacted for drainage. (Waste materials shall be seeded and mulched in accordance with specifications in Exhibit M.) Fill material for segment I1 to I2 shall consist of quarry reject material, located at the Sweethome Stockpile site, all other reconstruction backfill shall consist of select materials and may be obtained from borrow pits and at the Sweethome Stockpile site, 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) 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.

(5) 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.

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

(7) Subgrade Preparation and Application of Surfacing Rock.

(a) Complete tree removal.

(b) Complete road realignment and buttress construction.

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

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

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

(g) 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
	5+60	Widen existing turnout 4 feet Right, Spread and compact 24 cubic yards of 4”-0” crushed base rock.
	7+75	Replace Culvert. Increase gradient of culvert to slope away from ditch grade at least 2%. Utilize 30 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill.
	10+00	Reinforce Turnout Right. Utilize 24 cubic yards of 4”-0” crushed base rock.
	12+90	Repair Culvert Inlet.
	20+80	Replace Culvert. Increase gradient of culvert to slope away from ditch grade at least 2%. Utilize 30 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill.
	30+00	Install Culvert and Dissipator. Utilize and place 12 cubic yards of 24”-6” riprap rock for energy dissipator and 30 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill.
	30+50	Replace Culvert. Utilize and place 12 cubic yards of 24”-6” riprap rock for energy dissipator and 30 cubic yards of 1½”-0” crushed rock for culvert backfill.
	32+55	Replace Culvert and Install Dissipator. Utilize and place 12 cubic yards of 24”-6” riprap rock for energy dissipator and 30 cubic yards of 1½”-0” crushed rock for culvert bedding and backfill. Utilize 24 cubic yards of 4”-0” crushed rock for base reconstruction.
	33+30	Install Culvert and Dissipator. Utilize and place 12 cubic yards of 24”-6” riprap rock for energy dissipator and 30 cubic yards of 1½”-0” crushed rock for culvert for bedding and backfill.
	38+00	Install Culvert. Utilize 30 cubic yards of 1½”-0” crushed rock for culvert backfill.
	38+52	Begin buttress construction in accordance with Exhibit J.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description:
I1 to I2 Cont.	38+85	End buttress construction.
	44+20	Replace Culvert. Increase gradient of culvert to slope away from ditch grade at least 2%. Utilize 30 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill.
	48+00	Replace Culvert. Increase gradient of culvert to slope away from ditch grade at least 2%. Utilize 30 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill.
	48+35	Sweethome Creek Road
	61+70	Install Dissipator. Utilize and place 12 cubic yards of 24"-6" riprap rock for energy dissipator.
	65+70	Expand Turnout Right, Spread and compact 24 cubic yards of 4"-0" crushed base rock.
	71+15	Begin Reverse Super Elevation. Maintain ditch and Utilize 60 cubic yards of 1½"-0" crushed rock to slope road surface 4-6% towards ditch.
	71+85	End Reverse Super.
	75+50	Install Dissipator. Utilize and place 12 cubic yards of 24"-6" riprap rock for energy dissipator.
	78+25	Replace Culvert and install dissipator. Utilize and place 12 cubic yards of 24"-6" riprap for dissipator and 30 cubic yards of 1½"-0" crushed rock for culvert backfill.
	84+10	Install Dissipator. Utilize and place 12 cubic yards of 24"-6" riprap rock for energy dissipator.
	104+80	Install Dissipator. Utilize and place 12 cubic yards of 24"-6" riprap rock for energy dissipator.
	119+40	Remove Bank Slough and Re-establish Ditch. Haul material to an approved waste area.
	126+50	Install Dissipator. Utilize and place 12 cubic yards of 24"-6" riprap.
	136+40	Install Culvert and Dissipator. Utilize and place 12 cubic yards of 24"-6" riprap for dissipator and 30 cubic yards of 1½"-0" crushed rock for culvert backfill.
	140+20	Point I2
I5 to I6	0+00	Point I5
	7+00	Construct Turnout Right. Utilize 24 cubic yards of 4"-0" crushed rock.
	16+00	Construct Turnout Left. Utilize 24 cubic yards of 4"-0" crushed rock.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description:
I5 to I6 Cont.	19+70	Remove Culvert. Utilize 36 cubic yards of 4”-0” crushed rock to backfill trench.
	26+00	Remove Bank Slough and Re-establish Ditch. Haul material to an approved waste area.
	34+65	Remove Bank Slough and Re-establish Ditch. Haul material to an approved waste area.
	36+40	Point I6
I7 to I8	0+00	Point I7, Install Culvert. Utilize 30 cubic yards of 3/4”-0” crushed rock for culvert backfill.
	2+00	Point I8, Clear and grub Landing. Utilize 80 cubic yards of 6”-0” pit run rock for Landing.
I9 to I10	0+00	Point I9
	12+55	Install 18” X 35’ Culvert and Dissipator. Utilize 11 cubic yards of 24”-6” riprap for dissipator and 30 cubic yards of 3/4”-0” crushed rock for culvert backfill.
	17+00	Install Culvert and Dissipator. Utilize and place 12 cubic yards of 24”-6” riprap rock for energy dissipator and 30 cubic yards of 3/4”-0” crushed rock for culvert backfill.
	18+65	Install Culvert and Dissipator. Utilize and place 12 cubic yards of 24”-6” riprap rock for energy dissipator and 30 cubic yards of 3/4”-0” crushed rock for culvert backfill.
	30+90	Point I10, clear and grub standing trees as posted with Right-of-Way tags.

EXHIBIT D

END-HAULING REQUIREMENTS

POINT TO POINT	STA. TO STA.	CONTAINMENT	WASTE AREA LOCATION	WASTE AREA TREATMENT
4L	N/A	1	4I	4

End-Haul Areas General Requirements

Material shall not be intentionally side cast.

Clearing and grubbing debris shall be end-hauled.

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

Containment

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

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

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

Waste Area Location

As shown on Exhibit A and as marked in the field.

Waste Area Treatment

Utilize excess material in subgrade.

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	1A to 1B			POINT TO POINT		Sta. to Sta.		
				1A to 1B		26+40		
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)
Base Rock	4"-0" Crushed	0+00 to 17+20	9	Station	49	Stations	17.70	867
Junctions	4"-0" Crushed	1A	9	Junction	24	Junctions	1	24
Turnouts	4"-0" Crushed	3+40, 7+85, 12+85, 17+70	9	TO	24	TO's	4	88
Turnarounds	4"-0" Crushed	10+00	N/A	TA	12	TA's	1	12
Total Rock for Road Segment:			1A to 1B					991
ROAD SEGMENT	1C to 1D			POINT TO POINT		Sta. to Sta.		
				1C to 1D		8+00		
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)
Base Rock	4”-0” Crushed	1C to 1D	9	Station	49	Stations	8.00	392
Junctions	4”-0” Crushed	1C	9	Junction	24	Junctions	1	24
Turnouts	4”-0” Crushed	4+00	9	TO	22	TO’s	1	22
Turnarounds	4”-0” Crushed		N/A	TA	12	TA’s	1	12
Landings	6”-0” Pit-Run	1D	N/A	Landing	80	Landings	1	80
Total Rock for Road Segment:			1C to 1D					530
ROAD SEGMENT	1E to 1F			POINT TO POINT		Sta. to Sta.		
				1E to 1F		11+15		
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)
Base Rock	4"-0" Crushed	1E-1F	9	Station	49	Stations	11.15	546
Junctions	4"-0" Crushed	1E	9	Junction	24	Junctions	1	24
Turnouts	4"-0" Crushed	5+70, 9+40	9	TO	22	TO's	2	44
Turnarounds	4"-0" Crushed		N/A	TA	12	TA's	1	12
Landings	6"-0" Pit-Run	1F	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			1E to 1F					686
ROAD SEGMENT	4A to 4B			POINT TO POINT		Sta. to Sta.		
				4A to 4B		0+00 to 8+50		
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)
Base Rock	4”-0” Crushed	0+00 to 8+50	9	Station	49	Stations	8.50	417
Junctions	4”-0” Crushed	4A	9	Junction	48	Junctions	1	48
Junctions	¾”-0” Crushed	4A	N/A	Junction	20	Junctions	1	20
Turnouts	4”-0” Crushed	2+50	9	TO	24	TO’s	1	24
Turnarounds	4”-0” Crushed	5+00	N/A	TA	12	TA’s	1	12
Landings	6”-0” Pit-Run	5+00, 8+50	N/A	Landing	60	Landings	2	120
Total Rock for Road Segment:			4A to 4B					641

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT 4C to 4D				POINT TO POINT		Sta. to Sta.		
Application	Rock Size and Type	Location	Depth of Rock (inches)	4C to 4D Volume (CY) per		0+00 to 1+80 Number of		TOTAL VOLUME (CY)
Base Rock	4”-0” Crushed	0+00 to 1+80	9	Station	49	Stations	1.80	88
Junctions	4”-0” Crushed	4C	9	Junction	24	Junctions	1	24
Junctions	¾”-0” Crushed	4C	N/A	Junction	20	Junctions	1	20
Landings	6”-0” Pit-Run	4D	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			4C to 4D					192
ROAD SEGMENT 4E to 4F				**POINT TO POINT**		**Sta. to Sta.**		
Application	Rock Size and Type	Location	Depth of Rock (inches)	4E to 4F Volume (CY) per		0+00 to 3+00 Number of		TOTAL VOLUME (CY)
Base Rock	4"-0" Crushed	0+00 to 3+00	9	Station	49	Stations	3.00	147
Junctions	4"-0" Crushed	4E	9	Junction	24	Junctions	1.00	24
Junctions	3/4"-0" Crushed	4E	N/A	Junction	20	Junctions	1	20
Landings	6"-0" Pit-Run	4F	N/A	Junction	60	Junctions	1	60
Total Rock for Road Segment:			4E to 4F					251
ROAD SEGMENT 4G to 4H				**POINT TO POINT**		**Sta. to Sta.**		
Application	Rock Size and Type	Location	Depth of Rock (inches)	4G to 4H Volume (CY) per		0+00 to 1+50 Number of		TOTAL VOLUME (CY)
Base Rock	4”-0” Crushed	0+00 to 1+50	9	Station	49	Stations	1.50	74
Junctions	4”-0” Crushed	4G	9	Junction	24	Junctions	1	24
Landings	6”-0” Pit-Run	4H	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			4G to 4H					158
ROAD SEGMENT 4I to 4J				**POINT TO POINT**		**Sta. to Sta.**		
Application	Rock Size and Type	Location	Depth of Rock (inches)	4I to 4J Volume (CY) per		0+00 to 4+50 Number of		TOTAL VOLUME (CY)
Base Rock	4"-0" Crushed	0+00 to 4+50	9	Station	49	Stations	4.50	221
Junctions	4"-0" Crushed	4I	9	Junction	24	Junctions	1	24
Turnarounds	4"-0" Crushed	2+90	N/A	TA	12	TA's	1	12
Landings	6"-0" Pit-Run	3+40, 4J	N/A	Landing	60	Landings	2	120
Total Rock for Road Segment:			4I to 4J					377

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	4K			POINT TO POINT		Sta. to Sta.		
Application	Rock Size and Type	Location	Depth of Rock (inches)	4K Volume (CY) per		N/A Number of		TOTAL VOLUME (CY)
Junctions	3/4"-0" Crushed	4K	N/A	Junction	20	Junctions	1	20
Landings	6"-0" Pit-Run	4K	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			4K					80

ROAD SEGMENT	4L			POINT TO POINT		Sta. to Sta.		
Application	Rock Size and Type	Location	Depth of Rock (inches)	4L Volume (CY) per		N/A Number of		TOTAL VOLUME (CY)
Junctions	4"-0" Crushed	4L	N/A	Junction	12	Junctions	1	12
Landings	6"-0" Pit-Run	4L	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			4L					72

ROAD SEGMENT	5A to 5B			POINT TO POINT		Sta. to Sta.		
Application	Rock Size and Type	Location	Depth of Rock (inches)	5A to 5B Volume (CY) per		0+00 to 2+20 Number of		TOTAL VOLUME (CY)
Base Rock	4”-0” Crushed	0+00 to 2+50	9	Station	49	Stations	2.50	123
Junctions	4”-0” Crushed	5A	9	Junction	24	Junctions	1	24
Landings	6”-0” Pit-Run	5B	N/A	Landing	80	Landings	1	80
Total Rock for Road Segment:			5A to 5B					227

ROAD SEGMENT	5C			POINT TO POINT		Sta. to Sta.		
Application	Rock Size and Type	Location	Depth of Rock (inches)	5C Volume (CY) per		Number of		TOTAL VOLUME (CY)
Junctions	1 1/2"-0" Crushed	5C	N/A	Junction	20	Junctions	1	20
Landings	6"-0" Pit-Run	5C	N/A	Landing	80	Landings	1	80
Total Rock for Road Segment:			5C					100

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		140+20 Number of		
Base Rock, Turnouts	4"-0" Crushed	5+60, 10+00, 65+70	N/A	TO	24	TO's	3	72
Base Rock	4"-0" Crushed	30+50,32+55	9	Fill	24	Fills	2	48
Base Rock	4"-0" Crushed	Buttress	N/A		85		1	85
Subgrade Leveling	1½ "-0" Crushed		N/A					540
Curve Widening	1½ "-0" Crushed							360
Surface Rock	1½ "-0" Crushed		3	Station	16	Stations	140.2	2,243
Turnouts	1½ "-0" Crushed		N/A	TO	10	TO's	18	180
Junctions	1½ "-0" Crushed		N/A	Junction	20	Junctions	6	120
Culvert Backfill	1½ "-0" Crushed	7+75,20+80 33+30,38+65	N/A	Culvert	30	Culverts	4.00	120
Culvert Bedding/Backfill	1½ "-0" Crushed	30+00,32+55	N/A	Culvert	30	Culverts	2.00	60
Culvert Backfill	1½ "-0" Crushed	44+20,48+00 78+25 136+40	N/A	Culvert	30	Culverts	4.00	120
Buttress	36”-12 Riprap 60”-48” Riprap	38+52 to 38+85	N/A	N/A				251
Dissipator	6”-24” Riprap	30+00,32+55 30+50,32+55	N/A	Diss.	12	Dissipator	4	48
Dissipator	6"-24" Riprap	44+20,61+70 75+50,78+25 84+10 126+50 136+40	N/A	Diss.	12	Dissipator	7	84
Total Rock for Road Segment:			I1 to I2					4,080

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		10+00 Number of		
Subgrade Leveling	4"-0" Crushed		N/A					44
Surface Rock	4"-0" Crushed		6	Station	33	Stations	10.0	330
Turnouts	4"-0" Crushed	7+15	6	TO	24	TO's	2	48
Junctions	4"-0" Crushed	0+00, 4+00	6	Junction	24	Junctions	2	48
Junctions	3/4"-0" Crushed	0+00	N/A	Junction	20	Junctions	1	20
Total Rock for Road Segment:			I3 to I4					490

EXHIBIT D

ROAD SURFACING

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		36+40 Number of		
Subgrade Leveling	4"-0" Crushed		N/A					168
Curve Widening	4"-0" Crushed		6					108
Surface Rock	4"-0" Crushed		6	Station	33	Stations	36.4	1,201
Traction Rock	3/4"-0" Crushed	16+50-20+00 & 22+00-26+00	2	Station	11	Stations	7.5	83
Trench Backfill	4"-0" Crushed	19+70	N/A	N/A	N/A	N/A	N/A	36
Turnouts	4"-0" Crushed		6	TO	24	TO's	4	96
Trurnarounds	4"-0" Crushed		N/A	TA	12	TA's	2	24
Junctions	4"-0" Crushed		6	Junction	24	Junctions	1	24
Total Rock for Road Segment:			I5 to I6					1,740
ROAD SEGMENT	**I7 to I8**			**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I7 to I8 **Volume (CY) per**		2+00 **Number of**		
Surface Rock	4"-0" Crushed		6	Station	33	Stations	2.0	66
Junctions	4"-0" Crushed		6	Junction	24	Junctions	1	24
Junctions	3/4"-0" Crushed	0+00	N/A	Junction	20	Junctions	1	20
Culvert Bedding/Backfill	3/4"-0" Crushed	0+00	N/A	Culvert	30	Culverts	1	30
Landing	6"-0" Pit-Run	I8		Landing	80	Landing	1	80
Total Rock for Road Segment:			I7 to I8					220
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**		30+90 **Number of**		
Subgrade Leveling	4"-0" Crushed		N/A					202
Surface Rock	4"-0" Crushed		6	Station	33	Stations	30.9	1,020
Culvert Bedding/Backfill	3/4"-0" Crushed	12+55, 17+00, 18+65	N/A	Culvert	30	Culverts	3.00	90
Turnouts	4"-0" Crushed		N/A	TO	24	TO's	4	96
Junctions	4"-0" Crushed		N/A	Junction	24	Junctions	1	24
Junctions	3/4"-0" Crushed	0+00	N/A	Junction	20	Junctions	1	20
Dissipator	6"-24" Riprap	12+55, 17+00, 18+65	N/A	Diss	12	Dissipator	3	36
Total Rock for Road Segment:			I9 to I10					1,488

EXHIBIT D

ROAD SURFACING

Total Rock for all Projects

ROCK TOTALS (CY)	60”-48” (CY)	36”-12” (CY)	24"-6" (CY)	6"-0" (CY)	4"-0" (CY)	1½ "-0" (CY)	3/4"-0" (CY)
12,573	183	68	168	920	7,128	3,763	343

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

EXHIBIT D

ROCK ACCOUNTABILITY

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

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

Rock Checking. All rock spreading shall be done only when a STATE representative is present. STATE shall issue a receipt for each load delivered, and rock shall be measured without allowance for shrinkage or shakedown during hauling. Total truck measure volume for each road segment shall be as shown on Exhibit D. Deliver at least 500 cubic yards per 8-hour shift, unless otherwise approved by STATE. A penalty of $10 for each 10 cubic yards which are not delivered during a single shift shall be billed, and payment shall be required prior to final acceptance of the project by STATE.

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

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

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

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

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

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

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

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

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

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

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

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

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

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

Pit-Run Rock. The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of pit-run rock shall be moistened or dried to 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:

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
Segments requiring pit-run rock.	5

EXHIBIT D

COMPACTION EQUIPMENT OPTIONS

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

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

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

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

(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 18 inch diameter culverts shall be constructed of corrugated double-walled polyethylene, or corrugated aluminized steel. Polyethylene culverts shall meet the requirements of AASHTO M-294-901, Type S. This specification applies to high density polyethylene corrugated pipe with an integrally formed smooth interior. Aluminized steel culverts shall be constructed of corrugated aluminized Type 2 steel. All culverts shall conform to the material and fabricating requirements of the "Standard Specifications for Highway Construction" prepared by the Highway Division of the Oregon State Department of Transportation. Corrugation types and shapes other than those meeting the above minimum Highway requirements, shall be approved in writing by STATE.

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

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

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

The foundation and trench walls for all culverts shall be free from logs, stumps, limbs, stones, and other objects which would dent or damage the pipe. The culvert trench shall be excavated 3 pipe diameters wide to Permit compaction and working on each side of the pipe. Tamping shall be done in 6-inch lifts, 1 pipe diameter each side of the pipe to 95 percent density or over. Bedrock shall be excavated as required to provide a uniform foundation for the full length of the culvert.

A bedding of granulated material or crushed rock as specified shall be placed to provide a wide band of support and to transmit the load from above evenly over the entire length of the pipe.

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

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

Joining shall be done with bands of like material and corrugations. Manufacturer’s instructions shall be followed for prefabricated pipe assembly.

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

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

EXHIBIT E

CULVERT SPECIFICATIONS

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

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

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

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

			Band Widths (")			Hugger Band Widths (")	
Dia.	Steel Pipe Gauge	Band Gauges	Annular	Helical	Dimpled	Annular	Helical
18-24	16 (0.0598”)	16	12	12	12	13 1/8	10 1/2
30-36	16 (0.0598”)	16	12	12	12	13 1/8	10 1/2

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

Tamping is required.

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

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

EXHIBIT E

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
1	18	40	CPP	1A to 1B	0+00
2	18	35	CPP	1A to 1B	1+70
3	18	35	CPP	1A to 1B	18+00
4	18	30	CPP	4A to 4B	3+00
5	18	35	CPP	4C to 4D	0+00
6	18	35	CPP	4E to 4F	0+00
7	18	35	CPP	4I to 4J	0+00
8	18	35	CPP	I1 to I2	7+75
9	18	35	CPP	I1 to I2	20+80
10	18	35	CPP	I1 to I2	30+00
11	24	40	CPP	I1 to I2	30+50
12	30	40	CPP	I1 to I2	32+55
13	18	35	CPP	I1 to I2	33+30
14	18	30	CPP	I1 to I2	38+65
15	18	40	CPP	I1 to I2	44+20
16	18	35	CPP	I1 to I2	48+00
17	18	35	CPP	I1 to I2	78+25
18	18	35	CPP	I1 to I2	136+40
19	18	35	CPP	I7 to I8	0+00
20	18	35	CPP	I9 to I10	12+55
21	18	30	CPP	I9 to I10	17+00
22	18	30	CPP	I9 to I10	18+65

ACSP = Aluminized, CPP = Polyethylene

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

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

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

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

(3) All overburden and reject material shall be hauled to the designated waste area as directed by STATE.

(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 woody debris, including stumps and Slash shall be hauled to the designated waste area and piled as directed by STATE.

(6) Blasting in Fall Creek Quarry shall not be allowed from April 1 through September 15, unless otherwise approved in writing by STATE.

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.

(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. There shall be a minimum of one bench with an access road to it. Said bench shall be easily accessible with tractors.

(8) Quarry face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.

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

(10) 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.

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

(12) PURCHASER shall schedule and coordinate quarry and stockpile usage with other existing or planned activity requiring quarry or stockpile usage. PURCHASER shall notify STATE 5 days prior to the start of quarry development activities.

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

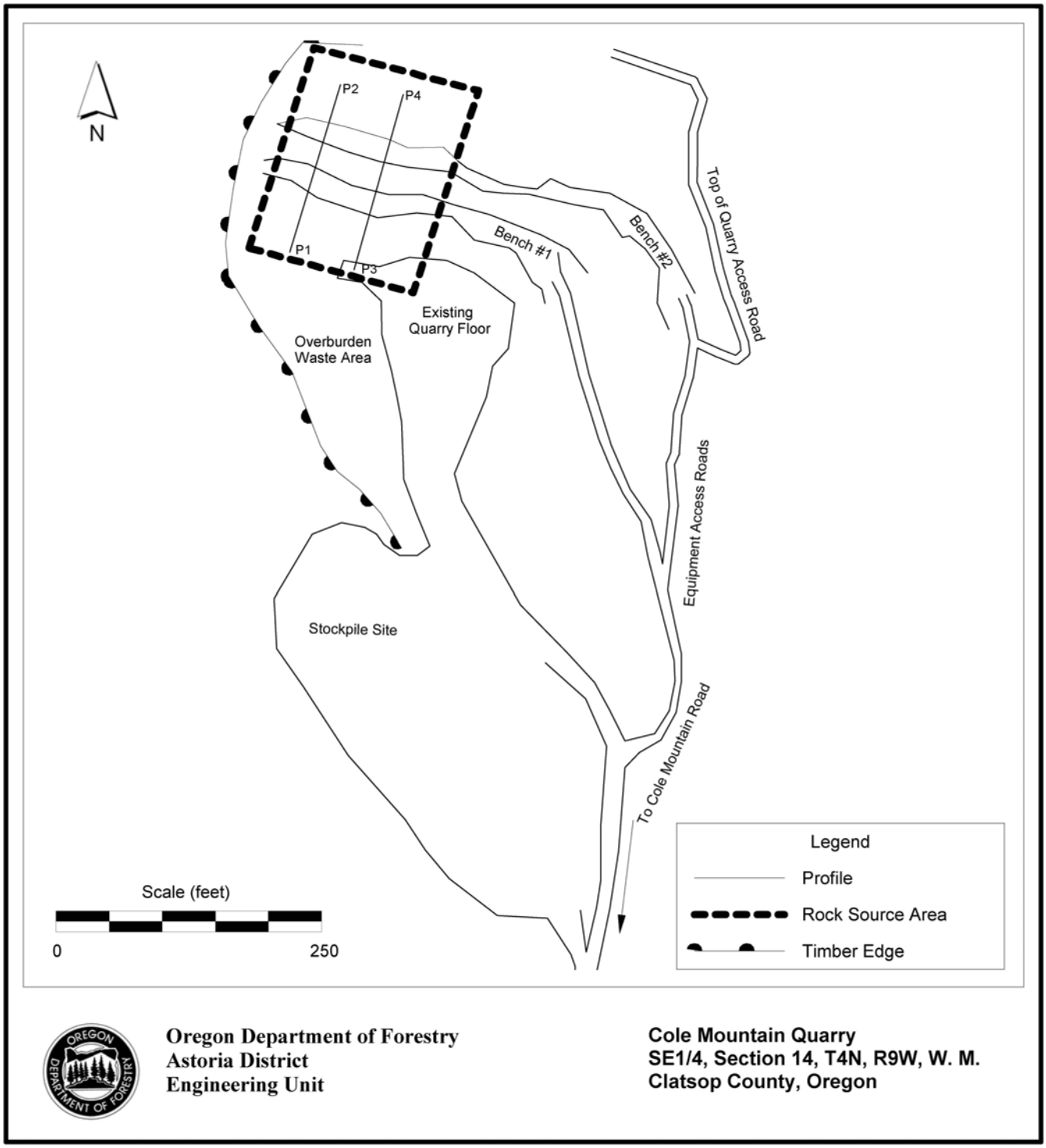


EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

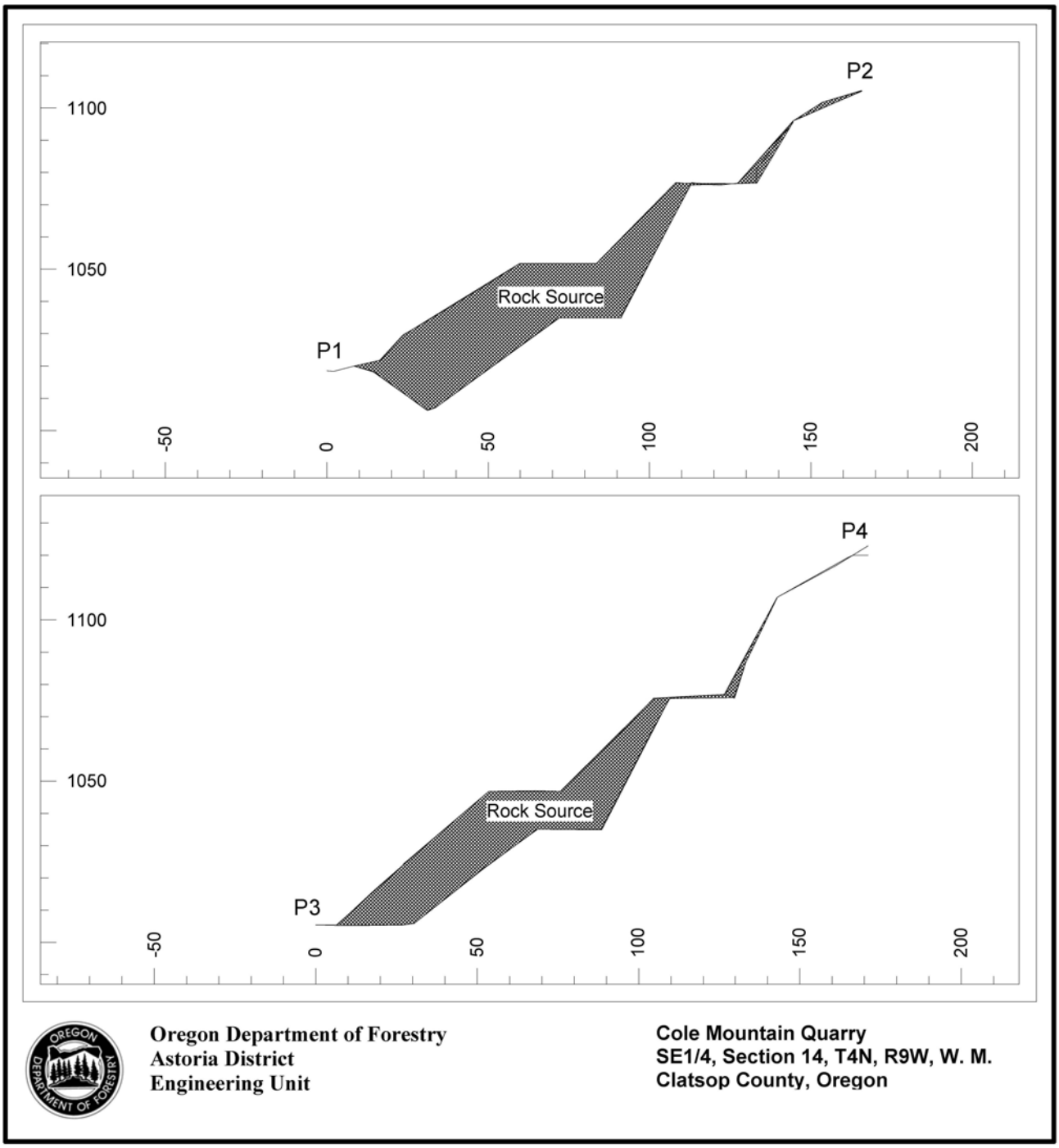


EXHIBIT G

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. Rock crushing shall be limited to periods when weather conditions are acceptable to STATE.

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 meet the following test requirements:

Hardness - Test Method AASHTO T 96 35% Maximum

Durability - Test Method ODOT TM 208
Passing No. 20 Sieve: 30% Maximum
Sediment Height: 3" Maximum

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

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

EXHIBIT G

CRUSHED ROCK SPECIFICATIONS

Grading Requirements

For 3/4"-0"	Passing	1" sieve	100%
	Passing	3/4" sieve	85-95%
	Passing	3/8" sieve	55-75%
	Passing	1/4" sieve	40-60%
	Passing	#10 sieve	30-55%
	Passing	#40 sieve	8-16%
For 1½"-0"	Passing	2" sieve	100%
	Passing	1½" sieve	95-100%
	Passing	1" sieve	80-95%
	Passing	3/4" sieve	70-90%
	Passing	1/4" sieve	40-60%
	Passing	#10 sieve	25-40%
	Passing	#40 sieve	8-16%
For 4"-0"	Passing	4" sieve	95-100%
	Passing	2" sieve	70-90%
	Passing	1" sieve	50-70%
	Passing	1/4" sieve	15-50%
	Passing	#10 sieve	0-30%
	Passing	#40 sieve	5-10%

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

PIT-RUN AND RIPRAP ROCK SPECIFICATIONS

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

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

Control of gradation shall be by visual inspection by STATE.

For 36"-12" Riprap A minimum of 50 percent or more of the material shall measure at least 36 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 60"-48" Riprap A minimum of 50 percent or more of the material shall measure at least 60 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.

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Progeny Split

EXHIBIT H

ROCK QUARRY TEST DRILLING REQUIREMENTS

(1) PURCHASER shall notify STATE a minimum of 48 hours prior to beginning any Operations. A STATE Representative shall be present during test drilling to monitor results, issue instructions, determine test hole locations and depths. The representative also shall certify hours of operation or acceptance of work when required under contract.

(2) Work scheduling 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. Testing Operations shall not be allowed from October 1 to April 30, 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.

(3) The hydraulic rock drill shall be a crawler-type in the 40,000 pound class or greater, with a minimum penetration rate of 120 feet per hour while drilling a 4”-6” bore hole, in overburden, fractured rock and solid rock.

(4) The operator must be experienced in operating hydraulic rock drills on rock test drilling Operations, be able to operate the drill proficiently, and operate in the area as directed by STATE.

(5) 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.

(6) Test holes shall be drilled to determine mass attitudes of rock strata, rates of drill advancement, depths of overburden and other pertinent information.

(7) Each test hole shall be staked and assigned an individual number. Test holes shall be drilled for a maximum distance of 60 feet in vertical, horizontal and/or other directions, as directed by STATE.

(8) STATE may elect to change the test drilling locations at the quarry sites. However, no more than a total of 70 hours of hydraulic rock drill time will be utilized. Should STATE determine that not all hours are needed, PURCHASER shall pay to STATE $225 per hour for each hour not used.

(9) Access road construction may be required. Access roads shall be constructed by the PURCHASER using small excavator. All routes and location of access roads shall be flagged and approved by STATE prior to construction. Cutting of trees may be necessary for access for test drilling. Trees shall be approved by STATE, properly accounted for prior to felling, decked as directed by STATE, and shall remain the property of the STATE.

(10) Upon completion of test drilling at each site, waterbar all excavator and test equipment access roads and reestablish drainage ditches, as directed by STATE.

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EXHIBIT I

TYPICAL EMBEDDED ENERGY DISSIPATOR

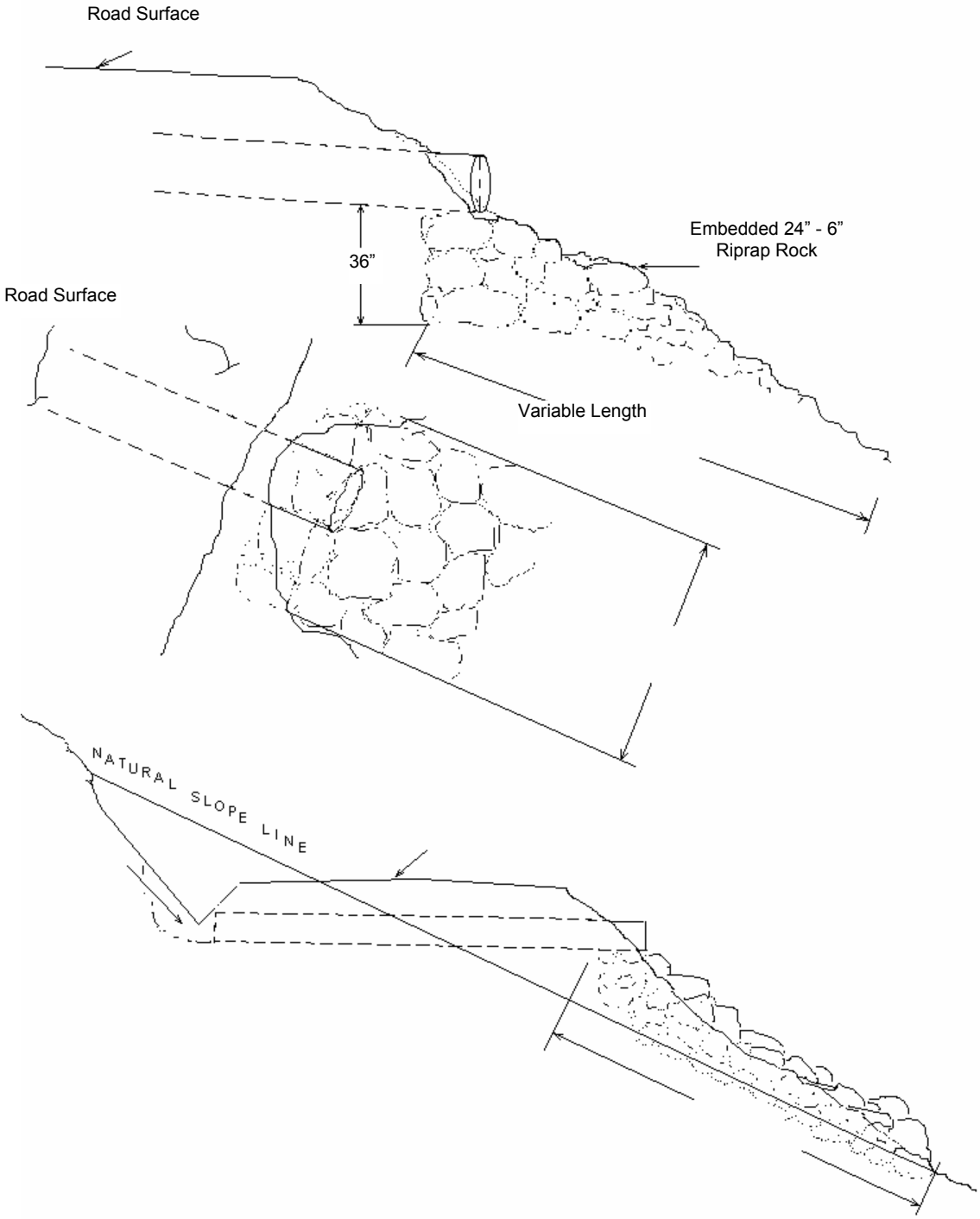

EXHIBIT J

BUTTRESS SPECIFICATIONS

PURCHASER shall construct a Buttress on road segment I1 to I2, from station 38+52 to station 38+85, the final road subgrade shall be 16 feet wide, and the final surfaced width shall be 12 feet wide.

PROJECT REQUIREMENTS AND GENERAL SPECIFICATIONS

(1) PURCHASER is to schedule a onsite pre-work meeting with STATE and excavator operator in attendance prior to commencement of Buttress construction.

(2) Work shall be conducted only during periods of low water flows and between July 1 and September 15 annually unless otherwise approved in writing by STATE. STATE shall be notified a minimum of 72 hours prior to beginning work. STATE has prepared the required FPA “Written Plan” for this work.

(3) Oil spill response materials shall be on site before work begins.

(4) Excavated Materials

- (a) Suitable excavated material, shall be staged on site for later use in rebuilding the road prism as directed by STATE.
- (b) Unsuitable excavated material, will be end hauled to the waste area located at the Fall Creek quarry as directed by STATE.
- (c) Fall Creek Quarry waste area will be seeded and mulched in accordance with Exhibit M.
- (d) Full containment is required for all material. Any amount of material lost shall be removed.

(5) Buttress and Armor material development

- (a) Buttress and armor material shall be developed at the Fall Creek Quarry as specified in Exhibit F.
- (b) PURCHASER shall clean up and winterize the area of quarry use as specified in Exhibit F.

(6) Buttress material placement

- (a) Place material as specified on Page 2 of Exhibit J.
- (b) Buttress material shall be machine placed. Material shall be keyed, providing a stable buttress base.
- (c) All excavation and riprap placement shall be performed using a minimum 2 cubic-yard track-mounted excavator.
- (d) A STATE representative is to be onsite during the placement of the 60”-48” material.

EXHIBIT J

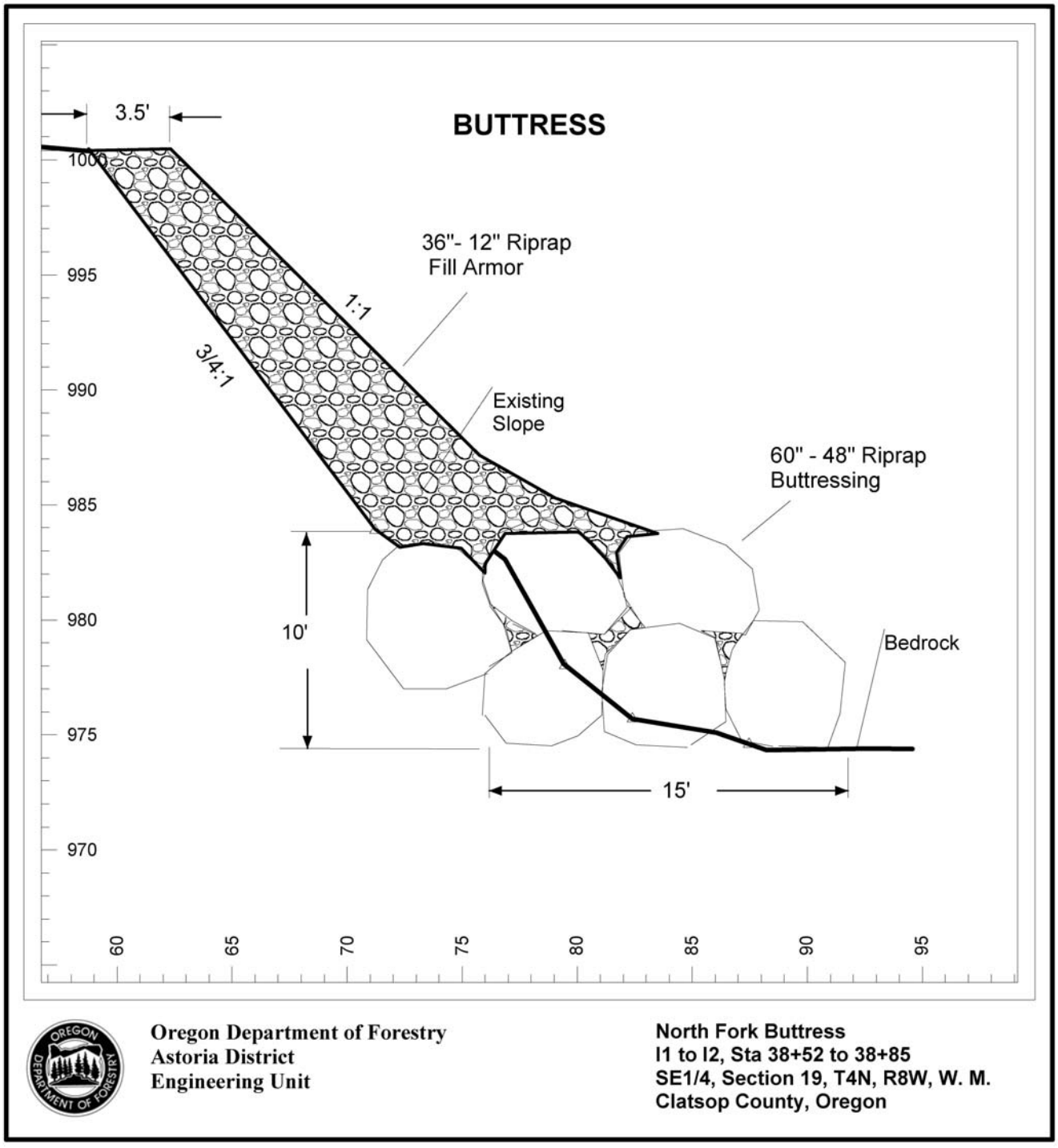
BUTTRESS
3.5'
1000
995
990
985
980
975
970
36"- 12" Riprap
Fill Armor
1:1
3/4:1
Existing
Slope
60" - 48" Riprap
Buttressing
10'
Bedrock
15'
60
65
70
75
80
85
90
95
Oregon Department of Forestry
Astoria District
Engineering Unit
North Fork Buttress
I1 to I2, Sta 38+52 to 38+85
SE1/4, Section 19, T4N, R8W, W. M.
Clatsop County, Oregon

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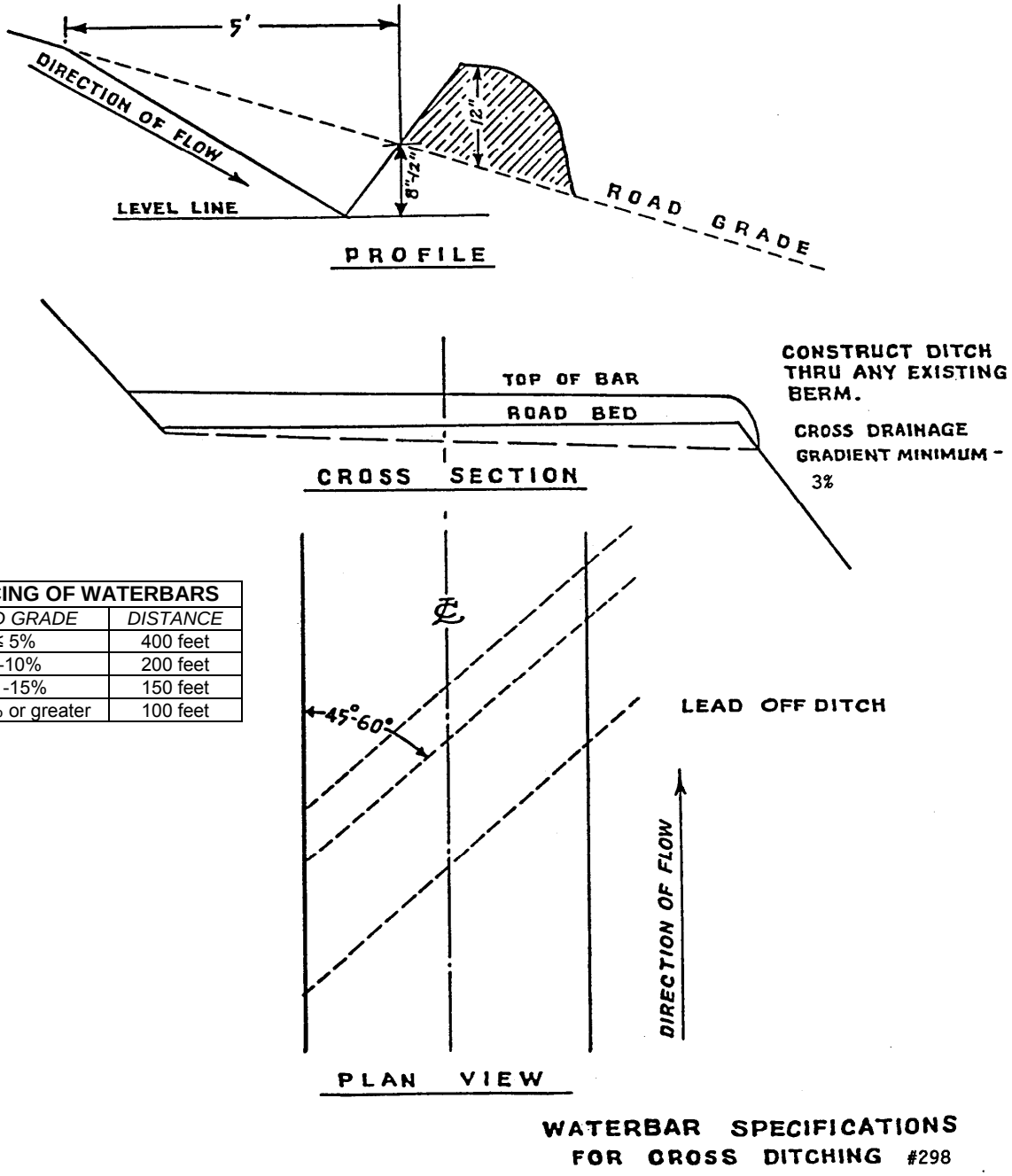
EXHIBIT K

WATERBAR SPECIFICATIONS



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

EXHIBIT L

ROAD VACATING SPECIFICATIONS

PURCHASER shall vacate between the following points: V1 to V2 and V3 to V4. Specific objectives for this project include:

A. Fill removal and stream channel development.
B. Culvert removal.
C. Restoration of natural contours by outsloping of the road prism.
D. Sidecast pullback.
E. Minimize disturbance of existing vegetation.

PROJECT REQUIREMENTS AND GENERAL SPECIFICATIONS:

(1) Tree Removal. Cut or remove all trees necessary to access the project area and to facilitate vacating Operations, as directed by STATE. Timber shall NOT be removed as designated timber, unless located within posted timber sale boundaries or right-of-way boundaries.

(2) Fill Removal and Stream Channel Development. Remove fills to the natural stream course level(s). Stream channel(s) shall be excavated/developed to specified widths. Developed stream banks shall be sloped at natural contours or no steeper than 1 ½:1, as directed by STATE.

(3) Culvert Removal. Remove drainage structures and culverts. Removed culverts shall be hauled to an approved refuse site off of STATE land.

(4) Outslope Road. Outslope road to restore natural contours or establish a minimum of 10% slope for drainage at designated locations. If the road grade exceeds 10%, outslope of the road shall be 2% greater than the road grade.

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

(6) Use of Excavated Materials.

(a) Fill Excavation and Sidecast Pullback. Excavated materials shall be placed on the interior (cut) side of the road 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 shall be hauled to a designated waste area, as directed by STATE.

(b) Woody Debris shall be placed in stable locations and may be placed on top of compacted embankment material, as directed by STATE.

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

(7) Erosion Control. Erosion control shall be completed in a progressive manner. Grass seed and straw mulch shall be applied for every 500 feet of road vacated, prior to continuing work.

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

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

EXHIBIT L

ROAD VACATING SPECIFICATIONS

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

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

SPECIFIC INSTRUCTIONS/SPECIFICATIONS:

Segment	Station	Work Description
V1 to V2	0+00	Begin Fill Removal Area
	1+27	End Fill Removal area
V3 to V4	0+00	Block Road to vehicular traffic
	3+00	Begin waterbars
	5+60	Begin sidecast pullback
	10+40	End sidecast pullback

EXHIBIT L

TYPICAL CROSS SECTION VIEW OF ROAD VACATING SIDECAST PULLBACK

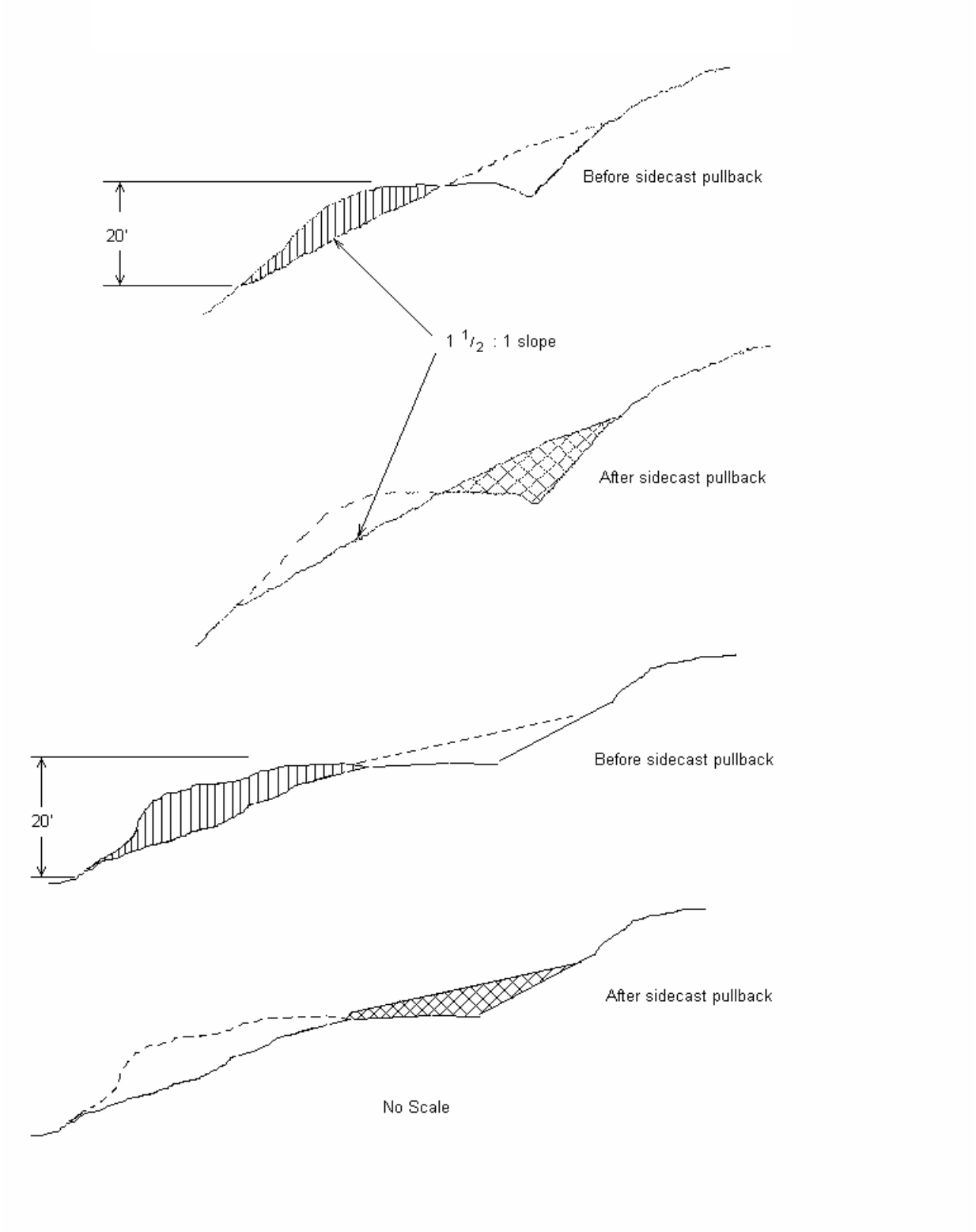


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EXHIBIT M

SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required seed, fertilizer, and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed, fertilizer, and straw mulch to all waste areas, and bare soils resulting from Project Nos. 2, 3, 4, 5, and 6.

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

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

APPLICATION RATES FOR SEED AND FERTILIZER
The seed mixture listed below shall be applied at 100 lbs. per acre. The seed mixture shall be comprised of the following:

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

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

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

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

APPLICATION LOCATIONS:

Road Segment	Location	Road Segment	Location
SE1 to SE2	Fall Creek access points	Cole Mtn. Quarry	W/A
I1 to I2	W/A and 38+52	Project No. 4	Access trails
Project No. 5	V1 to V2 & V3 to V4		

EXHIBIT N

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Description of Work to be Done

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

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

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

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

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

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

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

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

EXHIBIT 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	$ 120.00 / hour	104	$12,480
Log Loader	$ 87.50 / hour	142.7	$12,480

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, 2 and 3. 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.

State Timber Sale Contract
No. 341-09-24
Progeny Split

EXHIBIT O

STREAM ENHANCEMENT INSTRUCTIONS

General Instructions:

(a) Work shall be conducted only during periods of low water flows and between July 1 and September 15, annually unless otherwise approved in writing by STATE. STATE shall be notified a minimum of 48 hours prior to beginning work. STATE has prepared the required FPA "Written Plan" for this work.

(b) 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 shall be on site before work begins.

(c) Boulders required for construction of boulder structures for stream enhancement work shall be obtained from Fall Creek Quarry or other site acceptable to the STATE. Boulders will be a minimum of one cubic yard in size.

(d) A minimum of two pieces of large woody debris (LWD) in the form of tree tops, cull logs etc. at least 30 feet long and 12 inches in diameter at the large end will be incorporated into each boulder structure. LWD required for stream enhancement work shall be obtained from sale area, or at other locations acceptable to STATE. Trees shall be transported to the project area by log truck, or other means so that roads are not damaged (i.e. trees cannot be dragged on road surface).

(e) Access routes shall be selected to minimize disturbance to the riparian area. Equipment transporting boulders and trees to the sites shall 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.

(f) A minimum 1½ cubic-yard, track-mounted excavator shall be used for all placement.

(g) All areas of bare or disturbed soils shall be seeded with an approved grass seed mix. Fertilizer shall not be used. All access trails will be thoroughly blocked to prevent access using large woody debris or boulders, water barred, de-compacted, and mulched upon completion, as directed by STATE.

Specific Instructions:

Location
Project Area will extend from approximately 50 feet downstream of the Fall Creek bridge to approximately 250 feet upstream of the Fall Creek Bridge.

Wood Source. The Logs for Project No. 6 may be obtained from STATE land from the Timber Sale Area, the location shown as Fall Creek Quarry on Exhibit A, or from other locations acceptable to STATE.

Work Description
Materials: Sixty boulders at least one cubic yard in size and thirty pieces of large woody debris, 30 feet long and at least 12 inches in diameter at the large end.

Between Point SE1 and SE 2 as shown on Exhibit A, PURCHASER shall construct up to 12 boulder structures using 4-7 boulders, and at least two pieces of LWD in each structure as directed by the STATE. Boulders shall be arranged in various configurations in each structure depending on conditions at each site but will in general resemble a cluster. Pieces of LWD shall be placed under or between boulders. Gaps of at least three feet shall be left between each structure to ensure fish passage is maintained.

PART IV: OTHER INFORMATION

State Timber Sale Contract
No. 341-09-24
Progeny Split

FPA "Written Plan" for Operating within 100 Feet of Type F Streams
Progeny Split Timber Sale

Portions of Section 19, T4N, R8W, W.M., Clatsop County, Oregon

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

Protected Resources:
Unnamed tributary to North Fork Nehalem River.

Specific Site Characteristics:
Unnamed tributary to the North Fork Nehalem (Small, Type F) - This stream flows through the center of Area 4 for approximately 2,500 feet, and has an unmarked buffer of 25 feet.

Tree and Vegetation Retention:
Vegetation within the buffer consists of conifer alder and an understory of salmonberry.

Area 4 is a partial cut with a retention target of 160 square feet of basal area.

PARTIAL CUT HARVEST -- Area 4: During cable Yarding Operations, it is anticipated that cable skylines will cross the stream.

Resource Protection Practices:

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

- **Trees that fall or slide into Type F RMA's shall not be removed without prior approval from STATE.**
- 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.
- When cable logging is conducted near the RMA's, logging lines may cross, but will not be lowered to the ground in the RMA's during Yarding, except during rigging. During rigging the lines must be pulled out of the RMA's when changing corridors.
- Logs shall be fully suspended when Yarding across all stream buffers (RMA's).
- Cable corridors must be at least 100 feet apart where they cross the RMA's.

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practice Act regarding the Operations conducted within 100 feet of streams I agree to the protection measures listed in this plan.

Submitted by: _____ Date: _____
Operator/PURCHASER

Attachments**:** Logging Plan Map

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

State Timber Sale Contract
No. 341-09-24
Progeny Split

FPA "WRITTEN PLAN" for Operating within 100' of Type F streams

Progeny Split Timber Sale

Portion of SE1/4 of Section 19, T4N, R8W, W.M., Clatsop County, Oregon

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

Protected Resources:

The North Fork of the Nehalem River, a large Type F stream located in the NW1/4, SE1/4, Section 19, T4N, R8W, W.M., Clatsop County, Oregon. A "written plan" is required for any activities within 100 feet of any type F stream.

Situation:

The North Fork of the Nehalem River has undermined a portion of the North Fork Road, located as shown on Exhibit A. The undermined area is approximately 33 feet in length. The potential for a mass movement of soil and road material at this location into the North Fork of the Nehalem River exists.

Solution:

Construct a rock Buttress to stabilize the slope. The buttress shall be approximately 26 feet high. The bottom 10 feet of the buttress shall be built with 60"-48" riprap material. The upper 16 feet shall be built with 36"-12" riprap material.

Resource Protection Measures:

1) Machine activity in stream channels shall not be allowed.
2) In-stream work shall be conducted during periods of low water flows and between July 1 and September 15, annually.
3) All excavation and riprap placement shall be performed using a minimum 2 cubic-yard track-mounted excavator.
4) Unsuitable excavated materials shall be hauled to approved waste areas, sloped for drainage and left in a stable condition.
5) Erosion control measures shall be applied to all exposed excavation areas, bare soils and waste materials.
6) Riprap rock shall be used to armor embankments and stream banks.
7) Oil spill response materials shall be on site before the work begins.

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

Submitted _____ _____
Purchaser/Operator/Contract Representative Date

Attachments: Exhibits A and J.

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

State Timber Sale Contract
No. 341-09-24
Progeny Split

FPA "WRITTEN PLAN" for Operating within 100' of Type F streams

Progeny Split Timber Sale

Portions of Section 20, T4N, R8W, W.M., Clatsop County, Oregon

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

Protected Resources:
The following stream is located in Section 20 of T4N, R8W, W.M., Clatsop County, Oregon.

Type F Stream*:* Fall Creek (medium, Type F stream) flows along the east side of Area 1 and the northeast boundary of Area 2.

Specific Site Characteristics:
Fall Creek: The bedrock streambed is approximately 8 to 12 feet wide with gentle to moderate stream-bank slopes. Streamside vegetation is dominated by mature red alder. There is a significant component of conifer trees located above the flood plain.

Tree and Vegetation Retention:
FPA defines the RMA width of a medium Type F stream as 70 feet and a small Type F as 50 feet. The timber sale boundary for Areas 1 and 2 is posted at least 100 feet from the Type F stream.

Practices:
Twelve stream enhancement structures will be constructed in the stream using an excavator to place the structures. The approximate locations are shown on Exhibit "A" and work to be done is described on the attached exhibit.

Stream Enhancement structures must be created by the PURCHASER for stream improvement as recommended by ODFW fisheries biologist. Each structure will be created by placing 4 to 7 boulders with at least 2 conifer logs at each of the twelve locations in the Type F stream. Structures shall be at spaced to avoid damming of water and creation of velocity barriers. The logs boulders and logs will be placed with equipment into the stream at locations specified by STATE, and with consultation from an ODFW fisheries biologist. All conifer logs will be taken from the sale area and not from within the stream buffer. These structures will be created using a combination of boulders and conifer logs at each location. This work will take place during the instream work period (July 1 – September 15) if possible. If the work cannot be done during the designated instream work period an ODFW fisheries biologist will be consulted to field verify any fish habitat concerns and approve any work to be conducted outside the designated period.

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: Exhibit A
Stream Enhancement Exhibit
Boulder and Log Placement Diagram

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

State Timber Sale Contract
No. 341-09-24
Progeny Split

FPA "Written Plan" for Operating Within 300 Feet of a protected T&E site

Progeny Split Timber Sale

Portions of Section 20, T4N, R8W, W.M., Clatsop County, Oregon

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

Protected Resources:

Area 2 and Fall Creek Quarry:

The site designated as AST 143-3 is occupied by Marbled Murrelets and is immediately adjacent to Area 2 and Fall Creek Quarry.

Specific Site Characteristics:

Most of the occupied stand is included within stream buffers along Fall Creek and the North Fork Nehalem River.

Tree and Vegetation Retention:

All trees and shrubs within the occupied stand will be retained.

MMMA Protection Practices:

In the occupied stand mentioned above, the following practices are required under the timber sale contract to protect the suitable habitat trees within the MMMA:

- All activities will be restricted to the period between September 15 and April 1, annually.
- No trees will be felled within the MMMA.
- Trees adjacent to the MMMA will be felled away from or parallel to the MMMA boundary to prevent trees from damaging suitable Murrelet nesting platforms.
- When cable logging is conducted, logging lines will cross through the MMMA, and will be located to prevent damage to suitable Murrelet nesting platforms. Trees that fall or slide into the MMMA will 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

Attachments: Logging Plan Map

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

State Timber Sale Contract
No. 341-09-24
Progeny Split

OREGON DEPARTMENT of FISH and WILDLIFE

FISH SCREENING PROGRAM

SMALL PUMP SCREEN SELF CERTIFICATION

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

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

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

Perforated plate: Openings shall not exceed 3/32 or 0.0938 inches (2.38 mm).
Mesh/Woven wire screen: Square openings shall not exceed 3/32 or 0.0938 inches (2.38mm) in the narrow direction, e.g., 3/32 inch x 3/32 inch open mesh.
Profile bar screen/Wedge wire: Openings shall not exceed 0.0689 inches (1.75 mm) in the narrow direction.

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

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

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

For further information on fish screening please contact:

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

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

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

Applicant Signature:_____ Date: ___/___ /___WRD File #

Printed Name and Address:

Phone: (____)_____ Fax: (____) _____

bmk
3/11/99
PUMPCERT.doc

NB: ODFW logo is 129% of logo on HQ mail label