EXHIBIT "B"

FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DITCH REQUIRED	OUTSLOPE
14 feet	N/A	4A to 4B	0+00 to 8+70	NO	YES
16 feet	12 feet	5A to 5B	0+00 to 20+70	YES	NO
16 feet	12 feet	5C to 5D	0+00 to 4+00	YES	NO
16 feet	12 feet	6B to 6C	0+00 to 6+40	YES	NO
16 feet	12 feet	6F to 6G	0+00 to 9+50	YES	NO
14 feet	N/A	6I to 6J	0+00 to 5+50	NO	YES
16 feet	12 feet	6M to 6N	0+00 to 6+20	YES	NO
14 feet	N/A	6P to 6Q	0+00 to 6+00	NO	YES
16 feet	12 feet	6R to 6s	0+00 to 4+60	YES	NO
16 feet	12 feet	7A to 7B	0+00 to 26+60	YES	NO
16 feet	12 feet	7C to 7D	0+00 to 2+50	YES	NO
16 feet	12 feet	7E to 7F	0+00 to 2+70	YES	NO
16 feet	12 feet	7G to 7H	0+00 to 1+40	YES	NO
16 feet	12 feet	7I to 7J	0+00 to 1+20	YES	NO
16 feet	12 feet	7K to 7L	0+00 to 5+50	YES	NO
16 feet	12 feet	7M to 7N	0+00 to 6+60	YES	NO
16 feet	12 feet	7O to 7P	0+00 to 16+80	YES	NO
16 feet	12 feet	7Q to 7R	0+00 to 23+90	YES	NO
16 feet	12 feet	9A to 9B	0+00 to 4+40	YES	NO
16 feet	12 feet	9C to 9D	0+00 to 6+50	YES	NO
16 feet	12 feet	9E to 9F	0+00 to 4+30	YES	NO
16 feet	12 feet	9G to 9H	0+00 to 14+10	YES	NO
16 feet	12 feet	9I to 9J	0+00 to 3+50	YES	NO
16 feet	12 feet	9K to 9L	0+00 to 10+50	YES	NO
16 feet	12 feet	I1 to I2	0+00 to 31+70	YES	NO
16 feet	12 feet	I3 to I4	0+00 to 90+50	YES	NO
16 feet	12 feet	I5 to I6	0+00 to 24+00	YES	NO
16 feet	12 feet	I7 to I8	0+00 to 16+70	YES	NO
16 feet	12 feet	I9 to I10	0+00 to 5+00	YES	NO
16 feet	12 feet	W1 to W2	0+00 to 61+00	YES	NO

EXHIBIT "B"

FOREST ROAD SPECIFICATIONS

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

Where clearing limits have not been staked, the clearing limits shall extend 10 feet back of the top of the cutslope and 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 classifications are as follows:

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

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

CLEARING AND GRUBBING DISPOSAL. Scatter through openings in the timber outside of the cleared right-of-way, except where end-haul is required. In areas where end-haul is required, clearing and grubbing debris shall be fully contained and hauled to a designated waste area.

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

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

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

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-risk site 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.

EXHIBIT "B"

FOREST ROAD SPECIFICATIONS

DRAINAGE

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

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

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

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

GRADING	Back Slopes	Fill Slopes
Rock	Vertical to 1/4:1	Not steeper
Common - side slopes 50% and over	3/4:1	than 1½:1
Common - side slopes less than 50%	1:1	
Common - turnpike (level) section	2:1	

Top of cutslope shall be rounded.

LANDINGS. Landings shall be constructed no less than 50 feet wide and no more than 70 feet wide. Surface is to be crowned for drainage, with general grade no more than 3 percent. Surface as shown on Exhibit B.

TURNAROUNDS. Increase subgrade width an additional 20 feet for a length of 20 feet at locations listed in Exhibit B, and/or as marked in the field.

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

EXHIBIT "B"

ROAD IMPROVEMENT INSTRUCTIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS

(1) Timber Removal. Remove all trees within the posted Right-of-Way Boundary, as specified in the section titled, "Designated Timber." Timber within the right-of-way of W1 to W2 on Weyerhaeuser Company property shown on Exhibit A, are posted with orange day-glo "Weyerhaeuser – Cutting Unit Boundary" signs and yellow paint, and shall remain the property of Weyerhaeuser Company. Right-of-way timber shall be decked along the roadside on Weyerhaeuser property.

(2) Existing Underground Utility Lines. Prior to conducting any activity near underground utility lines, PURCHASER shall notify NW Natural Gas at 176 West Marine Drive, Astoria, Oregon 97103, (503) 325-1632 and the City of Astoria Public Works at 555 30th Street, Astoria, Oregon 97103, (503) 325-3524. The operator shall not conduct any excavation within 5 feet of any underground utility lines. PURCHASER shall conduct activities near these utility lines according to the recommendations of Northwest Natural Gas and the City of Astoria Public Works, and shall be responsible for any damage to the utility lines resulting from PURCHASER's activities. PURCHASER shall coordinate with the above listed utilities in the field locating underground utility lines.

(3) Overhead Powerlines. Prior to conducting any activity near overhead powerlines, PURCHASER shall notify STATE and Bonneville Power Administration (BPA) at 905 NE 11th Avenue, P.O. Box 3621, Portland, Oregon 97208, (503) 230-3000. PURCHASER shall conduct activities near these utility lines according to the recommendations of BPA, and shall be responsible for any damage to the utility resulting from PURCHASER's activities.

(4) Excavated Materials. Excavated materials shall be utilized for road and fill construction and hauled in where necessary. Fills shall be compacted in accordance with Exhibit B.

(5) Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. 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. Fill reconstruction backfill shall consist of select materials and be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with Exhibit B. 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.

(6) Riprap Rock Use. Where rock is specified for fill armor, rock shall be placed and tamped at a 1½:1 slope, beginning at the fill toes. Where rock is used for an energy dissipater, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet.

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

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

EXHIBIT "B"

ROAD IMPROVEMENT INSTRUCTIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS

(9) Subgrade Preparation and Application of New Surfacing Rock

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

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

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

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

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

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I3 to I4	0+00	Point I3.
	74+70	Remove loose material on existing fill. Armor fill slopes utilizing 50 cubic yards of 24"-6" riprap rock.
	90+50	Point I4.
I5 to I6	0+00	Point I5. Begin curve widening.
	1+50	End curve widening.
	5+90	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. Construct energy dissipator utilizing 10 cubic yards of 24"-6" riprap rock.
	8+85	Construct turn-out on left.
	11+50	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill.
	16+20	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. Construct energy dissipator utilizing 10 cubic yards of 24"-6" riprap rock.
	17+60	Reconstruct turn-around on left.
	19+95	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill.
	20+50	Construct turn-out on left.
	23+60	Reconstruct turn-around on left.
	24+00	Point I6.

EXHIBIT "B"

ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I7 to I8	0+00	Point I7.
	2+50	Construct landing.
	4+25	Culvert replacement / fill reconstruction. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding. Construct energy dissipator utilizing 10 cubic yards of 24"-6" riprap rock. Armor fill slopes utilizing 30 cubic yards of 24"-6" riprap rock. Apply 30 cubic yards of 4"-0" crushed rock for base rock replacement. Finished subgrade width shall be 16 feet.
	5+50	Construct turn-out left.
	9+50	Construct turn-out right.
	11+45	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding. Construct energy dissipator utilizing 10 cubic yards of 24"-6" riprap rock.
	14+10	Construct turn-around.
	15+50	Culvert replacement. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert bedding.
	16+70	Point I8.
I11		Armor fill slopes utilizing 70 cubic yards of 24"-6" riprap rock.
W1 to W2	0+00	Point W1.
	4+95	ODF/Weyerhaeuser property line.
	9+15	Weyerhaeuser/ODF property line.
	10+30	Construct ditchout left.
	13+00	ODF/Hampton Tree Farms property line.
	15+00	Construct ditchout left.
	20+45	Hampton Tree Farms/Weyerhaeuser property line.
	22+70	Construct ditchout right.
	40+50	Block dirt road on left.
	53+85	Weyerhaeuser/ODF property line.
	61+00	Point W2.

EXHIBIT "B"

ROAD CONSTRUCTION INSTRUCTIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS

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

(2) Riprap Rock Use. Where rock is used for an energy dissipater, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet.

(3) Existing Underground Utility Lines. Prior to conducting any activity near underground utility lines, PURCHASER shall notify NW Natural Gas at 176 West Marine Drive, Astoria, Oregon 97103, (503) 325-1632 and the City of Astoria Public Works at 555 30th Street, Astoria, Oregon 97103, (503) 325-3524. The operator shall not conduct any excavation within 5 feet of any underground utility lines. PURCHASER shall conduct activities near these utility lines according to the recommendations of Northwest Natural Gas and the City of Astoria Public Works, and shall be responsible for any damage to the utility lines resulting from PURCHASER's activities. PURCHASER shall coordinate with the above listed utilities in the field locating underground utility lines. Where the road crosses the existing Pipeline County Road, select embankment material or sand shall be hauled in and used for fill. The fill shall be thoroughly compacted for a thickness of 12 inches for the entire width of the Pipeline County Road, and to provide for tapered approaches (from the Pipeline County Road to crossing the new road) for a minimum distance of 10 feet.

(4) Overhead Powerlines. Prior to conducting any activity near overhead powerlines, PURCHASER shall notify STATE and Bonneville Power Administration (BPA) at 905 NE 11th Avenue, P.O. Box 3621, Portland, Oregon 97208, (503) 230-3000. PURCHASER shall conduct activities near these utility lines according to the recommendations of BPA, and shall be responsible for any damage to the utility resulting from PURCHASER's activities.

(5) Geotextile Road Fabric. Install fabric from 0+00 to 17+25 on 5A to 5B, 5C to 5D, 7A to 7B, 7O to 7P, and 7Q to 7R in accordance with the specifications in Exhibit F.

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: 5A to 5B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	5A to 5B Volume (CY) per		0+00 to 20+70 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	20.70	1,035
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	2	44
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Landings	6"-0" Pit-Run		N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:		5A to 5B						1,144
ROAD SEGMENT: 5C to 5D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	5C to 5D Volume (CY) per		0+00 to 4+00 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	4.00	200
Junctions	4"-0" Crushed		8	Junction	25	Junctions	2	50
Total Rock for Road Segment:		5C to 5D						250
ROAD SEGMENT: 6B to 6C				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	6B to 6C Volume (CY) per		0+00 to 6+40 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	6.40	320
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Junctions	3/4"-0" Crushed		N/A	Junction	20	Junctions	1	20
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-Run	3+00	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:		6B to 6C						451
ROAD SEGMENT: 6F to 6G				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	6F to 6G Volume (CY) per		0+00 to 9+50 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	9.50	475
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-Run		N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:		6F to 6G						586
ROAD SEGMENT: 6M to 6N				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	6M to 6N Volume (CY) per		0+00 to 6+20 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	6.20	310
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Junctions	1 1/2"-0" Crushed		N/A	Junction	20	Junctions	1	20
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-Run		N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:		6M to 6N						441

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: 6R to 6S				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	6R to 6S		0+00 to 4+60		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	4.60	230
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Junctions	1 1/2"-0" Crushed		N/A	Junction	20	Junctions	1	20
Landings	6"-0" Pit-Run	6S	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:		6R to 6S						315
ROAD SEGMENT: 6N, 6O				POINTS		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	6N, 6O		N/A		
				Volume (CY) per		Number of		
Landings	6"-0" Pit-Run	6N, 6O	N/A	Landing	40	Landings	2	80
Total Rock for Road Segment:		6N, 6O						80
ROAD SEGMENT: 7A to 7B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	7A to 7B		0+00 to 26+60		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	26.60	1,330
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	5	110
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Traction Rock	3/4"-0" Crushed	6+50-8+50	N/A					20
Traction Rock	3/4"-0" Crushed	12+50-14+50	N/A					20
Traction Rock	3/4"-0" Crushed	23+00-25+00	N/A					20
Landings	6"-0" Pit-Run	7B	N/A	Landing	40	Landings	1	40
Energy Dissipator	24"-6" Riprap	10+60	N/A					10
Energy Dissipator	24"-6" Riprap	14+00	N/A					10
Energy Dissipator	24"-6" Riprap	16+00	N/A					10
Total Rock for Road Segment:			7A to 7B					1,619
ROAD SEGMENT: 7C to 7D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	7C to 7D		0+00 to 2+50		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	2.50	125
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Landings	6"-0" Pit-Run	7D	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:			7C to 7D					190

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: 7E to 7F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	7E to 7F		0+00 to 2+70		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	2.70	135
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Landings	6"-0" Pit-Run	7F	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:			7E to 7F					200

ROAD SEGMENT: 7G to 7H				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	7G to 7H		0+00 to 1+40		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	1.40	70
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Landings	6"-0" Pit-Run	7H	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:			7G to 7H					135
ROAD SEGMENT: 7I to 7J				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	7I to 7J		0+00 to 1+20		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	1.20	60
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Landings	6"-0" Pit-Run	7J	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:			7I to 7J					125
ROAD SEGMENT: 7K to 7L				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	7K to 7L		0+00 to 5+50		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	5.50	275
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Landings	6"-0" Pit-Run	7L	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:			7K to 7L					362
ROAD SEGMENT: 7M to 7N				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	7M to 7N		0+00 to 6+60		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	6.60	330
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TA	1	24
Junctions	3/4"-0" Crushed		N/A	Junction	20	Junctions	1	20
Landings	6"-0" Pit-Run	7N	N/A	Landing	40	Landings	1	40
Energy Dissipator	24"-6" Riprap	4+00	N/A					10
Total Rock for Road Segment:			7M to 7N					471

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: 7O to 7P				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	7O to 7P Volume (CY) per		0+00 to 16+80 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	16.80	840
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	3	66
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Curve Widening	4"-0" Crushed		8					80
Traction Rock	3/4"-0" Crushed	0+50-3+00	N/A					20
Traction Rock	3/4"-0" Crushed	7+00-14+00	N/A					70
Landings	6"-0" Pit-Run	7P	N/A	Landing	40	Landings	1	40
Energy Dissipator	24"-6" Riprap	8+00	N/A					10
Total Rock for Road Segment:			7O to 7P					1,175

ROAD SEGMENT: 7Q to 7R				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	7Q to 7R Volume (CY) per		0+00 to 23+90 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	23.90	1,195
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	6	132
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Curve Widening	4"-0" Crushed		8					70
Landings	6"-0" Pit-Run	7R	N/A	Landing	40	Landings	1	40
Energy Dissipator	24"-6" Riprap	3+50	N/A					10
Total Rock for Road Segment:			7Q to 7R					1,496

ROAD SEGMENT: 9A to 9B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	9A to 9B Volume (CY) per		0+00 to 4+40 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	4.40	220
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Landings	6"-0" Pit-Run	9B	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:			9A to 9B					307

ROAD SEGMENT: 9C to 9D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	9C to 9D Volume (CY) per		0+00 to 6+50 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	6.50	325
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-Run	9D	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:			9C to 9D					436

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: 9E to 9F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	9E to 9F Volume (CY) per		0+00 to 4+30 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	4.30	215
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Junctions	4"-0" Crushed		8	Junction	25	Junctions	3	75
Landings	6"-0" Pit-Run	9F	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:			9E to 9F					352
ROAD SEGMENT: 9G to 9H				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	9G to 9H Volume (CY) per		0+00 to 14+10 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	14.10	705
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	2	44
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-Run	9H	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:			9G to 9H					838
ROAD SEGMENT: 9I to 9J				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	9I to 9J Volume (CY) per		0+00 to 3+50 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	3.50	175
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-Run	9J	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:			9I to 9J					264
ROAD SEGMENT: 9K to 9L				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	9K to 9L Volume (CY) per		0+00 to 10+50 Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	10.50	525
Turn Outs	4"-0" Crushed		8	Turnout	22	Turnouts	2	44
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-Run	9L	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:			9K to 9L					658
ROAD SEGMENT: I1 to I2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2 Volume (CY) per		0+00 to 31+70 Number of		
Base Rock	3/4"-0" Crushed		3	Station	19	Stations	31.70	602
Turn Outs	3/4"-0" Crushed		3	Turnout	8	Turnouts	12	96
Junctions	3/4"-0" Crushed		3	Junction	20	Junctions	2	40
Subgrade Leveling	3/4"-0" Crushed		N/A					160
Total Rock for Road Segment:			I1 to I2					898

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: I3 to I4				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3 to I4 Volume (CY) per		0+00 to 90+50 Number of		
Base Rock	1 1/2"-0" Crushed		3	Station	19	Stations	90.50	1,720
Turn Outs	1 1/2"-0" Crushed		3	Turnout	8	Turnouts	20	160
Junctions	1 1/2"-0" Crushed		3	Junction	10	Junctions	1	10
Junctions	3/4"-0" Crushed		3	Junction	20	Junctions	2	40
Subgrade Leveling	1 1/2"-0" Crushed		N/A					344
Fill Armor	24"-6" Riprap	74+70	N/A					50
Total Rock for Road Segment:			I3 to I4					2,324
ROAD SEGMENT: I5 to I6				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I5 to I6 Volume (CY) per		0+00 to 24+00 Number of		
Base Rock	4"-0" Crushed		6	Station	38	Stations	24.00	912
Turn Outs	4"-0" Crushed		6	Turnout	17	Turnouts	3	51
Junctions	4"-0" Crushed		6	Junction	25	Junctions	1	25
Curve Widening	4"-0" Crushed	0+00 to 1+50						75
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	2	48
Energy Dissipator	24"-6" Riprap	5+90	N/A					10
Culvert Backfill	1 1/2"-0" Crushed	5+90	N/A					20
Culvert Backfill	1 1/2"-0" Crushed	11+50	N/A					20
Culvert Backfill	1 1/2"-0" Crushed	19+95	N/A					20
Energy Dissipator	24"-6" Riprap	16+20	N/A					10
Culvert Backfill	1 1/2"-0" Crushed	16+20	N/A					20
Total Rock for Road Segment:			I5 to I6					1,211
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		0+00 to 16+70 Number of		
Base Rock	4"-0" Crushed		6	Station	38	Stations	16.70	635
Turn Outs	4"-0" Crushed		6	Turnout	17	Turnouts	2	34
Junctions	4"-0" Crushed		8	Junction	25	Junctions	1	25
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Fill Armor	24"-6" Riprap	4+25	N/A					40
Energy Dissipator	24"-6" Riprap	4+25	N/A					10
Culvert Bedding/Backfill	1 1/2"-0" Crushed	4+25	N/A					20
Fill Base Rock Restoration	4"-0" Crushed	4+25	N/A					30
Energy Dissipator	24"-6" Riprap	11+45	N/A					10
Culvert Backfill	1 1/2"-0" Crushed	11+45	N/A					20
Culvert Backfill	1 1/2"-0" Crushed	15+50	N/A					20
Landings	6"-0" Pit-Run	2+50	N/A	Landing	40	Landings	1	40
Total Rock for Road Segment:			I7 to I8					908

EXHIBIT "B"

ROAD SURFACING

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		0+00 to 5+00 Number of		
Base Rock	4"-0" Crushed	0+00 to 1+00	6	Station	38	Stations	1.00	38
Junctions	4"-0" Crushed		N/A	Junction	25	Junctions	1	25
Subgrade Leveling	1 1/2"-0" Crushed		N/A					30
Total Rock for Road Segment:			I9 to I10					93
ROAD SEGMENT: I11				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I11 Volume (CY) per		Number of		
Fill Armor	24"-6" Riprap	I11	N/A					70
Total Rock for Road Segment:			I11					70
ROAD SEGMENT: W1 to W2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	W1 to W2 Volume (CY) per		0+00 to 61+00 Number of		
Base Rock	1 1/2"-0" Crushed		4	Station	25	Stations	61.00	1,525
Turn Outs	1 1/2"-0" Crushed		4	Turnout	10	Turnouts	8	80
Junctions	1 1/2"-0" Crushed		4	Junction	20	Junctions	2	40
Subgrade Leveling	1 1/2"-0" Crushed		N/A					338
Total Rock for Road Segment:			W1 to W2					1,983
ROAD SEGMENT: W3				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	W3 Volume (CY) per		Number of		
Base Rock Restoration	4"-0" Crushed		10					80
Culvert Bedding/Backfill	1 1/2"-0" Crushed		N/A					20
Fill Armor	24"-6" Riprap		N/A					40
Energy Dissipator	24"-6" Riprap		N/A					10
Total Rock for Road Segment:			W3					150
ROAD SEGMENT: P1 to P2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	P1 to P2 Volume (CY) per		Number of		
Junction Reinforcement	4"-0" Crushed		N/A					70

ROCK TOTALS (CY)	24"-6"	6"-0"	4"-0"	1 1/2"-0"	3/4"-0"
19,602	310	920	12,797	4,447	1,128

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

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

EXHIBIT "B"

ROCK ACCOUNTABILITY

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

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

Rock Checking. All rock spreading shall be done only when a STATE representative is present. STATE shall issue a receipt for each load delivered, and rock shall be measured without allowance for shrinkage or shakedown during hauling. Total truck measure volume for each road segment shall be as shown on Exhibit B. Deliver at least 500 cubic yards per 8-hour shift, unless otherwise approved by STATE. A penalty of $10.00 for each 10 cubic yards which are not delivered during a single shift shall be billed, and payment shall be required prior to final acceptance of the project by STATE.

Depth Measurement. Rock shall be spread and compacted according to the depths specified in Exhibit B. 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 B. 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 "B"

COMPACTION AND PROCESSING REQUIREMENTS

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All Road Construction and Road Improvement Segments except for 4A to 4B, 6I to 6J, and 6P to 6Q	1

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

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

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

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All Road Construction and Road Improvement Segments	1

EXHIBIT "B"

COMPACTION EQUIPMENT OPTIONS

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

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

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

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

EXHIBIT "C"

CULVERT SPECIFICATIONS

All culvert materials shall be furnished and installed by PURCHASER, unless otherwise specified in the contract. Culverts shall conform to the material and fabricating requirements of Sections 2410 and 2420 of the "Standard Specifications for Highway Construction" prepared by the Highway Division of the Oregon State Department of Transportation. All culverts shall be constructed with of double-walled polyethylene. Double-walled polyethylene pipe shall meet the requirements of AASHTO M-294-901, Type S. Corrugation types and shapes other than those meeting the above minimum Highway requirements, shall be approved in writing by STATE.

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

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

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

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

A bedding of granulated material or job-excavated soil shall be placed to provide a wide band of support and to transmit the load from above evenly over the entire length of the pipe.

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

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

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

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

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

EXHIBIT "C"

CULVERT SPECIFICATIONS

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

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

The ends of each culvert shall be free of logs and debris which would restrict the free flow of water. Culverts in Type F streams must allow free passage of fish as provided in the Oregon Forest Practice Rules. The intake end of relief culverts shall be provided with a sediment catching basin 3 feet in diameter at the bottom. The outlet end of any culvert which would allow water to erode embankment soil into waters of the State shall be provided with a downspout or other approved slope protection device.

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

Polyethylene culverts between 3" to 10" in diameter shall meet the requirements of AASHTO M-252-851. Polyethylene culverts between 10" to 36" in diameter shall be double walled and meet the requirements of AASHTO M-294-901, Type S.

The intake ends of culverts shall be marked by driving white fiberglass posts within 6 inches of the downgrade side. Posts shall be a minimum of 6 feet long, and be a minimum of 2½ inches in width, with the spade driven 2 feet into the ground.

Tamping is required.

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

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

EXHIBIT "C"

CULVERT SPECIFICATIONS

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
1	18	30	5A to 5B	0+95
2	18	30	5A to 5B	7+00
3	18	30	5A to 5B	9+20
4	18	30	5A to 5B	11+35
5	18	30	5A to 5B	17+00
6	18	40	6B to 6C	0+50
7	18	30	6B to 6C	4+70
8	18	40	6R to 6S	3+07
9	18	40	7A to 7B	6+38
10	18	40	7A to 7B	10+60
11	18	40	7A to 7B	14+00
12	18	40	7A to 7B	16+00
13	18	40	7M to 7N	4+00
14	18	30	7O to 7P	4+00
15	18	40	7O to 7P	8+00
16*	24	50	7O to 7P	10+00
17*	24	40	7O to 7P	14+40
18	18	40	7Q to 7R	0+00
19	18	40	7Q to 7R	5+55
20	18	30	7Q to 7R	10+20
21	18	40	9C to 9D	0+00
22	18	40	9E to 9F	0+00
23	18	30	9G to 9H	0+00
24	18	40	9I to 9J	0+00
25	18	40	9K to 9L	0+00
26	18	40	I5 to I6	5+90
27	18	36	I5 to I6	11+50
28	18	30	I5 to I6	16+20
29	18	30	I5 to I6	19+95
30*	24	50	I7 to I8	4+25
31	18	30	I7 to I8	11+45
32	18	30	I7 to I8	15+50
33*	24	50	W3	W3
34	18	54	P1 to P2	0+20

*Indicates culverts that do not require markers.

EXHIBIT "D"

ROCK PIT DEVELOPMENT AND USE

(1) PURCHASER shall schedule and coordinate Simmons Ridge Quarry and stockpile use with other existing STATE contracts and planned STATE contracts requiring quarry and stockpile use.

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

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

(3) 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.

(4) Clear and grub the rock source area. All woody debris, including stumps and slash shall be hauled, piled and disposed of by burning at the waste area or quarry floor, as directed by STATE.

(5) PURCHASER shall obtain a FPA Burn Permit prior to debris disposal.

(6) Strip overburden from the rock source area. Overburden materials shall be hauled to the waste area. Waste material shall be spread evenly on the site, sloped and compacted for drainage, as directed by STATE.

(7) Benches shall be constructed at intervals of 40 feet or less in height and shall be a minimum of 20 feet in width. Any gravel or talus slopes shall be left with a working face at an angle of 60 degrees or less. There shall be a minimum of 1 bench with an access road to it. Said bench shall be easily accessible with tractors.

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

(9) If blasting will be utilized, controlled blasting techniques are required, 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.

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

(11) The quarry will developed in such a manner that Rock Source Area 1 will be utilized first, followed by Area 2, Area 3, and Area 4.

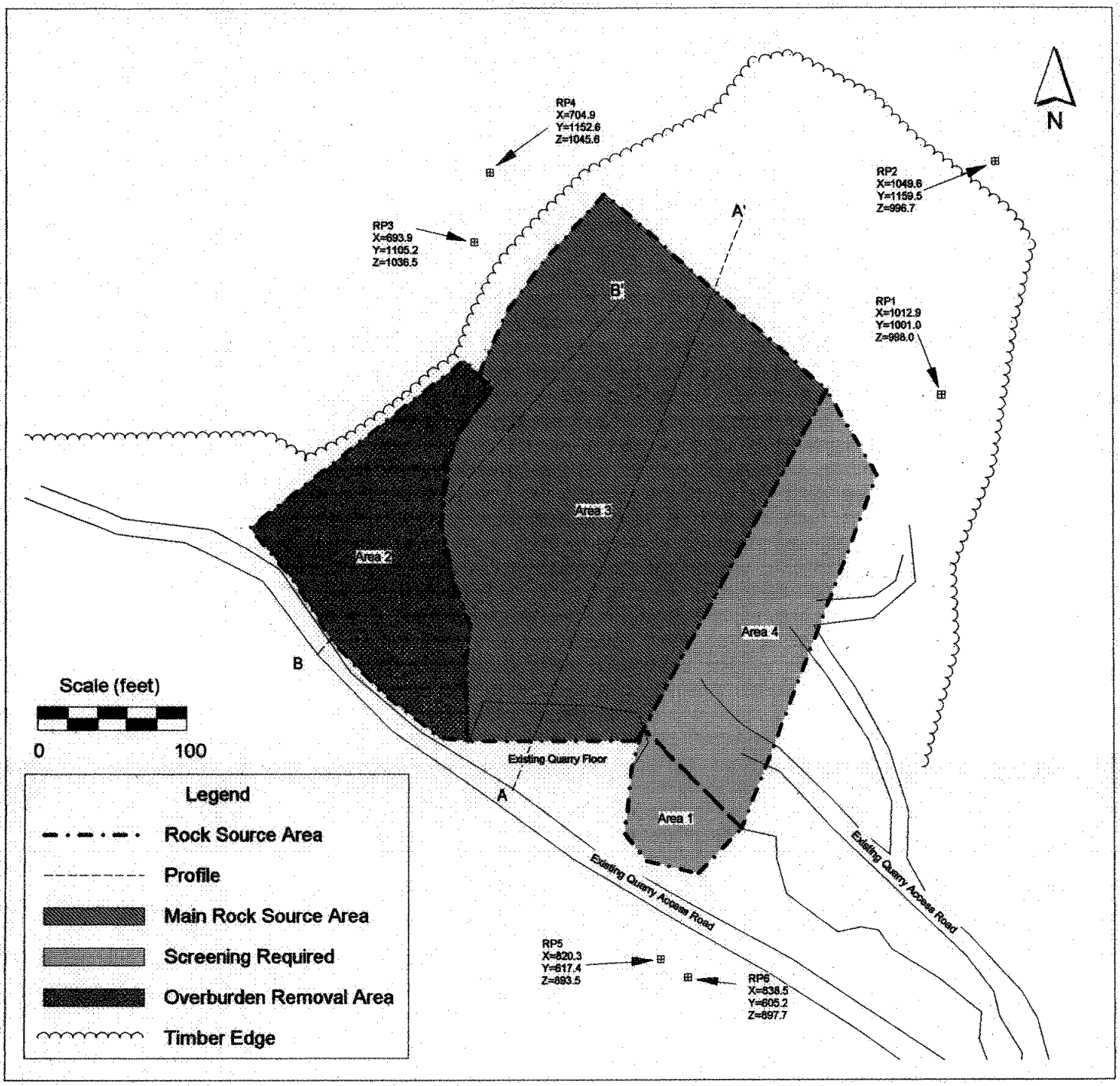
(12) The pit site shall be left in a condition free from overburden and debris. Access roads to the pit, and the pit floor, shall be cleared at the termination of use. Overburden shall be removed for a distance of 20 feet beyond the developed rock source.

(13) 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.

(14) 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.

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

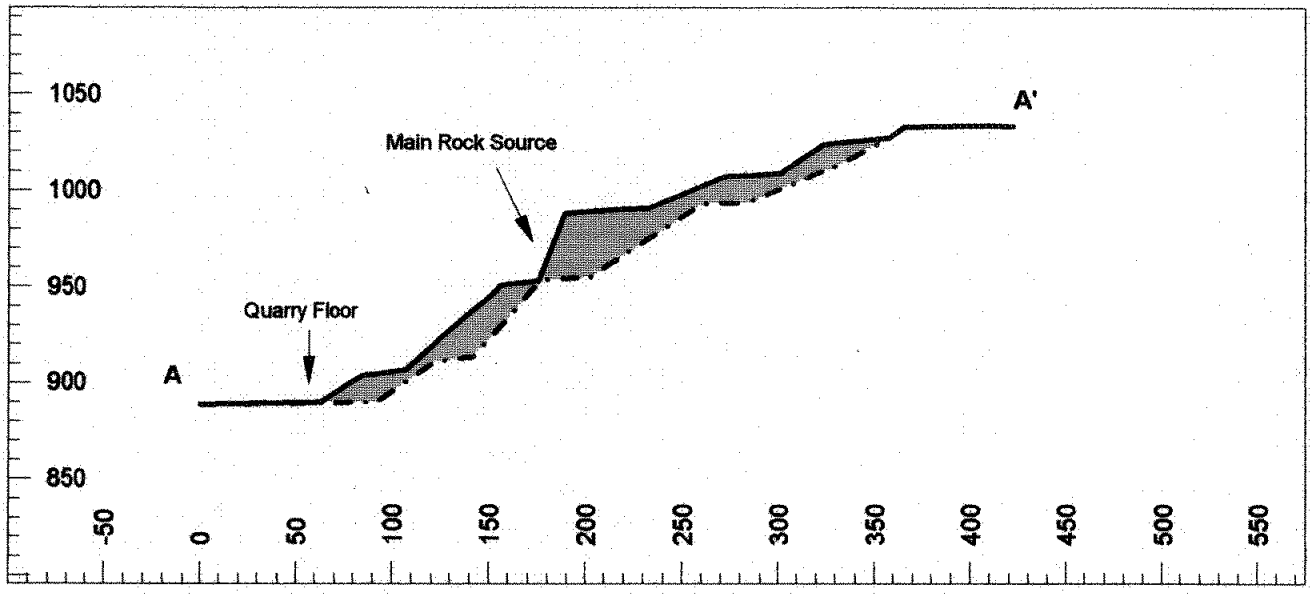
EXHIBIT "D"
ROCK PIT DEVELOPMENT AND USE

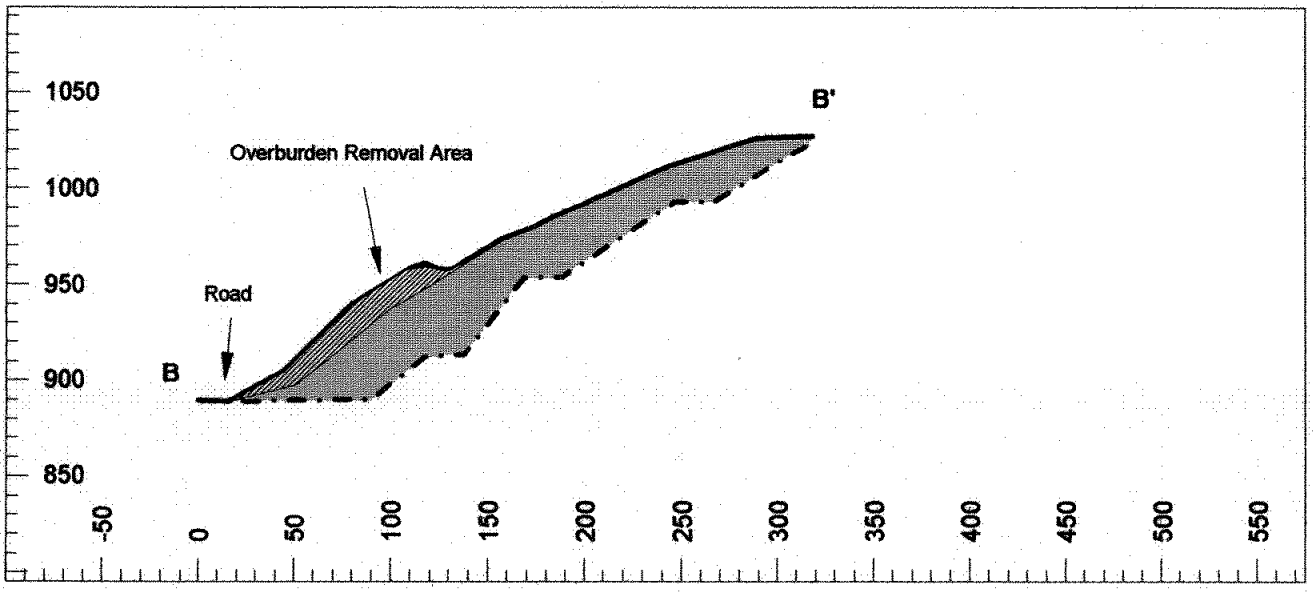


Oregon Department of Forestry
Astoria District
Engineering Unit

Simmons Ridge Quarry
NE1/4, Section 28, T7N, R8W, W. M.
Clatsop County, Oregon

EXHIBIT "D"
ROCK PIT DEVELOPMENT AND USE





Legend	
———	Original Ground
- - - -	Planned Development
	Rock Source
	Overburden Removal Area

Oregon Department of Forestry
Astoria District
Engineering Unit

Simmons Ridge Quarry
NE1/4, Section 28, T7N, R8W, W. M.
Clatsop County, Oregon

State Timber Sale Contract
No. 341-04-54
Astoria Basin Thinning

EXHIBIT "E"

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 1½"-0" and ¾"-0" crushed rock for the purpose of removing excess dirt.

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

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

Hardness - Test Method AASHTO T 96 35% Maximum

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

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

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

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

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

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

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

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EXHIBIT "F"

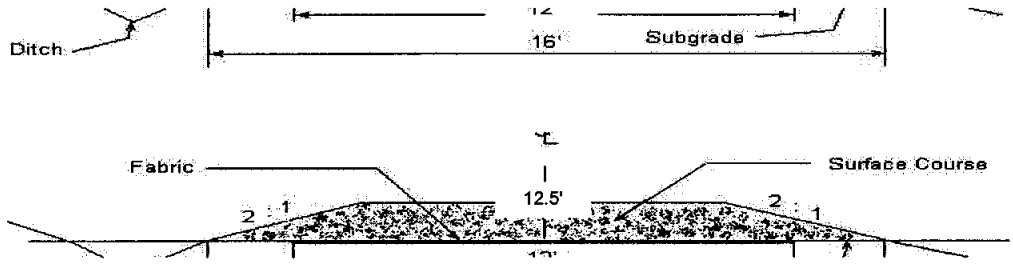
FABRIC SPECIFICATIONS

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

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

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

(1) Typical cross section:



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

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

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

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

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

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

(8) Install fabric at the following locations: 0+00 to 17+25 on 5A to 5B, 5C to 5D, 7A to 7B, 7o to 7P, and 7Q to 7R.

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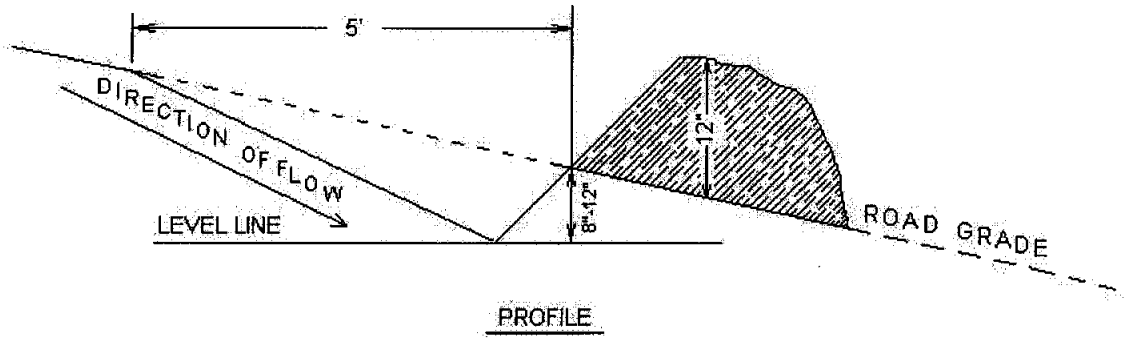
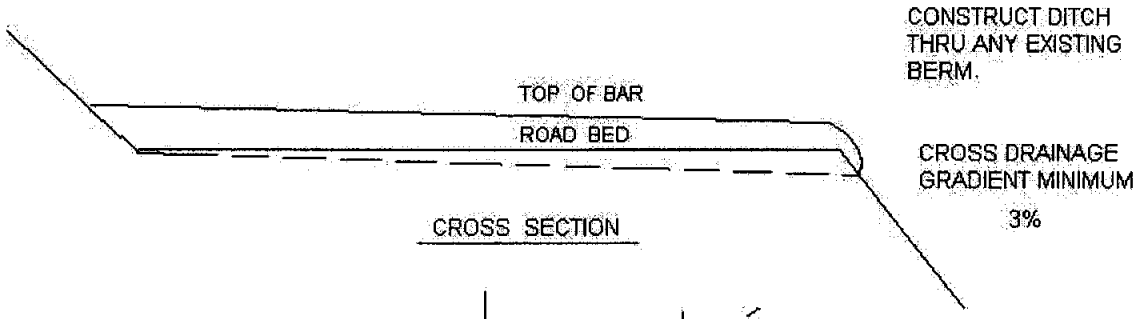
EXHIBIT "G"

WATERBAR SPECIFICATIONS



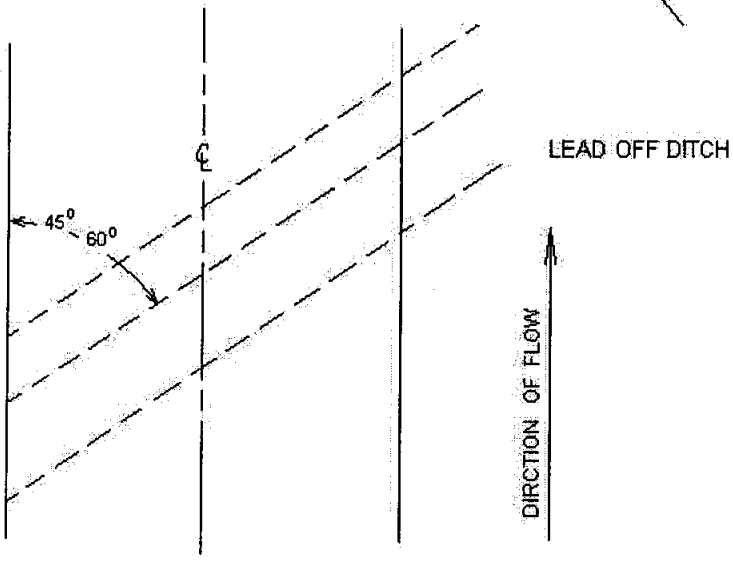
PROFILE



CROSS SECTION

SPACING OF WATERBARS:

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



PLAN VIEW

WATERBAR SPECIFICATIONS
FOR CROSS DITCHING #298

State Timber Sale Contract
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Astoria Basin Thinning

EXHIBIT "H"

TYPICAL EMBEDDED ENERGY DISSIPATER

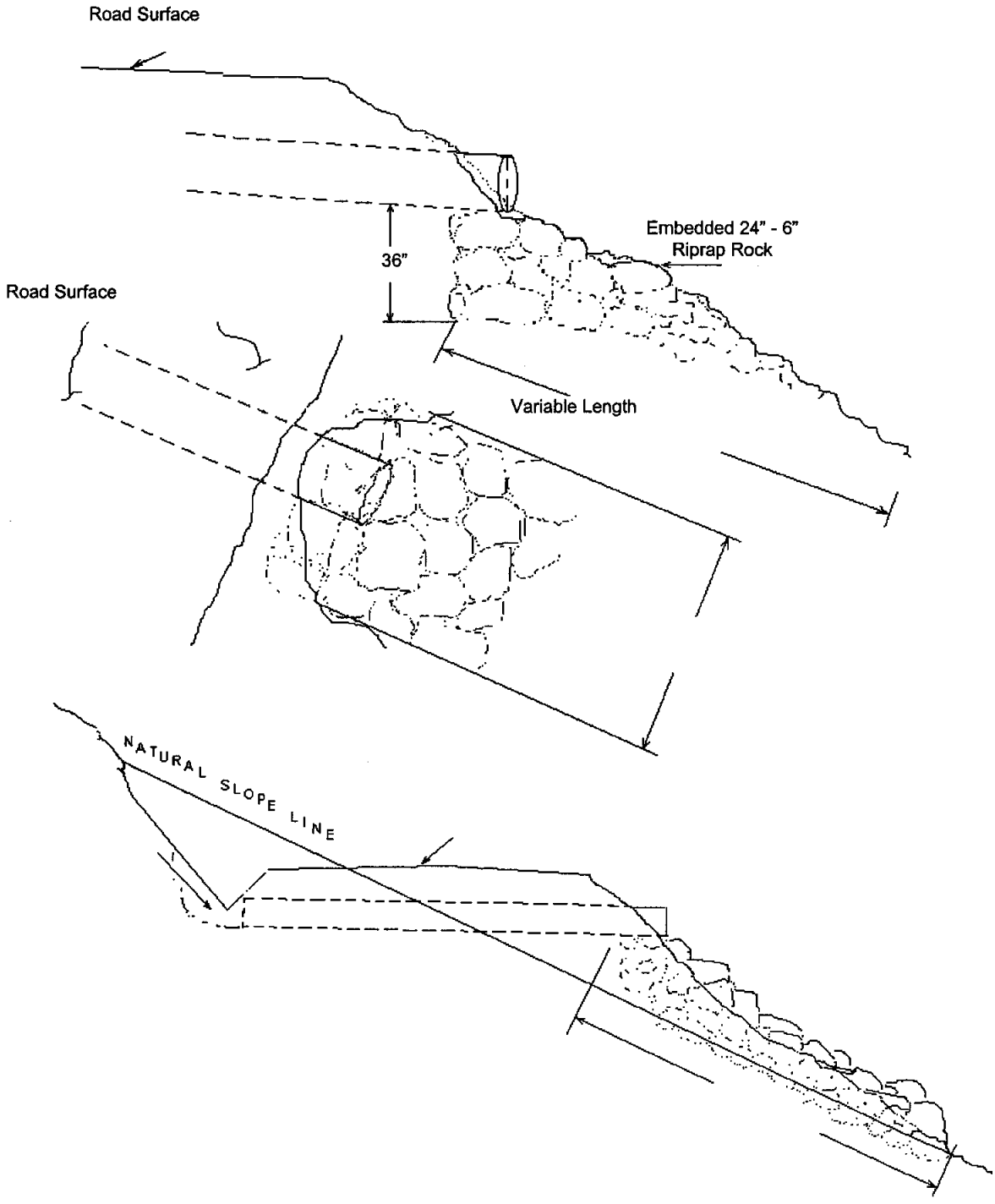

EXHIBIT "I"

ROAD VACATING AND FILL REMOVAL SPECIFICATIONS: V1 AND V2

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

(2) Fill Removal and Stream Channel Development. Remove fills to the natural stream course level(s). Stream channel(s) shall be excavated/developed to a minimum of 6 feet in width. Developed stream banks shall be sloped at natural contours or no steeper than 1½ :1, as directed by STATE.

(3) Use of Excavated Materials.

(a) Fill Excavation. Excavated materials shall be placed and compacted on the roadway a minimum of 10 feet from the top of the developed stream bank.

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

(4) Construct Waterbars at designated locations and as directed by STATE. Construct waterbars according to the specifications in Exhibit G, and as directed by STATE.

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

(6) Erosion Control. All exposed excavation areas and waste materials shall be mulched with a straw mulch approved by STATE. Applied straw mulch shall be a minimum of 2 inches deep and provide a uniform cover.

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

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EXHIBIT "J"

PAVED HIGHWAY APPROACH SPECIFICATIONS: P1 TO P2

PURCHASER shall reconstruct and pave the Williamsport Road highway approach from Point P1 to P2 in accordance with the Oregon Department of Transportation (ODOT) approach specifications and requirements, as directed by STATE.

PROJECT REQUIREMENTS AND GENERAL SPECIFICATIONS:

(1) Reconstruct Junction. Reconstruct existing approach to provide for a minimum 2% slope away from the highway and to accommodate a 3-inch lift of asphalt. The junction shall be a minimum of 70 feet wide at Station 0+00.

(2) Ditch Improvement. Improve drainage ditches to provide positive drainage away from the road prism.

(3) Culvert replacement. Remove existing culvert and replace with a 18 inch diameter X 54 foot culvert, in accordance to specifications in Exhibit C. Utilize salvaged rock for culvert backfill material.

(4) Shoulder Widening and Reinforcement. PURCHASER shall utilize 70 cubic yards of 4"-0" crushed rock for shoulder widening and reinforcement.

(5) Compaction. Compact base material in accordance with specifications in Exhibit B.

(6) Paved Highway Approach.

(a) All materials and workmanship shall be in accordance with 1996 Oregon Standard Specifications for Highway Specifications.

(b) PURCHASER shall notify STATE 48 hours before beginning work and again after completing work.

(c) This work is located within the Oregon Utility Notification Center (OUNC) area. The OUNC is a utilities notification system to notify owners of utilities about excavation work performed in the vicinity of their facilities. The utilities notification system telephone number is 1-800-332-2344.

(d) The work area during operations shall be protected in accordance with the current Manual on Uniform Traffic Control Devices for Streets and Highways, US Department of Transportation, and the Oregon Department of Transportation supplements.

(e) Station 0+00 to 0+50: The approach shall be paved with Class C asphalt pavement, with minimum width of 70 feet at 0+00 and taper to 12 feet in width 0+50, including shoulders. Minimum pavement depth is 3 inches.

(f) Station 0+50 to 1+50: Pave the road surface with Class C asphalt pavement. Minimum surface width shall be 12 feet and minimum pavement depth shall be 3 inches.

EXHIBIT "K"

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 -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 "K"

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Equipment Type, Equipment Operation, and Conduct of Work

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

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

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

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

Equipment	Rate	Hours	Appraised Value
Excavator	$ 95.00 / hour	60.0	$ 5,700.00
Log Loader	$ 70.00 / hour	81.4	$ 5,700.00

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

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

Work Scheduling - work shall be accomplished only during dry weather conditions, and started within 14 calendar days after completion of yarding activities on Areas 1 and 2. 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.

FORM 629.343-307
Rev. 3/01

EXHIBIT "L"
OREGON DEPARTMENT OF FORESTRY

SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

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

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

(4) PURCHASER: _____
Address _____

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

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

	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 Astoria Basin Thinning
COUNTY Clatsop

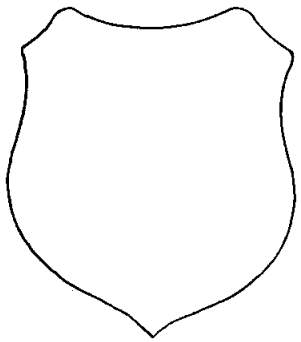
(13) STATE CONTRACT NUMBER 341-04-54

(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: _____

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

(21) SIGNATURES:

_____
Purchaser or Authorized Representative Date

_____
State Forester Representative Date

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

EXHIBIT "L"

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 45, "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 SUB species 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.