

EXHIBIT "B"

FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DITCH REQUIRED	OUTSLOPE
16 feet	12 feet	1A to 1B	0+00 to 11+70	YES	NO
16 feet	12 feet	1C to 1D	0+00 to 6+00	YES	NO
16 feet	12 feet	2A to 2B	0+00 to 11+00	YES	NO
16 feet	12 feet	3A to 3B	0+00 to 1+60	YES	NO
16 feet	12 feet	3C to 3D	0+00 to 2+70	YES	NO
16 feet	12 feet	6A to 6B	0+00 to 15+70	YES	NO
16 feet	12 feet	l1 to l2	0+00 to 296+20	YES	NO
16 feet	12 feet	l3 to l4	0+00 to 6+00	YES	NO
16 feet	12 feet	l5 to l6	0+00 to 6+00	YES	NO
16 feet	12 feet	l7 to l8	0+00 to 2+00	YES	NO
16 feet	12 feet	l9 to l10	0+00 to 11+60	YES	NO
16 feet	12 feet	l11 to l12	0+00 to 3+00	YES	NO
16 feet	12 feet	l13 to l14	0+00 to 13+00	YES	NO
16 feet	12 feet	l15 to l16	0+00 to 4+00	YES	NO
16 feet	12 feet	l17 to l18	0+00 to 3+00	YES	NO

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

Where clearing limits have not been staked, the clearing limits shall extend 10 feet back of the top of the cutslope and 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 areas where end-haul is required.

EXHIBIT "B"

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.

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 in lifts not to exceed 8 inches in depth.

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.

DRAINAGE

Ditches. 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 a minimum 25 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

	<u>Back Slopes</u>	<u>Fill Slopes</u>
Rock	Vertical to 1/4:1	Not steeper than 1½:1
Common - side slopes 50% and over	3/4:1	
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 marked in the field.

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

EXHIBIT "B"

ROAD IMPROVEMENT INSTRUCTIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS

- (1) 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.
- (2) 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.
- (3) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic-yard, track-mounted excavator.
- (4) Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels. Install a culvert marker at each newly installed culvert and at each existing culvert that is missing a marker that could be reached by a grader blade. Markers shall meet specifications in Exhibit C. Excavated materials shall be placed in a stable location, as directed by STATE.
- (5) 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.

EXHIBIT "B"

ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
Point I1 to I2	0+00	Point I1.
	214+90	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill. Construct energy dissipater utilizing 24 cubic yards of 24"-6" riprap rock.
	296+20	Point I2.
Point I3 to I4	0+00	Point I3.
	0+60	Culvert replacement. Utilize 20 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill. Construct energy dissipater utilizing 12 cubic yards of 24"-6" riprap rock.
Point I13 to I14	6+00	Point I4.
	0+00	Point I13.
	2+00	Install culvert. Utilize 20 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	9+00	Culvert replacement. Utilize 20 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill. Construct energy dissipater utilizing 12 cubic yards of 24"-6" riprap rock.
Point I19	10+50	Culvert replacement. Utilize 20 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
		Widen junction 10 feet.

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.

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
Point 2A to 2B	0+00 to 11+00	Install fabric in accordance with Exhibit F.

EXHIBIT "B"
 ROAD SURFACING

TYPE OF ROCK	SIZE OF ROCK	VOL. PER STATION (CY)	DEPTH OF ROCK (inches)	POINT TO POINT	STATION TO STATION	TOTAL VOLUME (CY)
Crushed	4"-0"	50	8	1A to 1B	0+00 to 11+70	585
Crushed	4"-0"	50	8	1C to 1D	0+00 to 6+00	300
Crushed	4"-0"	50	8	2A to 2B	0+00 to 11+00	550
Crushed	4"-0"	50	8	3A to 3B	0+00 to 1+60	80
Crushed	4"-0"	50	8	3C to 3D	0+00 to 2+70	135
Crushed	4"-0"	63	10	6A to 6B	0+00 to 15+70	989
Crushed	1 1/2"-0"	19	3	6A to 6B	0+00 to 15+70	298
Crushed	3/4"-0"	32	4	l1 to l2	0+00 to 296+20	9,478
Crushed	4"-0"	50	8	l3 to l4	0+00 to 6+00	300
Crushed	4"-0"	50	8	l5 to l6	0+00 to 6+00	300
Crushed	4"-0"	50	8	l7 to l8	0+00 to 2+00	100
Crushed	3/4"-0"	19	3	l7 to l8	0+00 to 2+00	38
Crushed	1 1/2"-0"	19	3	l9 to l10	0+00 to 11+60	220
Crushed	4"-0"	50	8	l11 to l12	0+00 to 3+00	150
Crushed	4"-0"	50	8	l13 to l14	0+00 to 13+00	650
Crushed	4"-0"	50	8	l15 to l16	0+00 to 4+00	200
Crushed	4"-0"	50	8	l17 to l18	0+00 to 3+00	150
TURNOUTS:		VOLUME/TO	NO. TURNOUTS		PT. TO PT.	
Crushed	4"-0"	24	1		1A to 1B	24
Crushed	4"-0"	24	1		2A to 2B	24
Crushed	4"-0"	36	3		6A to 6B	108
Crushed	1 1/2"-0"	12	3		6A to 6B	36
Crushed	3/4"-0"	12	48		l1 to l2	576
Crushed	4"-0"	24	1		l13 to l14	24

EXHIBIT "B"
 ROAD SURFACING

TYPE OF ROCK	SIZE OF ROCK	VOLUME PER JCT.	NUMBER OF JUNCTIONS	POINTS	TOTAL VOLUME
Crushed	4"-0"	36	5	1A, 1C, 2A, 3A, 3C	180
Crushed	3/4"-0"	20	5	1A, 1C, 2A, 3A, 3C	100
Crushed	4"-0"	48	2	6A, 6B	96
Crushed	1 1/2"-0"	24	2	6A, 6B	48
Crushed	3/4"-0"	20	20	I1 to I2	400
Crushed	4"-0"	36	7	I3, I5, I7, I11, I13, I15, I17	252
Crushed	3/4"-0"	20	8	I3, I5, I7, I8, I11, I13, I15, I17	160
Crushed	1 1/2"-0"	20	3	I9 to I10	60
Crushed	4"-0"	48	1	I19	48
Crushed	1 1/2"-0"	24	1	I19	24
LANDINGS:		VOLUME/ LANDING	NUMBER OF LANDINGS		
Pit-Run	6"-0"	60	5	1B, 1D, 2B, 3B, 3D	300
Crushed	4"-0"	100	1	9A	100
Pit-Run	6"-0"	60	6	I4, I6, I12, I14, I16, I18	360
TURNAROUNDS:		VOL./ T.A.	NUMBER OF TURNAROUNDS		
Crushed	4"-0"	24	3	1A to 1B, 1C to 1D, 2A to 2B	72
MISCELLANEOUS:		USE		LOCATION	
Riprap	24"-6"	Fill Armor		9+55 on 1A to 1B	30
Riprap	24"-6"	Energy Dissipater		9+55 on 1A to 1B	24
Crushed	1 1/2"-0"	Culvert Bedding/Backfill		9+55 on 1A to 1B	36
Crushed	3/4"-0"	Leveling Rock		I1 to I2	1,000
Crushed	1 1/2"-0"	Culvert Bedding/Backfill		214+90 on I1 to I2	40
Riprap	24"-6"	Energy Dissipater		214+90 on I1 to I2	24
Riprap	24"-6"	Energy Dissipater		0+60 on I3 to I4	12
Crushed	1 1/2"-0"	Culvert Bedding/Backfill		0+60 on I3 to I4	20
Riprap	24"-6"	Energy Dissipater		9+00 on I13 to I14	12
Crushed	1 1/2"-0"	Culvert Bedding/Backfill		9+00 on I13 to I14	20
Crushed	1 1/2"-0"	Culvert Bedding/Backfill		2+00 and 10+50 on I13 to I14	40

EXHIBIT "B"

ROAD SURFACING

ROCK TOTALS (CY)	3/4"-0"	1 1/2"-0"	4"-0"	6"-0"	24"-6"
18,774	11,752	843	5,417	660	102

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.

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 600 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	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 6 inches in depth except where installation of road fabric is required. Where installation of road fabric is required, 4"-0" base surfacing course rock shall be placed to the designated thickness in one lift and spread in the direction of fabric overlap, as specified in Exhibit F. 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 miles to 1.8 miles per hour, as directed by STATE.
- (2) Tampingfoot Compactors. Tampingfoot or sheepsfoot compactors shall exert a minimum pressure of 250 pounds per square inch on the ground area in contact with the tamping feet. The compactor shall cover a minimum width of 60 inches per pass and weigh a minimum of 16,000 pounds.
- (3) Rubber-Tired Skidders. A rubber-tired skidder weighing a minimum of 20,000 pounds shall be operated over the fill layers so that the entire surface comes into contact with the tires. Skidders with oversized tires (high floatation) are not acceptable for compaction.
- (4) Vibratory Hand-Operated or Backhoe-Mounted Tamper. Vibratory hand held or hydraulic tampers shall be used for compaction of backfill around culverts. The tamper shoe dimensions shall be a minimum of 10" X 13" and capable of a centrifugal force of 2,250 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 except for Culvert No. 1 (CMPA al. Ctd.) which shall be constructed of 14 gauge aluminized steel. 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.

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.

EXHIBIT "C"

CULVERT SPECIFICATIONS

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.

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
1*	48	40	1A to 1B	9+55
2	18	30	1C to 1D	2+00
3	18	30	2A to 2B	7+00
4	18	30	3A to 3B	0+00
5	18	30	3C to 3D	0+00
6	18	30	6A to 6B	1+71
7	18	40	6A to 6B	13+95
8	18	60	11 to 12	214+90
9	18	32	13 to 14	0+60
10	18	40	113 to 114	2+00
11	18	32	113 to 114	9+00
12	18	30	113 to 114	10+50

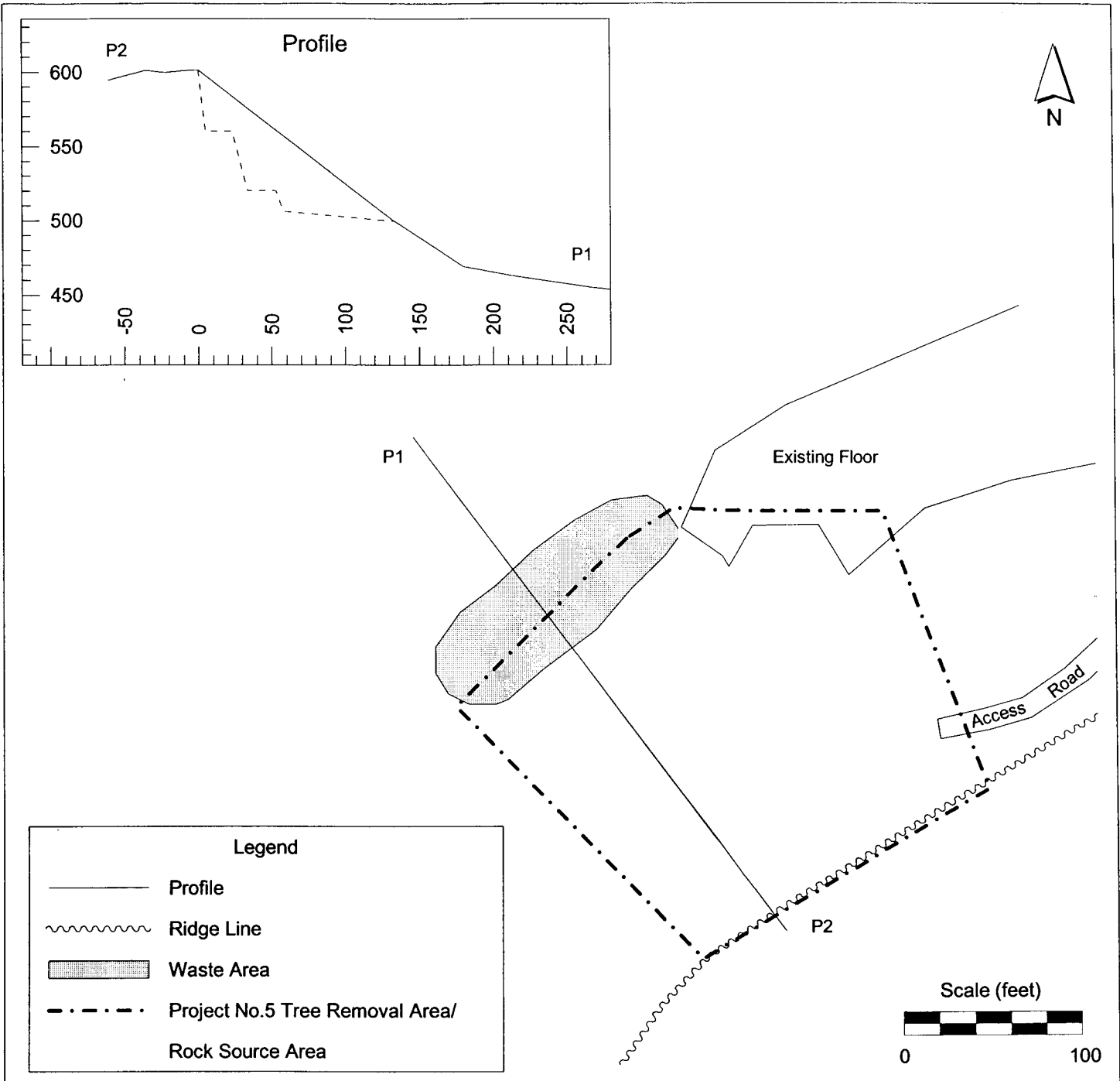
*Indicates culverts that do not require markers.

EXHIBIT "D"

ROCK PIT DEVELOPMENT AND USE

- (1) PURCHASER shall schedule and coordinate Northrup Creek 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, as directed by STATE.
- (5) Complete Project No. 5, Tree Removal at Northrup Ridge Quarry, prior to the clearing and grubbing of the rock source area and waste area. All woody debris, including stumps and slash, shall be hauled, piled, and disposed of by burning at the waste area, as directed by STATE.
- (6) PURCHASER shall obtain an FPA Burn Permit prior to debris disposal.
- (7) All overburden shall be hauled to the designated waste area as directed by STATE.
- (8) 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.
- (9) Pit face shall be developed in a uniform manner.
- (10) Oversized material that is produced or encountered during development shall be broken down and utilized for crushing or utilized as required in Exhibit B.
- (11) 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.
- (12) The quarry floor shall be developed to provide for drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained. Quarry access roads shall be cleared and blocked upon completion of quarry use as directed by STATE.
- (13) 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.

EXHIBIT "D"
ROCK PIT DEVELOPMENT AND USE



Oregon Department of Forestry
Astoria District
Engineering Unit

Northrup Ridge Quarry
SE1/4, Section 17, T6N, R6W, W. M.
Clatsop County, Oregon

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. Prior to entering the rock crusher, materials used for rock crushing shall be screened, and all materials less than one inch in size shall be rejected.

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

Grading Requirements

<u>For 3/4"-0"</u>	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.

<u>For 1 1/2"-0"</u>	Passing	2" sieve	100%
	Passing	1 1/2" sieve	95-100%
	Passing	3/4" sieve	55-80%
	Passing	1/4" sieve	35-50%

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

<u>For 4"-0"</u>	Passing	4" sieve	100%
	Passing	2" sieve	60-90%
	Passing	1/4" sieve	20-35%

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

Grading Requirements

<u>For 6"-0" Pit-Run</u>	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.

EXHIBIT "F"

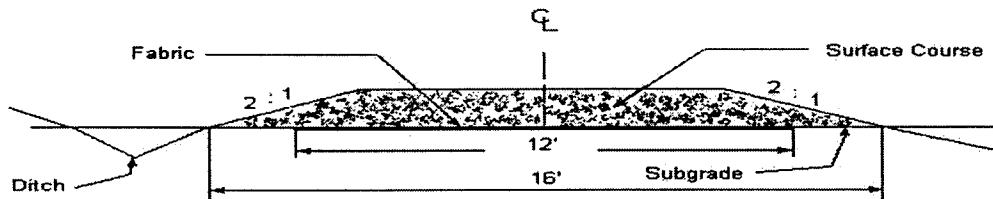
FABRIC SPECIFICATIONS

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:

Grab Tensile	300 lbs.	ASTM D1682
Modulus Load at 10% Elongation	140 lbs.	ASTM D1682
Mullen Burst	600 lbs.	ASTM D751
Width - 12 feet		

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

(1) Typical cross sections:



- (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:

SEGMENT	STATION TO STATION	LENGTH (feet)
2A to 2B	0+00 to 11+00	1,210

EXHIBIT "G"

ROAD VACATING AND FILL REMOVAL SPECIFICATIONS: V1 to V2, V3 to V4

- (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 specified widths. Developed stream banks shall be sloped at natural contours or no steeper than 1½ :1, as directed by STATE.

FPA Written Plan. STATE has prepared the required FPA Written Plan for this work and the Plan is on file at the Astoria District, Oregon Department of Forestry. Fill removal, stream channel development and/or in-stream work shall be conducted between July 1 and September 15, annually.

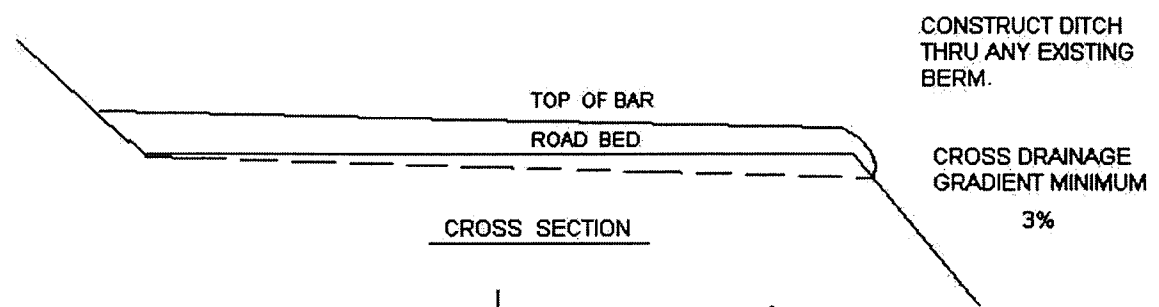
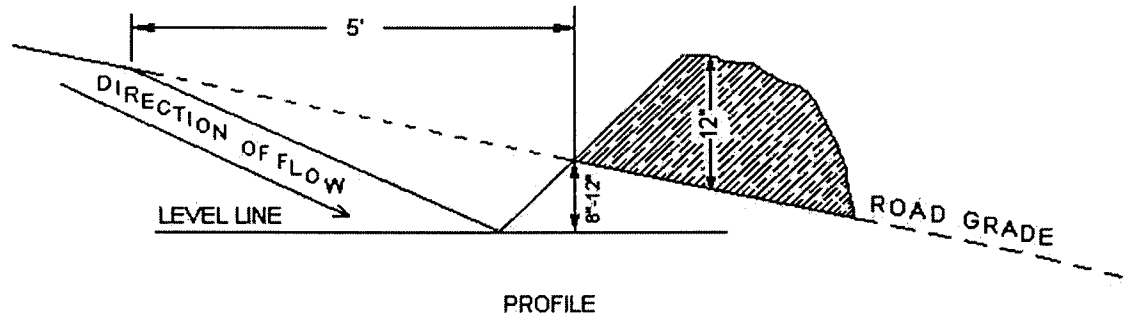
- (3) Use of Excavated Materials.
 - (a) Fill Excavation. Excavated materials shall be placed and compacted on the roadway a minimum of 10 feet from the top of the developed stream bank.
 - (b) Woody Debris may be incorporated in embankment material and/or placed on the surface of compacted embankment material.
- (4) Construct Waterbars at designated locations and as directed by STATE. Construct waterbars according to the specifications in Exhibit H.
- (5) Block Roads. Use excavated material from fill removals or sidecast pullback 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.

SPECIFIC INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
V1 to V2	0+00	Point V1. Block road.
	1+15	Type F Stream. Remove all fill material. Develop 20 foot stream channel.
	8+70	Point V2. Block road.
V3 to V4	0+00	Point V3. Remove culvert. Block road.
	5+00	Remove culvert.
	6+00	Point V4.

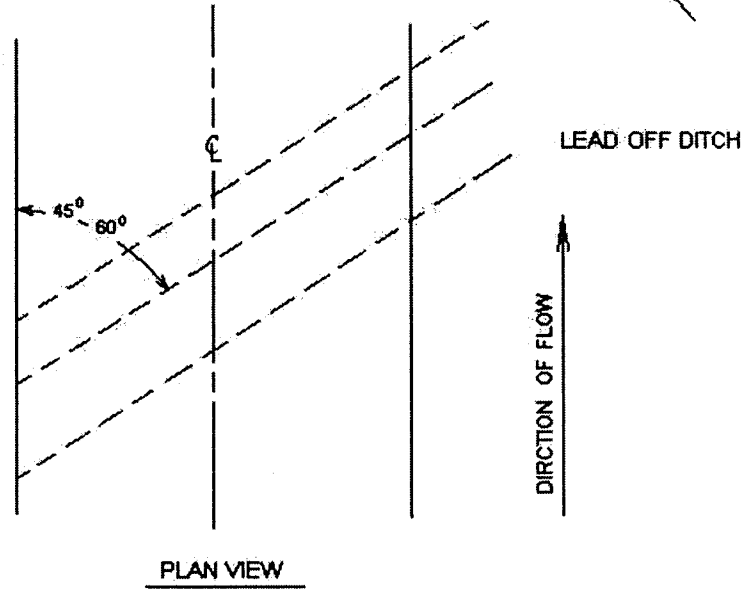
EXHIBIT "H"

WATERBAR SPECIFICATIONS



SPACING OF WATERBARS:

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



WATERBAR SPECIFICATIONS
 FOR CROSS DITCHING #298

EXHIBIT "I"

SPECIFICATIONS FOR SLASH TREATMENT

Description of Work To Be Done

Operation Area. Areas 3, 10, and 11 as indicated on Exhibit A; approximately 88 hours of machine time.

Slash Piling. In areas designated for slash piling, clear all brush, logging slash, and other debris from evenly distributed planting sites so that mineral soil is exposed on 85 percent of the treatment area. All woody vegetation other than conifer trees is defined as brush in this contract.

Piles shall be located within the project area designated for piling. Piles shall be spaced at least 75 feet apart; at least 75 feet from standing timber, snags, and wildlife trees; and at least 75 feet from any property line. Piles shall be 20 to 25 feet tall with steep sides and shall cover the smallest amount of ground possible at their base. Piles shall be a minimum of 100 feet away from the Nicolai Mainline.

Cover Slash Piles.

Piles shall be built to a height of 3 to 4 feet and then covered to prevent water from reaching the slash. Additional woody debris shall be piled on top of the covered piles to complete the piling, as directed by STATE.

STATE shall supply the materials for covering.

Reserved Material. All trees, snags, logs, and other down wood designated in Section 56, "Reserved Timber."

Protective Measures. Shall comply with applicable Forest Practice Rules and with the terms of this contract including, but not limited to, Section 62, "Ground-Based Operations," and Section 64, "Protection of Watershed."

EXHIBIT "I"

SPECIFICATIONS FOR SLASH TREATMENT

Equipment Type, Equipment Operation, and Conduct of Work

The specifications given below are requirements for complying with the terms of this contract:

Equipment: Shall be a track-mounted machine with a ground-pressure rating of less than 6.8 PSI and a net horsepower rating of 85 HP or more.

The machine shall be capable of a minimum horizontal reach of 26 feet and a minimum vertical reach of 16 feet.

The 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.

Operator: Must be experienced in operating similar equipment on forest site preparation operations, be able to operate the equipment proficiently, and be willing and able to perform the operations 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 terms of this contract.

Work Scheduling: Work shall be accomplished only during dry weather conditions and started within 14 calendar days after completion of yarding activities on Areas 3, 10, and 11. Operations shall provide for continual operation until contract work is completed, unless interrupted by poor weather, fire closures, or other uncontrollable circumstances. Equipment breakdowns shall be repaired without undue delay, and provision shall be made for replacement of equipment to prevent prolonged delays. Operations shall not be allowed as described in Section 39 (Seasonal Restrictions) of the contract, or during any other period when operations might damage sites or affect stream flows. Any exception to these instructions must be authorized in writing by STATE.

STATE Representative: Designated to provide directions for the conduct of work and to inspect work to determine when contract requirements have been satisfied.

EXHIBIT "J"
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 _____

(12) SALE NAME Hunt Creek LSD

COUNTY Clatsop

(13) STATE CONTRACT NUMBER 341-02-12

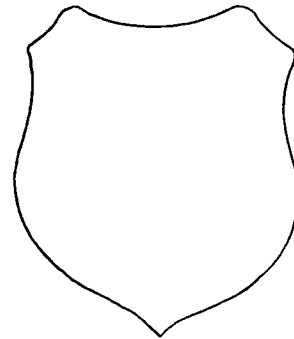
(14) SCALE: westside eastside cubic foot

(15) STATE BRAND REGISTRATION NUMBER _____

(16) BUREAU BRAND CODE NUMBER _____

(17) STATE BRAND INFORMATION:

(COMPLETE) ↓



(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 (19).

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

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

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

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

(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: _____

(10) APPROVED SCALING LOCATIONS	Species	Yard	Truck

(20) REMARKS: _____

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

(21) SIGNATURES:

 Purchaser or Authorized Representative Date

 State Forester's Representative

 State Forester Representative Date

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.