PART III: EXHIBITS

State Timber Sale Contract
No. 341-10-10
Mombo Combo

EXHIBIT B

629-Form 341-203
Revised 06/97

OREGON DEPARTMENT OF FORESTRY

TIMBER SALE OPERATIONS PLAN
(See Page 2 for instructions)

Date Received by STATE: _____

(5) State Brand Information (complete):

(1) Contract No.: 341-10-10

(2) Sale Name: Mombo Combo

(3) Contract Expiration Date: October 31, 2012 Project Completion Dates: October 31, 2011

(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.

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

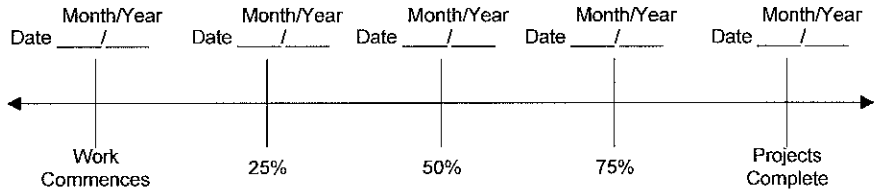
EXHIBIT B

OPERATIONS PLAN

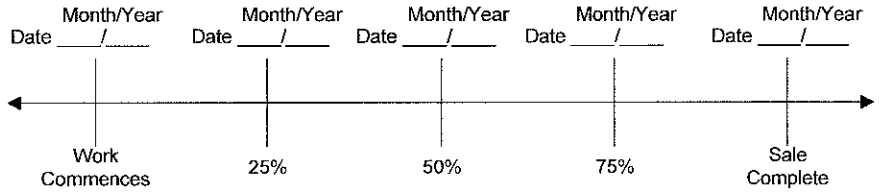
Completion Timeline

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

Projects



Harvest & Other Requirements



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

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

APPROVED: Date: _____

STATE OF OREGON - DEPARTMENT OF FORESTRY

_____

Title _____

SUBMITTED BY:
PURCHASER

_____

Title _____

Original: Salem
cc: District File
Purchaser

EXHIBIT C

SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

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

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

(4) PURCHASER: _____
Mailing Address: _____
Phone Number: _____

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

* Apply minimum volume test to whole logs over 40' Westside; 20' Eastside.
** Sum (if indicated): see instructions and explain in Item (19).

	YES	NO
(6) WESTSIDE SCALE: Use Region 6 actual taper rule. Logs over 40'.	☒	☐
(7) EASTSIDE SCALE: Use Region 6 actual taper rule. Logs over 40'.	☐	☒
(8) Weight Scale Sample (6) – (8), pink log load receipts	☐	☒
(9) Weight Sale	☐	☒
(10) Per Load (9) and (10), yellow log load receipts	☐	☒

(11) APPROVED SCALING LOCATIONS	Species	Yard	Truck	Weight

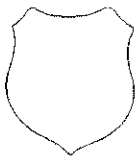
(12) NOTICE OF CANCELLATION OF BRAND:
Effective Date: _____
_____
State Forester's Representative

(13) SALE NAME Mombo Combo
COUNTY Clatsop

(14) STATE CONTRACT NUMBER 341-10-10

(15) STATE BRAND REGISTRATION NUMBER _____

(16) STATE BRAND INFORMATION:
(COMPLETE)



(17) PAINT REQUIRED: YES ☒
COLOR Orange

(18) SPECIAL REQUESTS
PEELABLE CULL (all species) **NO DEDUCTIONS ALLOWED** **FOR MECHANICAL DAMAGE** ADD-BACK VOLUME - Deductions due to delay
OTHER:

(19) 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): _____

(20) 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, Approved Scaling Location, Purchaser, District, Mgmt. Unit

EXHIBIT C

INSTRUCTIONS FOR FORM 343-307 (rev. 10/08)

(1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires Item (12). Complete date.

(2) Designate Third Party Scaling Organization (TPSO).

(3) State District office, address and phone.

(4) Enter Purchaser's business name, address, and phone number 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 (16) thru (18)), and is required to show existence on the sale. **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 (Per MBF) entries. Per MBF, SUM, and SUB must be indicated by checking the appropriate column. Species with the same specifications and value are combined into one entry. Per MBF 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, Per MBF and/or subspecies will always be scaled.

(6) Westside – Region 6 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 – Region 6 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 (Northwest Log Rules Eastside). Items with * follow U.S. Forest Service Eastside rules.

(8) Weight Scale Sample – Check box if sale is to be a Weight Scale Sample. All specifics for handling, scaling and processing will be attached or explained in the Remarks section Item (19).

(9) Weight Sale – Check box if sale is to be sold as a weight sale. Processing procedures from approved locations to TPSO's will be explained in the Remarks section of Item (19).

(10) Per Load – Check box if volumes on sale are per load. Specific instructions for handling and processing will be fully explained in the Remarks section of Item (19).

(11) Show scaling locations only applicable to TPSO. Location name should appear as it does on the ODF Approved Scaling Location web site: http://www.odf.state.or.us/DIVISIONS/management/asset_management/ScalingLocation.asp Locations with scaling and processing directions specific to their location should be on a separate form. Species should be identified if not capable of receiving "all" species. Check appropriate box for either: yard, truck scale, or weight. Refer to the web site listed above for the locations approval status.

(12) When logging and hauling is complete, recall branding hammers, date and sign where indicated, check CANCELLATION box in Item (1), and send to TPSO.

(13) Enter sale name and county

(14) .Enter sale Contract number.

(15) Enter Oregon's State Brand Registry Number (required).

(16) Show brand assigned to timber sale. One brand only. 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) in the Remarks section Item (19).

(17) Check yes for Paint Required and designate "Orange" for color. Non required removal volumes may sometimes require blue paint.

(18) Special Requests. These are requests that will be applied to ODF timber sales. If "Other" is indicated, it must contain a description and any necessary comments.

(19) Use this space to designate any weight conversion factors, per load volumes, weight scale sample instructions or any other explanations to clarify scaling or processing 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.

(20) 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	2A to 2B	0+00 to 3+60	Ditch
16 feet	12 feet	3A to 3B	0+00 to 15+40	Ditch
14 feet	N/A	3C to 3D	0+00 to 7+10	Outslope
16 feet	12 feet	I1 to I2	0+00 to 124+48	Ditch
16 feet	12 feet	I2 to I3	0+00 to 61+75	Ditch
16 feet	12 feet	I4 to I5	0+00 to 53+84	Ditch
16 feet	12 feet	I6 to I7	0+00 to 4+00	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 50 feet back of the top of the cutslope and 5 feet out from the toe of the fill slope, or as directed by STATE. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing debris shall not be left lodged against standing trees.

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

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

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

GRUBBING CLASSIFICATION.

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

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

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

Unless road 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.

Suitable excavated material shall be used 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.

Sidecast includes any road generated excess excavation material which is not essential as part of the road prism, is not compacted, and is below the roadway. Sidecast shall not be placed where it will enter a stream course. Leaving sidecast below the road is only permissible if specifically allowed in "Full Bench and End Haul Requirements" in this Exhibit.

All fills shall be machine compacted according to the "Compaction and Processing Requirements" in this Exhibit.

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 specified in the plans or 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 as shown on the "Forest Road Specifications" table in this Exhibit for roads to be rocked and at 4 to 6 percent outsloped for non-surfaced roads.

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

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

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.

SLOPES	Back Slopes	Fill Slopes
Solid Rock	Vertical to ¼ :1	
Fractured Rock	½ :1	
Soil - side slopes 50% and over	¾ :1	1½:1
Soil - side slopes less than 50%	1 :1	1½:1

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 unless otherwise approved by STATE. Surface is to be crowned for drainage with general grade no more than 3 percent. Surface as shown in the "Road Surfacing" table in this Exhibit.

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

SEASONAL WINTERIZATION. All unsurfaced roads or unfinished subgrades shall be waterbarred in accordance with the specifications in Exhibit I, and blocked from vehicular traffic prior to October 1, annually and as directed by STATE.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS

(1) Timber Removal. Remove all trees within posted right-of-way boundary as specified in Section 2210, "Designated Timber."

(2) Excavated Materials. Excavated materials shall be utilized for road construction. 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 this Exhibit. Excess excavated material not used for embankment shall be end hauled or pushed to waste areas as shown on Exhibit A and marked in the field.

(3) Fill Armor and Energy Dissipator Construction. Where rock is specified for fill armor, rock shall be machine placed and tamped at a 1½:1 slope, beginning at the toe of the fill. 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 G.

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

(5) Subgrade Preparation and Application of Surfacing Rock.

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

(b) Subgrade shall be crowned at 4 to 6 percent for surfaced roads and at 4 to 6 percent outsloped on unsurfaced roads.

(c) Upon completion of above required work, apply, process, and compact surfacing rock in accordance with specifications in the "Compaction and Processing Requirements" in this Exhibit. Final road surface shall be crowned at 4 to 6 percent.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS

(1) Timber Removal. Remove all trees within posted Right-of-Way Boundary as specified in Section 2210, "Designated Timber."

(2) Roadside Brushing. Conduct roadside brushing as specified in Exhibit H.

(3) Roadside Protruding Debris. Dispose of all woody debris encroaching the road prism as directed by STATE. Haul removed debris to designated waste areas as directed by STATE. For the purpose of this instruction road prism is defined as tree line to tree line or as specified by STATE.

(4) Excavated Materials. Excavated materials shall be utilized for road construction. 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 this Exhibit. Excess excavated material not used for embankment shall be end hauled to waste areas as shown on Exhibit A and marked in the field.

(5) Bank Slough Removal. Dig out all bank slough. Bank slough material 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. Waste materials shall be seeded and mulched in accordance with specifications in Exhibit J.

(6) 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 J. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit. 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.

(7) 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.

(8) Fill Armor and Energy Dissipator Construction. Where rock is specified for fill armor, rock shall be machine placed and tamped at a 1½:1 slope, beginning at the toe of the fill. 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 G.

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS

(10) Subgrade Preparation and Application of Surfacing Rock.

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

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

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

(d) Process grade and mix the existing surface and added base rock. Provide for a crown of 4 to 6 percent, and compact in accordance to the "Compaction and Processing Requirements" in this Exhibit.

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

(11) Improvements with STATE designs. On road segment I1 to I2, Station 28+32 to 33+44, and Station 81+50 to 88+14, and road segment I4 to I5 Station 19+67 to 22+74 design plans are on file at the Astoria District office. These road segments shall be improved as designed.

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description:
I1 to I2	0+00	Begin application of "Resin modified biopolymer dust control agent" per Exhibit K.
	5+60	Improve existing turnout left. Clear and haul vegetative material to designated waste area.
	6+75	Begin buttress construction. Excavate bench for placement of buttress material as directed by STATE. Utilize 300 cubic yards of 24"-6" riprap for buttress as directed by STATE.
	7+50	End buttress construction.
	9+25	Improve existing turnout left. Clear and haul vegetative material to designated waste area.
	12+42	Replace existing culvert. Utilize 40 cubic yards of ¾"-0" crushed rock for bedding and backfill. Utilize suitable onsite excavated material for select backfill. Utilize 25 cubic yards of 4"-0" crushed rock for base course replacement. Utilize 10 cubic yards of 24"-6" riprap rock for energy dissipator construction.
	14+50	Begin moving road centerline into hill 2 feet. Haul clearing and excavated material to the designated waste area as directed by STATE. Utilize 40 cubic yards of 4"-0" crushed rock for base rock as directed by STATE. Improve existing turnout left. Clear and haul vegetative material to designated waste area. Utilize 22 cubic yards of 4"-0" crushed rock as directed by STATE.
	16+15	End moving road centerline into the hill.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I1 to I2	19+40	Trim damaged culvert outlet.
	19+60	Improve existing turnout left. Clear and haul vegetative material to designated waste area.
	23+28	Improve existing turnout right.
	28+32	Begin road re-alignment per plans and profile on file at the Astoria District office. Haul all clearing and excess excavated material to the designated waste area. Utilize 45 cubic yards of 4"-0" crushed rock as base course as directed by STATE.
	33+44	End road re-alignment per plans and profile.
	37+86	End application of "Resin modified biopolymer dust control agent".
	42+45	Develop waste area as directed by STATE.
	47+67	Reconstruct existing ditch line to a 1 foot wide and 1 foot deep "V" ditch line. Utilize 17 cubic yards of 4"-0" and 9 cubic yards of ¾"-0" crushed rock to build up inside road shoulder as directed by STATE .
	50+65	End reconstructing ditch line, and building up inside road shoulder. Replace existing culvert. Utilize 30 cubic yards of ¾"-0" crushed rock for bedding and backfill. Utilize 40 cubic yards of 24"-6" riprap for energy dissipator construction.
	53+36	Improve existing turnout right. Clear and haul vegetative material to designated waste area.
	58+19	Improve junction. Clear and haul vegetative material to designated waste area.
	77+80	Install new culvert. Utilize 23 cubic yards of ¾"-0" crushed rock as bedding and backfill material. Utilize 25 cubic yards of 4"-0" crushed rock as base rock replacement. Utilize 10 cubic yards of 24"-6" riprap rock for energy dissipator construction.
	81+50	Begin road re-alignment per plans and profile on file at the Astoria District office. Haul all clearing and excess excavated material to the designated waste area. Begin application of 4"-0" base rock.
	84+11	Replace existing culvert. Utilize 30 cubic yards of ¾"-0" crushed rock as bedding and backfill material. Utilize 10 cubic yards of 24"-6" riprap rock for energy dissipator construction.
	88+14	End road re-alignment. End application of 4"-0" crushed rock.
	98+00	Construct turnout left. Haul all cleared vegetative material and excavated material to designated waste area.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I1 to I2	106+60	Improve turnout right. Clear and haul vegetative material to designated Waste area. Utilize 22 cubic yards of 4"-0" crushed rock for base course material.
I2 to I3	23+00	Establish ditch line through old road junction.
	49+00	Improve ditch out left.
I4 to I5	19+67	Begin road re-alignment per plans and profile on file at the Astoria District office.
	22+74	End road re-alignment per plans and profile.
	26+23	Repair outlet of existing culvert. .
	32+84	Improve turnout right. Clear and haul vegetative material to designated Waste area.
	36+65	Waste area location.

EXHIBIT D

FULL BENCH AND END-HAUL REQUIREMENTS

POINT TO POINT	STA. TO STA.	CONTAINMENT - SIDECAST	WASTE AREA LOCATION	WASTE AREA TREATMENT
Road Improvement	See specific instructions	1 and 2	1	1, 2, and 3

Full Bench and End-Haul Areas General Requirements

Sidecast includes any road generated excess excavation material which is not essential as part of the road prism, is not compacted, and is below the roadway. Material shall not be sidecast unless specified above.

Clearing and grubbing debris shall be end-hauled. Ditch materials on Road Improvement Segments I1 to I2, I2 to I3, and I4 to I5 shall be end hauled.

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

Containment/Sidecast

(1) Full: No excavated material remains below the road

(2) Normal/Incidental: The amount of excavated material lost over the outside edge of the road shall not exceed 1 foot in depth.

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

Waste Area Location

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

(2) Setback from slope break shall be a minimum of 20 feet horizontal measurement.

Waste Area Treatment

(1) Deposit at waste area, spread evenly, compact, and provide adequate drainage.

(2) Pile woody debris separate from other waste material.

(3) Mulch and seed all waste areas in accordance with Exhibit J.

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	3A to 3B			POINT TO POINT		Sta. to Sta.		
Application	Rock Size and Type	Location	Depth of Rock (inches)	3A to 3B Volume (CY) per		0+00 to 15+40 Number of		TOTAL VOLUME (CY)
Base Rock	4"-0" Crushed	0+00 to 15+40	8	station	50	stations	15.4	770
Turnouts	4"-0" Crushed	3+35, 7+30, 11+85	8	TO	22	TO's	3	66
Landings	6"-0" Pit-run	7+30, 11+85	N/A	Landing	50	Landings	2	100
Landings	6"-0" Pit-run	15+40	N/A	Landing	80	Landings	1	80
Total Rock for Road Segment:			3A to 3B					1,016
ROAD SEGMENT	2A to 2B			POINT TO POINT		Sta. to Sta.		
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B Volume (CY) per		0+00 to 3+60 Number of		TOTAL VOLUME (CY)
Base Rock	4"-0" Crushed	0+00 - 3+60	8	station	50	stations	3.60	180
Junctions	4"-0" Crushed	Pt. 2A	8	junction	33	junctions	1	33
Turnouts	4"-0" Crushed	1+55	8	TO	22	TO's	1	22
Landings	6"-0" Pit-run	1+55	N/A	Landing	50	Landings	1	50
Landings	6"-0" Pit-run	3+60	N/A	Landing	80	Landings	1	80
Total Rock for Road Segment:			2A to 2B					365

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	I1 to I2			POINT TO POINT		Sta. to Sta.		
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2 Volume (CY) per		0+00 to 124+48 Number of		TOTAL VOLUME (CY)
Base Rock	4"-0" crushed		n/a	station	n/a	stations	12.35	536
Turnouts	4"-0" crushed	5+60, 9+25,14+50, 19+60, 23+28, 53+36, 98+00, 106+60	8"	turnout	22	turnouts	8	176
Curve Widening	4"-0" crushed		8"	curve	n/a	curves	6	188
Crowd/narrow ditchline	4"-0" crushed	47+67 - 50+65	6"		n/a		n/a	20
Surface Rock	3/4"-0" crushed		3"	station	19	stations	124.48	2,365
Junctions	3/4"-0" crushed	34+44, 37+86,38+50, 47+00, 58+19, 124+48	3"	junction	20	junctions	6	130
Turnouts	3/4"-0" crushed		3"	turnout	10	turnouts	20	200
Curve Widening	3/4"-0" crushed		3"	curve	n/a	curves	36	326
Culvert Bedding	3/4"-0" crushed	12+42,50+65, 77+80,84+11	n/a	culvert	n/a	culverts	4	130
Leveling Rock	3/4"-0" crushed		n/a					100
Narrow ditchline	3/4"-0" crushed	47+67 - 50+65	3"		n/a		n/a	10
Dissipator Rock	24"-6" riprap	12+42, 77+80, 84+11	n/a	dissipator	10	dissipators	3	30
Dissipator Rock	24"-6" riprap	50+65	n/a	dissipator	10	dissipators	4	40
Buttress Rock	24"-6" riprap		n/a	buttress	300	buttresses	1	300
Total Rock for Road Segment:			I1 to I2					4,509

ROAD SEGMENT	I2 to I3			POINT TO POINT		Sta. to Sta.		
Application	Rock Size and Type	Location	Depth of Rock (inches)	I2 to I3 Volume (CY) per		0+00 to 61+75 Number of		TOTAL VOLUME (CY)
Surface Rock	3/4"-0" crushed		2"	station	13	stations	61.75	803
Curve Widening	3/4"-0" crushed		2"	curve	n/a	curves	14	96
Turnouts	3/4"-0" crushed		2"	turnout	10	turnouts	8	80
Junctions	3/4"-0" crushed		2"	junction	n/a	junctions	3	80
Subgrade Leveling	3/4"-0" crushed		N/A					335
Total Rock for Road Segment:			I2 to I3					1,394

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	I4 to I5			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I4 to I5 Volume (CY) per		0+00 to 53+84 Number of		
Base Rock	4"-0" crushed	19+67 - 22+76	8"	station	50	stations	1.54	77
Turnouts	4"-0" crushed	32+84	8"	turnout	22	turnouts	1	22
Surface Rock	3/4"-0" crushed		2"	station	13	stations	53.84	700
Turnouts	3/4"-0" crushed		2"	turnout	10	turnouts	11	110
Curve Widening	3/4"-0" crushed		2"	curve	n/a	curves	19	106
Leveling Rock	3/4"-0" crushed							120
Junctions	3/4"-0" crushed		2"	junction	10	junctions	2	20
Total Rock for Road Segment:			I4 to I5					1,155

ROAD SEGMENT	I6 to I7			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I6 to I7 Volume (CY) per		0+00 to 4+00 Number of		
Surface Rock	3/4"-0" crushed	0+00 - 4+00	2"	station	13	stations	4.00	52
Turnouts	3/4"-0" crushed		2"	turnout	10	turnouts	1	10
Leveling Rock	4"-0" crushed		N/A					60
Total Rock for Road Segment:			I6 to I7					122

ROCK TOTALS (CY)	24"-6"	6"-0"	4"-0"	1½"-0"	3/4"-0"
8,603	370	310	2,150	0	5,773

Roads shall be uniformly graded, shaped 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 sediment will not enter streams. Additional surfacing needed because of construction season or construction practice is not included in the preceding ROAD SURFACING table, and shall be furnished at PURCHASER expense.

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

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

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

Depth shall be determined in the most compacted area of the surface cross section. The depth of compacted aggregates shall not vary more than 1 inch from the depth specified in the "Road Surfacing" table in Exhibit D. The average depth for each road segment shall be the specified depth or greater. If additional rock is required because of insufficient depth, the locations and volumes to be added shall be determined 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

Moisture Content: Compaction must take place when moisture content of the materials being compacted is favorable for effective compaction as determined by STATE.

Compaction Pass: A pass is defined as traveling a road section forward and then backward over that same section.

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 the surface is smooth and hard and visible deformation ceases. At least 3 passes shall be made over the entire width and length of the road. 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 as specified in the "Forest Roads Specifications" table in Exhibit D.

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. At least 3 passes shall be made over the entire width and length of each layer.

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

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

Crushed Rock. The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of crushed rock shall be moistened or dried to uniform moisture content suitable for maximum compaction and compacted in layers not to exceed 6 inches in depth. When more than 1 layer is required, each shall be shaped and compacted before the succeeding layer is placed. Any irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform. Each layer shall be compacted with a minimum of 3 passes over the entire width and length of the road until the surface is smooth and hard and visible deformation ceases. 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 as specified in the "Forest Roads Specifications" table in Exhibit D.

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

EXHIBIT D

COMPACTION EQUIPMENT OPTIONS

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

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

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

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

EXHIBIT E

CULVERT SPECIFICATIONS

All culvert materials shall be furnished and installed by PURCHASER, unless otherwise specified in the Contract.

Culverts shall be constructed of corrugated double-walled polyethylene.

Polyethylene culverts shall be double-walled and meet the requirements of AASHTO M-294-06, Type S Culvert.

Polyethylene culverts shall not be used where required culvert diameter is over 24 inches.

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

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 specified in special instructions.

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

Cross drain culverts on road grades in excess of 3 percent shall be skewed at least 30 degrees from perpendicular to the road centerline, except that cross drain culverts at the low point of dips in roads shall not be skewed.

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3 percent or greater than 10 percent.

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

A bedding of 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 culvert for all culverts on road improvement segments.

Backfill shall consist of, crushed rock, rock crusher reject, or job-excavated soil free of stumps, limbs, rocks, or other objects which would damage the culvert, as specified in Exhibit D.

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

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.

EXHIBIT E

CULVERT SPECIFICATIONS

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.

Compaction by tamping utilizing a Vibratory Hand-Operated or Backhoe-Mounted Tamper is required for all culverts.

All culverts scheduled for replacement shall become property of the PURCHASER and be removed from STATE land and hauled to an approved refuse site in the same project period in which replacement occurred.

The intake ends of culverts in fills less than 3 feet to the top of the culvert 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 2½ inches wide, with the spade driven 2 feet into the ground.

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

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
1	18	55	CPP	I1 to I2	12+42
2	18	40	CPP	I1 to I2	50+65
3	18	35	CPP	I1 to I2	77+80
4	18	40	CPP	I1 to I2	84+11

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 quarry area. The plan shall include, but not be limited to:

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

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

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

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

5. PURCHASER shall conduct the operations relative to the disposal of waste material in such manner that sediment, rock, or debris shall not be washed, conveyed, or otherwise deposited in any stream.

6. 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 maintained/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 percent 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 riprap or pit-run, as directed by STATE.

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. Apply seed and mulch to the waste area, as specified in Exhibit J.

EXHIBIT F

PIT-RUN AND RIPRAP ROCK SPECIFICATIONS

For 6"-0" Pit-Run	Passing	10" sieve	100%
	Passing	6" sieve	60-85%
	Passing	3" sieve	30-50%
	Passing	1/4" sieve	0-20%

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.

State Timber Sale Contract
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Mombo Combo

EXHIBIT G

TYPICAL EMBEDDED ENERGY DISSIPATOR

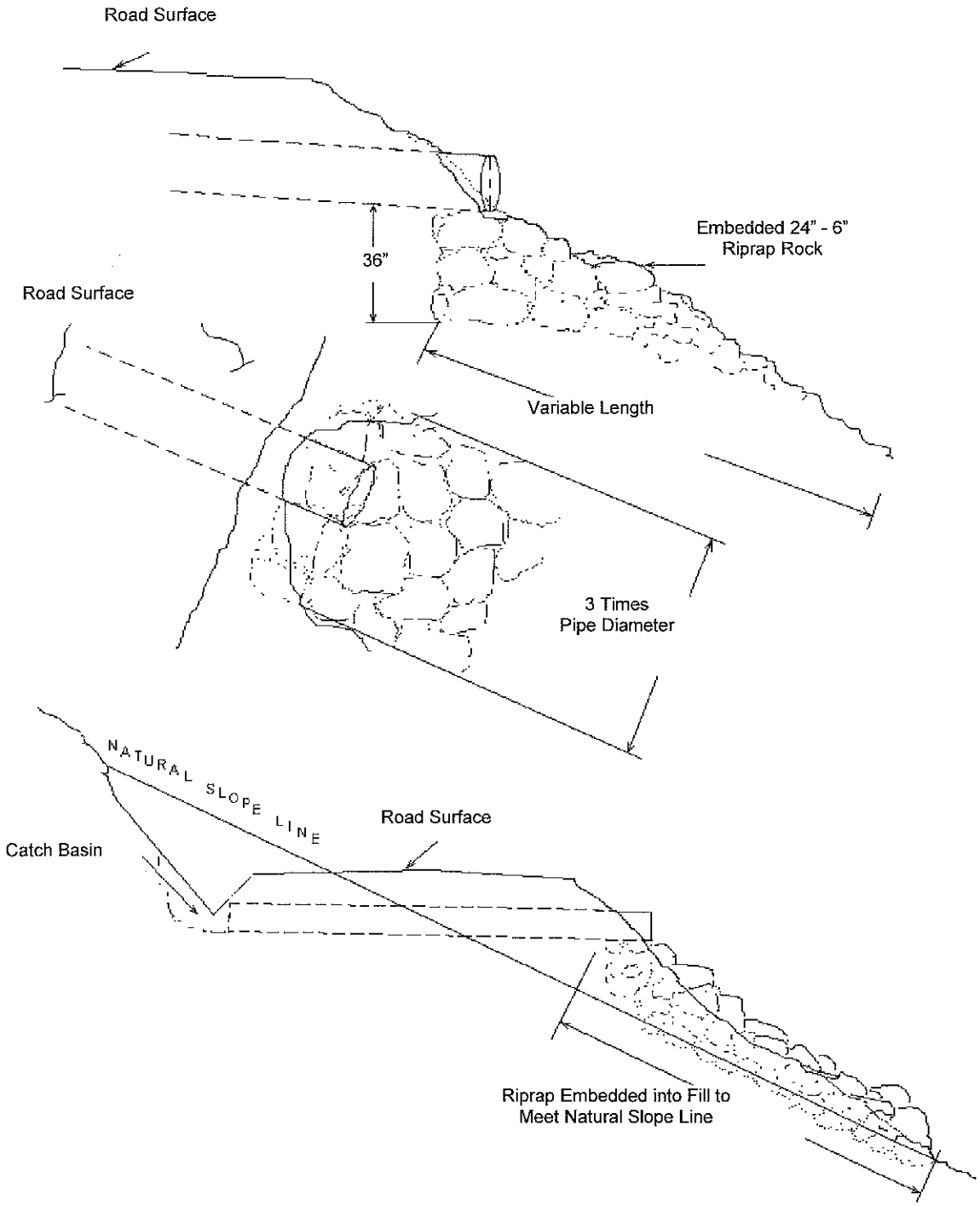

EXHIBIT H

ROAD BRUSHING SPECIFICATIONS

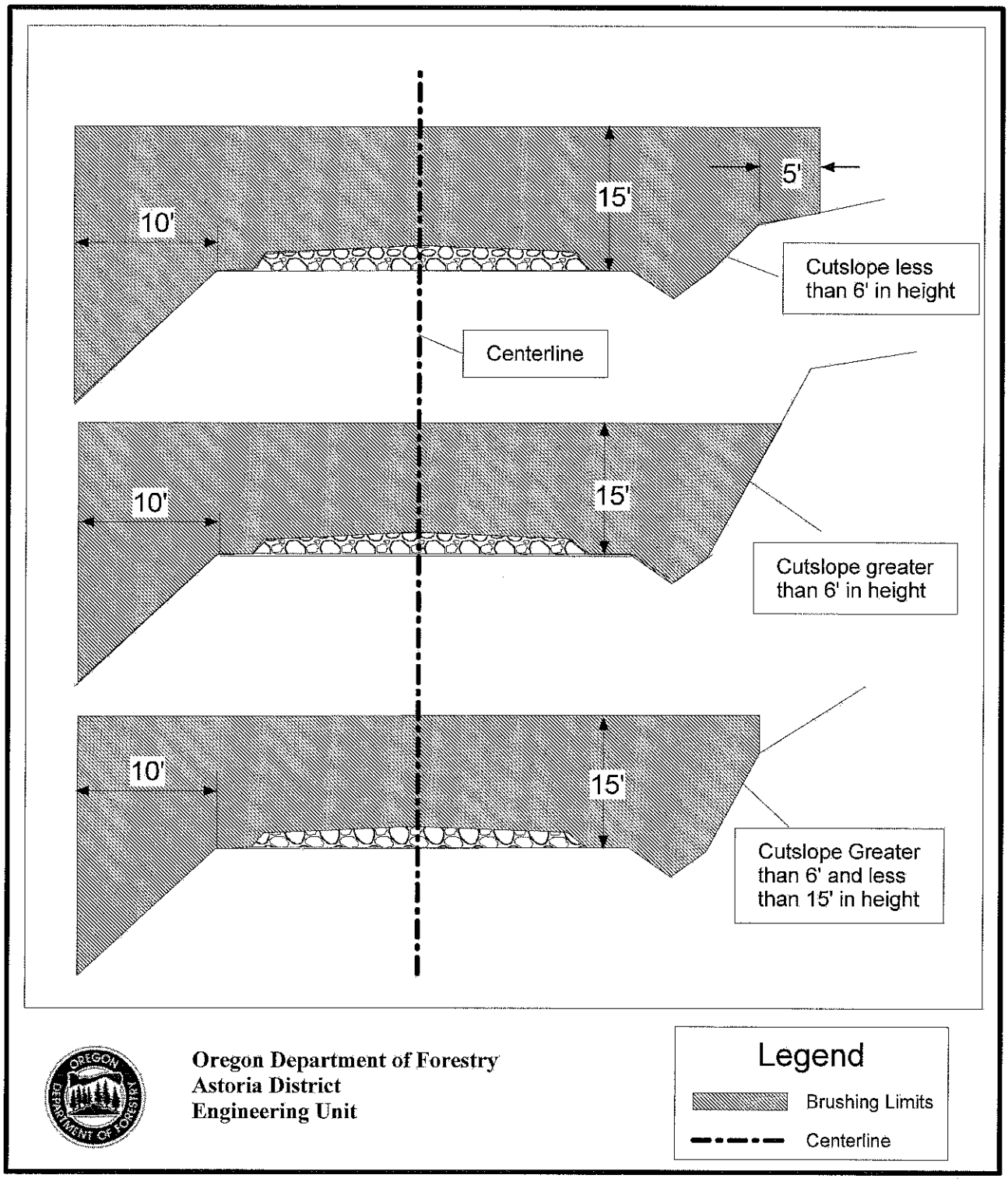

EXHIBIT H

ROAD BRUSHING SPECIFICATIONS

REQUIREMENTS. The minimum height of brushing shall be for all situations 15 feet from the road surface, and the minimum width of brushing on the down slope side of the road shall be 10 feet horizontal distance. The minimum width of brushing on the cutslope side of the road shall be dictated by the height of the cutslope as indicated in the three drawings above. In situations where site distance is an issue brushing heights on the cutslope may vary from the above drawings, as directed by STATE.

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

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

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

Existing debris on the roadway, cutslope, ditchline, or catch basin shall be removed and treated. Debris shall be mulched or scattered downslope from the road or placed in other stable locations. Large non-merchantable debris, 6 inches or larger in diameter, shall be mulched or cut into lengths 6 feet or less to facilitate rapid decay, unless otherwise approved by STATE.

Merchantable blown down trees encountered shall be bucked in lengths as directed by STATE, and placed in locations acceptable to STATE, or pushed out of the road prism.

When spur roads to be brushed end with a landing, the landing is to be brushed as directed by STATE.

CULVERT AND ROAD MARKER DAMAGES. Culvert and road markers damaged, or any portion of a marker damaged from PURCHASER activities shall replaced by PURCHASER.

State Timber Sale Contract
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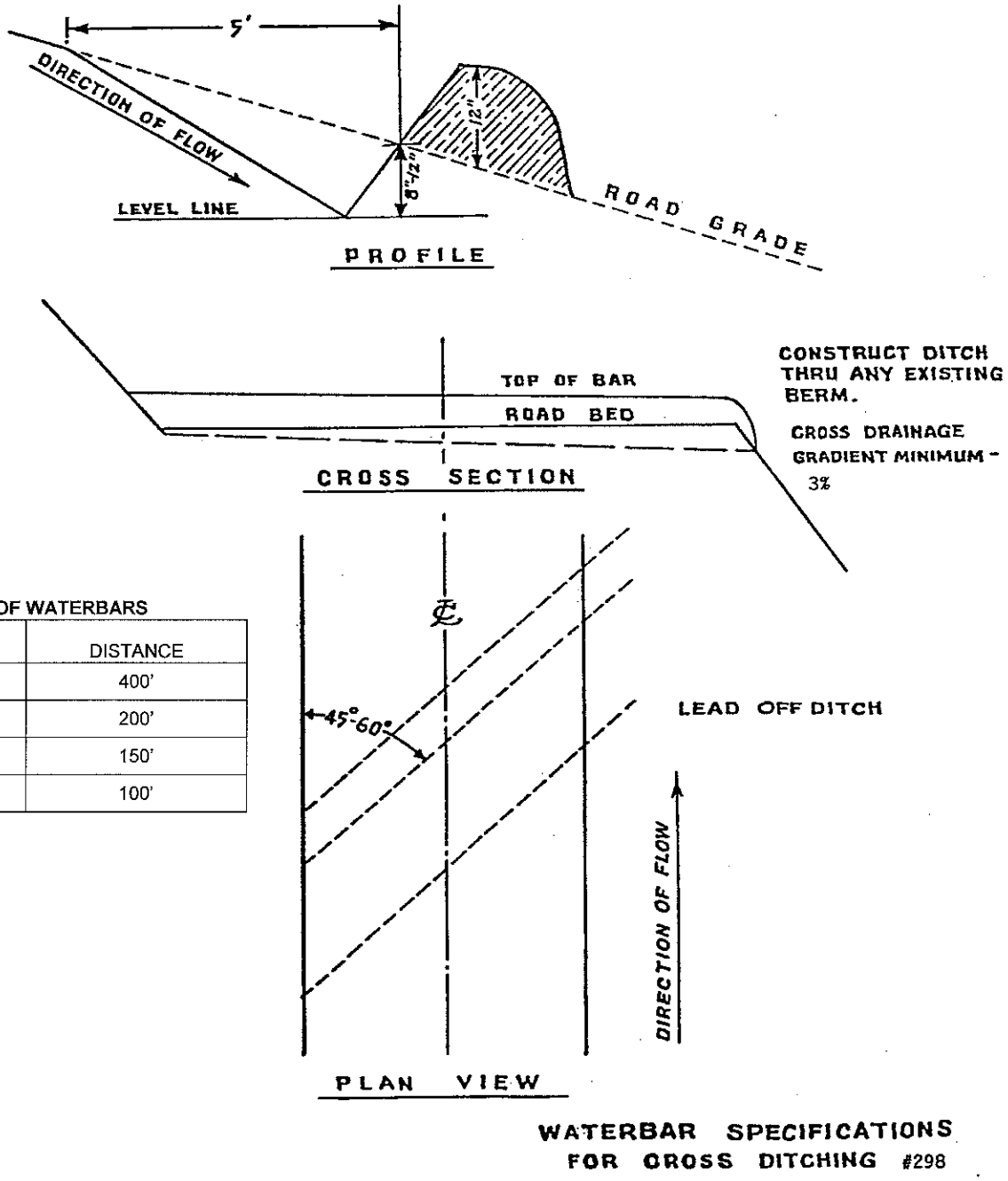
Mombo Combo

EXHIBIT I

WATERBAR SPECIFICATIONS



SPACING OF WATERBARS

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

WATERBAR SPECIFICATIONS FOR CROSS DITCHING #298

State Timber Sale Contract
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Mombo Combo

EXHIBIT J

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 No. 2.

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

APPLICATION METHODS FOR SEED AND FERTILIZER

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

APPLICATION RATES FOR SEED AND FERTILIZER

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

SPECIES	MIXTURE	PURE LIVE SEED	GERMINATION
Annual Rye	26%	95%	>90%
Orchard Grass	25%	95%	>90%
New Zealand White Clover	17%	95%	>90%
Perennial Rye	15%	95%	>90%
Birdsfoot Trifoil	07%	95%	>90%
Red Clover	06%	95%	>90%
Alsike Clover	04%	95%	>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
Waste Areas	N/A

EXHIBIT K

DUST PALLIATIVE AND ROAD SURFACE STABILIZATION SPECIFICATIONS

Surface Course Preparation

(1) Haul specified ¾"-0" crushed rock for roadway, turnouts, fill and curve widening as specified in Exhibit D.

(2) Grade, mix, shape and water crushed surface course. Do not compact with a roller at this stage.

(3) Keep road surface well watered prior to dust abatement application.

Application of Dust Palliative

Initial Application Rate

(1) The ¾"-0" crushed rock placed on the roadway, turnouts, and curves is to be treated with palliative.

(2) Palliative is to be applied within 72 hours of placement of specified ¾"-0" crushed rock.

(3) Delivered palliative in concentrate form is to be diluted per manufacture specifications.

(4) Initial application of palliative is to be applied at the rate of 0.15 gallons of concentrate per square yard.

(5) Application of palliative is to be limited to road segments of no more than 1/3 mile in length.

Palliative and Crushed Rock Mixing

(1) Palliative is to be mixed with placed ¾"-0" crushed rock by the use of a grader. All specified ¾"-0" crushed rock is to be treated with palliative.

(2) The grader used for mixing palliative and crushed rock shall meet the minimum grader specification of 180 horsepower and an operating weight of 40,500 pounds.

(3) Water is not to be applied to palliative after its application on the road surface.

Compaction

(1) Mixed palliative and ¾"-0" crushed rock shall be compacted by the use of two (2) smooth drum vibratory rollers.

(2) Vibratory rollers shall meet the specifications of Exhibit D. Rollers shall be equipped with a mister.

(3) Compactors are to work closely with the grader on a road segment to avoid palliative becoming tacky and being picked up by the roller drum.

(4) Compaction shall be according to Exhibit D specifications.

Distribution Equipment

(1) Distribution equipment shall meet the following specifications:

- (a) Apply dust palliative uniformly on variable widths of road surface. The maximum allowable variation from the specified rate is ± 10 percent of the specified rate for individual distributor loads, and ± 2 percent of the specified rate over the total project.
- (b) Spray pattern from each nozzle on the spray bar is uniform across the spray bar.
- (c) Application at controlled rates from 0.1 to 0.5 pounds per square yard with uniform pressure and application.
- (d) Provide distribution equipment that includes accurate volume measuring devices or a calibrated tank; a thermometer for measuring temperatures of tank contents; and a hose and nozzle attachment for applying material to areas inaccessible to the spray bar.

EXHIBIT K

DUST PALLIATIVE AND ROAD SURFACE STABILIZATION SPECIFICATIONS

Second Application

(1) A second application of palliative is to be applied the same day at a rate of 0.05 gallons of concentrate per square yard once the initial application has sufficiently cured. Curing time of the initial application will be as directed by STATE.

(2) No further processing or equipment activity is required after this second application.

General

(1) Palliative will not be applied to the next road segment until the previous road segment has received full compaction and when directed by STATE.

(2) Dust palliative will not be applied in a manner that spatters or mars adjacent structures or trees, or

(3) placed across bridges. Discharge dust palliative only on roads approved by STATE.

(4) Discharge dust palliative material only in approved areas, and do not allow it to flow into ditches or stream courses.

(5) Application during a light rain is acceptable, provided the palliative penetrates the road surface and does not flow to low areas or off the road surface. Apply palliative when the ambient temperature is 41° F or higher and the ground is not frozen.

Palliative Specification

(1) Palliative shall be a "resin modified biopolymer dust control agent".

(2) Palliative shall be designed to not "re-solubilize" in rainwater.

(3) Palliative is considered a "base stabilizer".

(4) Palliative components shall be:

- (a) Non-hazardous
- (b) Free of asphalt or solvent
- (c) Non-flammable
- (d) Non-carcinogenic
- (e) Non- harmful to aquatic and mammal life