

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+80	YES	NO
16 feet	12 feet	2A to 2B	0+00 to 29+00	YES	NO
14 feet	DIRT	2C to 2D	0+00 to 12+10	NO	YES
16 feet	12 feet	3A to 3B	0+00 to 5+55	YES	NO
16 feet	12 feet	3C to 3D	0+00 to 14+95	YES	NO
16 feet	12 feet	3E to 3F	0+00 to 1+60	YES	NO
16 feet	12 feet	3G to 3H	0+00 to 3+45	YES	NO
16 feet	12 feet	4A to 4B	0+00 to 37+90	YES	NO
16 feet	12 feet	4C to 4D	0+00 to 12+70	YES	NO
16 feet	12 feet	4E to 4F	0+00 to 2+20	YES	NO
16 feet	12 feet	5A to 5B	0+00 to 4+80	YES	NO
16 feet	12 feet	5C to 5D	0+00 to 2+75	YES	NO
16 feet	12 feet	6B to 6C	0+00 to 13+40	YES	NO
16 feet	12 feet	7A to 7B	0+00 to 21+60	YES	NO
16 feet	12 feet	7C to 7D	0+00 to 7+40	YES	NO
16 feet	12 feet	7E to 7F	0+00 to 3+90	YES	NO
16 feet	12 feet	7G to 7H	0+00 to 2+00	YES	NO
16 feet	12 feet	7I to 7J	0+00 to 5+10	YES	NO
16 feet	12 feet	7K to 7L	0+00 to 12+70	YES	NO
16 feet	12 feet	8A to 8B	0+00 to 66+60	YES	NO
16 feet	12 feet	8C to 8D	0+00 to 8+70	YES	NO
16 feet	12 feet	8E to 8F	0+00 to 6+70	YES	NO
16 feet	12 feet	8G to 8H	0+00 to 9+00	YES	NO
16 feet	12 feet	10A to 10B	0+00 to 5+35	YES	NO
16 feet	12 feet	10C to 10D	0+00 to 10+50	YES	NO
16 feet	12 feet	10E to 10F	0+00 to 11+35	YES	NO
14 feet	DIRT	10E to 10F	11+35 to 21+50	NO	YES
16 feet	12 feet	I1 to I2	0+00 to 17+35	YES	NO
16 feet	12 feet	I3 to I4	0+00 to 8+80	YES	NO
16 feet	12 feet	I5 to I6	0+00 to 8+70	YES	NO
16 feet	12 feet	I7 to I8	0+00 to 27+00	YES	NO
16 feet	12 feet	I9 to I10	0+00 to 6+00	YES	NO

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SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DITCH REQUIRED	OUTSLOPE
16 feet	12 feet	I11 to I12	0+00 to 7+00	YES	NO
16 feet	12 feet	I13 to I14	0+00 to 17+42	YES	NO
16 feet	12 feet	I15 to I16	0+00 to 50+00	YES	NO
16 feet	12 feet	I17 to I18	0+00 to 162+62	YES	NO
20 feet	16 feet	I17 to I18	162+62 to 318+34	YES	NO
16 feet	12 feet	I19 to I20	0+00 to 63+89	YES	NO
16 feet	12 feet	I21 to I22	0+00 to 145+20	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.

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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 J and blocked from vehicular traffic, prior to October 1, annually, and as directed by STATE.

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ROAD IMPROVEMENT INSTRUCTIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

- (1) Timber Removal. Remove all trees within the posted Right-of Way Boundary, as specified in Section 55, Designated Timber
- (2) Roadside Brushing. Complete roadside brushing between Points I7 to I8, I11 to B1, I15 to I16, I19 to I20, I21 to I22, B2 to B3, according to the specifications in Exhibit I.
- (3) Existing Underground Utilities. PURCHASER shall notify Western Oregon Electric Cooperative, Inc. at (800) 777-1276, prior to operating. PURCHASER shall conduct activities near these utility lines according to recommendations of Western Oregon Electric Cooperative, Inc., and shall be responsible for any damage to the utility lines resulting from PURCHASER's activities. PURCHASER shall coordinate with the above listed utility in field locating underground utility lines.
- (4) 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.
- (5) 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.
- (6) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic-yard, track-mounted excavator.
- (7) Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels. Install a culvert marker at each newly installed culvert and at each existing culvert that is missing a marker that could be reached by a grader blade. Markers shall meet specifications in Exhibit C. Excavated materials shall be placed in a stable location, as directed by STATE.
- (8) Free Draining Fill Construction. Where free draining fill construction is required, clean 24"-6" riprap rock shall be hauled in and used for fill base construction to specified heights. 2"-1" crushed drain rock shall be used for backfilling around culvert installations. Free Draining Fill construction shall be in accordance with Exhibit F.

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ROAD IMPROVEMENT INSTRUCTIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

- (9) Subgrade Preparation and Application of New Surfacing Rock.
- (a) Complete culvert installations, fill reconstructions, roadside brushing, 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 1/2 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:

<u>SEGMENT</u>	<u>STATION</u>	<u>WORK DESCRIPTION:</u>
Point I1 to I2	0+00	Point I1.
	2+75	Culvert replacement / fill reconstruction. Utilize 180 cubic yards of 24"-6" riprap rock and 60 cubic yards of 1½"-0" crushed rock for culvert bedding. Construct energy dissipater utilizing 24 cubic yards of 24"-6" riprap rock. Armor fill slopes utilizing 100 cubic yards of 24"-6" riprap rock. Apply 75 cubic yards of 4"-0" crushed rock for base rock replacement. Finished subgrade width shall be 18 feet.
	17+35	Point I2.
Point I9 to I10	0+00	Point I9.
	3+00	Culvert replacement. Utilize 40 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.
	6+00	Point I10.

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ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

<u>SEGMENT</u>	<u>STATION</u>	<u>WORK DESCRIPTION:</u>
Point I11 to I12	0+00	Point I11.
	0+50	Install culvert marker.
	6+00	Culvert replacement. Utilize 40 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.
	7+00	Point I12.
Point I13 to I14	0+00	Point I13.
	3+00	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	5+80	Culvert replacement. Utilize 30 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	11+60	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	17+42	Point I14.
Point I15 to I16	0+00	Point I15.
	5+80	Install culvert marker.
	11+60	Install culvert marker.
	17+42	Culvert replacement. Utilize 40 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.
	20+33	Install culvert marker.
	29+04	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	40+36	Culvert replacement. Utilize 40 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.

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ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

<u>SEGMENT</u>	<u>STATION</u>	<u>WORK DESCRIPTION:</u>
Point I17 to I18	0+00	Point I17.
	11+62	Install culvert. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	31+94	Install culvert. Construct energy dissipater utilizing 12 cubic yards of 24"-6" riprap rock.
	37+75	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	41+00	Culvert replacement / fill reconstruction. Construct free draining fill base to a height of 10 feet. Then utilize common materials for a total fill height of 21.5 feet. Fill slope for free draining base shall be 1:1. Fill slope for common material shall be 1½:1. Utilize 400 cubic yards of 24"-6" riprap rock for free drain fill construction, and 50 cubic yards of 2"-1" crushed rock for culvert bedding and backfill. Develop the stream channel above the new culvert inlet for a minimum distance of 20 feet. Armor fill slopes utilizing 170 cubic yards of 24"-6" riprap rock. Apply 100 cubic yards of 4"-0" crushed rock for base rock replacement. Finished subgrade width shall be 18 feet.
	42+00	Install culvert. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	46+46	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	52+27	Culvert replacement. Utilize 40 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.
	68+60	Vesper Tie-Through Junction.
	71+77	Culvert replacement / fill reconstruction. Construct free draining fill base to a height of 9 feet. Then utilize common materials for a total fill height of 19 feet. Fill slope for all materials shall be 1½:1. Utilize 400 cubic yards of 24"-6" riprap rock for free drain fill construction, and 50 cubic yards of 2"-1" crushed rock for culvert bedding and backfill. Develop the stream channel above the new culvert inlet for a minimum distance of 20 feet. Armor fill slopes utilizing 60 cubic yards of 24"-6" riprap rock. Apply 100 cubic yards of 4"-0" crushed rock for base rock replacement. Finished subgrade width shall be 18 feet.

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ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

<u>SEGMENT</u>	<u>STATION</u>	<u>WORK DESCRIPTION:</u>
Point I17 to I18	79+16	Remove culvert.
	79+46	Culvert replacement / fill reconstruction. Construct free draining fill base to a height of 10 feet. Then utilize common materials for a total fill height of 24 feet. Fill slope for free draining base shall be 1:1. Fill slope for common material shall be 1½:1. Utilize 780 cubic yards of 24"-6" riprap rock for free drain fill construction, and 65 cubic yards of 2"-1" crushed rock for culvert bedding and backfill. Develop the stream channel above the new culvert inlet for a minimum distance of 20 feet. Armor fill slopes utilizing 100 cubic yards of 24"-6" riprap rock. Apply 100 cubic yards of 4"-0" crushed rock for base rock replacement. Finished subgrade width shall be 20 feet.
	86+02	Construct energy dissipater utilizing 12 cubic yards of 24"-6" riprap rock.
	92+89	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	97+64	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	103+45	Install culvert marker.
	109+26	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	115+06	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	144+10	Install culvert marker.
	147+27	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	149+90	Install culvert marker. Construct energy dissipater utilizing 12 cubic yards of 24"-6" riprap rock.
	155+72	Culvert replacement. Utilize 40 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.

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ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

<u>SEGMENT</u>	<u>STATION</u>	<u>WORK DESCRIPTION:</u>
Point I17 to I18	157+30	Culvert replacement. Utilize 40 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.
	161+53	Culvert replacement. Utilize 40 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.
	163+11	Culvert replacement. Utilize 40 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.
	167+34	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	173+14	Culvert replacement. Utilize 40 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.
	178+95	Install culvert. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	202+18	Install culvert marker.
	213+80	Install culvert. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	219+61	Culvert replacement. Utilize 30 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	231+22	Culvert replacement. Utilize 40 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.
	242+84	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. Apply 24 cubic yards of 24"-6" riprap rock for fill armor.
	248+65	Install culvert marker. Construct culvert energy dissipater.
	266+07	Culvert replacement. Utilize 40 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.

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ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

<u>SEGMENT</u>	<u>STATION</u>	<u>WORK DESCRIPTION:</u>
Point I17 to I18	312+54	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	318+34	Point I18.
Point I19 to I20	0+00	Point I19.
	1+98	Install culvert marker.
	7+92	Install culvert marker.
	11+60	Culvert replacement. Utilize 40 cubic yards of 1½"-0" of crushed rock for culvert bedding and backfill.
	23+20	Install culvert marker.
	25+20	Install culvert. Utilize 30 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.
	29+04	Culvert replacement. Utilize 30 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.
	31+94	Install culvert marker.
	34+85	Culvert replacement. Utilize 30 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.
	58+08	Install culvert marker.
Point I21 to I22	63+89	Point I20.
	0+00	Point I21.
	3+17	Install culvert marker.
	17+42	Install culvert marker. Construct energy dissipater utilizing 12 cubic yards of 24"-6" riprap rock.
	29+04	Install culvert marker.
34+85	Install culvert marker.	

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ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

<u>SEGMENT</u>	<u>STATION</u>	<u>WORK DESCRIPTION:</u>
Point I21 to I22	58+08	Install culvert marker. Construct energy dissipater utilizing 12 cubic yards of 24"-6" riprap rock.
	63+89	Install culvert marker.
	87+12	Culvert replacement / fill reconstruction. Utilize 50 cubic yards of 24"-6" riprap rock and 50 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. Construct energy dissipater utilizing 24 cubic yards of 24"-6" riprap rock. Develop the stream channel above the new culvert inlet for a minimum distance of 15 feet. Armor fill slopes utilizing 100 cubic yards of 24"-6" riprap rock. Apply 180 cubic yards of 4"-0" crushed rock for base rock replacement. Finished subgrade width shall be 18 feet.
	98+74	Culvert replacement / fill reconstruction. Utilize 50 cubic yards of 24"-6" riprap rock and 50 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. Construct energy dissipater utilizing 24 cubic yards of 24"-6" riprap rock. Develop the stream channel above the new culvert inlet for a minimum distance of 20 feet. The new culvert shall be sunk into the developed stream channel and embedded a depth of 1.0 foot. Armor fill slopes utilizing 140 cubic yards of 24"-6" riprap rock. Apply 180 cubic yards of 4"-0" crushed rock for base rock replacement. Finished subgrade width shall be 20 feet.
	101+90	Culvert replacement / fill reconstruction. Utilize 30 cubic yards of 24"-6" riprap rock and 40 cubic yards of 1½"-0" crushed rock for culvert bedding and backfill. Construct energy dissipater utilizing 24 cubic yards of 24"-6" riprap rock. Develop the stream channel above the new culvert inlet for a minimum distance of 20 feet. The new culvert shall be sunk into the developed stream channel and embedded a depth of 1.0 foot. Armor fill slopes utilizing 60 cubic yards of 24"-6" riprap rock. Apply 80 cubic yards of 4"-0" crushed rock for base rock replacement. Finished subgrade width shall be 18 feet.
	110+65	Install culvert marker.
	115+50	Install culvert marker.
	145+20	Point I22.

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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. Full bench road construction shall be performed in accordance with Exhibit B, page 13.
- (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 Utilities. PURCHASER shall notify Western Oregon Electric Cooperative, Inc. at (800) 777-1276, prior to operating. PURCHASER shall conduct activities near these utility lines according to recommendations of Western Oregon Electric Cooperative, Inc., and shall be responsible for any damage to the utility lines resulting from PURCHASER's activities. PURCHASER shall coordinate with the above listed utility in field locating underground utility lines.

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS:

<u>SEGMENT</u>	<u>STATION</u>	<u>WORK DESCRIPTION:</u>
6B to 6C	3+00	Begin full bench truck end haul. End haul excess suitable material to landing at Point 6A.
	7+00	End full bench truck end haul.

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END-HAULING REQUIREMENTS

POINT TO POINT	STA. TO STA.	CONTAINMENT	WASTE AREA LOCATION	WASTE AREA TREATMENT
4A to 4B	5+25 to 6+75	1	1, 2	1, 4
4A to 4B	17+40 to 23+05	1	1, 2	1, 4
4A to 4B	24+00 to 25+77	1	1, 2	1, 4
4C to 4D	10+40 to 11+65	1	2, 3	2, 4
6B to 6C	3+00 to 7+00	1	4, 5	3, 4

End-Haul Areas General Requirements

Material shall not be intentionally sidecast.

Clearing and grubbing debris shall be end-hauled.

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

Containment

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

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

Waste Area Location

- (1) Between stations 5+60 to 12+60, 29+10 to 31+10, and 37+00 to 37+90 on Road 4A to 4B.
- (2) Waste Area located west of Point 4A.
- (3) Between stations 11+90 to 12+70 on Road 4C to 4D
- (4) Between stations 0+00 to 1+00 and 10+50 to 12+00 on Road 6B to 6C, and on Point 6A.
- (5) Waste Area located immediately adjacent to Point 6A.

Waste Area Treatment

- (1) Use suitable excavated material for use in road construction on Road 4A to 4B.
- (2) Use suitable excavated material for use in road construction on Road 4C to 4D.
- (3) Use suitable excavated material for use in road construction on Road 6B to 6C. Use suitable excavated fill material for use in landing construction at Point 6A.
- (4) Unsuitable materials and/or surplus materials shall be deposited at the waste area(s), spread evenly, compacted and adequately drained. Woody debris shall be piled on top of the waste materials.

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+80	590
Crushed	4"-0"	50	8	2A to 2B	0+00 to 29+00	1,450
Crushed	4"-0"	50	8	3A to 3B	0+00 to 5+55	278
Crushed	4"-0"	63	10	3C to 3D	0+00 to 14+95	942
Crushed	3/4"-0"	19	3	3C to 3D	0+00 to 9+00	171
Crushed	4"-0"	50	8	3E to 3F	0+00 to 1+60	80
Crushed	4"-0"	50	8	3G to 3H	0+00 to 3+45	173
Crushed	4"-0"	63	10	4A to 4B	0+00 to 37+90	2,388
Crushed	3/4"-0"	19	3	4A to 4B	0+00 to 37+90	720
Crushed	4"-0"	50	8	4C to 4D	0+00 to 12+70	635
Crushed	3/4"-0"	13	2	4C to 4D	0+00 to 12+70	165
Crushed	4"-0"	50	8	4E to 4F	0+00 to 2+20	110
Crushed	4"-0"	50	8	5A to 5B	0+00 to 4+80	240
Crushed	4"-0"	50	8	5C to 5D	0+00 to 2+75	138
Crushed	4"-0"	50	8	6B to 6C	0+00 to 13+40	670
Crushed	3/4"-0"	13	2	6B to 6C	0+00 to 9+00	117
Crushed	4"-0"	50	8	7A to 7B	0+00 to 21+60	1,080
Crushed	4"-0"	50	8	7C to 7D	0+00 to 7+40	370
Crushed	4"-0"	50	8	7E to 7F	0+00 to 3+90	195
Crushed	4"-0"	50	8	7G to 7H	0+00 to 2+00	100
Crushed	4"-0"	63	10	7I to 7J	0+00 to 5+10	321
Crushed	3/4"-0"	19	3	7I to 7J	0+00 to 5+10	97
Crushed	4"-0"	50	8	7K to 7L	0+00 to 12+70	635
Crushed	4"-0"	63	10	8A to 8B	0+00 to 66+60	4,196
Crushed	3/4"-0"	19	3	8A to 8B	0+00 to 66+60	1,265
Crushed	4"-0"	50	8	8C to 8D	0+00 to 8+70	435
Crushed	4"-0"	50	8	8E to 8F	0+00 to 6+70	335
Crushed	4"-0"	50	8	8G to 8H	0+00 to 9+00	450

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	10A to 10B	0+00 to 5+35	268
Crushed	4"-0"	50	8	10C to 10D	0+00 to 10+50	525
Crushed	4"-0"	50	8	10E to 10F	0+00 to 11+35	568
Crushed	4"-0"	50	8	11 to 12	0+00 to 17+35	868
Crushed	4"-0"	50	8	13 to 14	0+00 to 8+80	440
Crushed	4"-0"	50	8	15 to 16	0+00 to 7+80	390
Crushed	4"-0"	50	8	19 to 110	0+00 to 6+00	300
Crushed	3/4"-0"	25	4	117 to 118	68+60 to 162+62	2,351
Crushed	3/4"-0"	32	4	117 to 118	162+62 to 318+34	4,983
Crushed	3/4"-0"	19	3	121 to 122	0+00 to 145+20	2,759
Crushed	4"-0"	50	8	121 to 122	81+30 to 110+30	1,450

TYPE OF ROCK: TURNOUTS	SIZE OF ROCK	VOLUME/TO	NO. TURNOUTS	PT. TO PT.	TOTAL VOLUME (CY)
Crushed	4"-0"	25	2	1A to 1B	50
Crushed	4"-0"	25	9	2A to 2B	225
Crushed	4"-0"	25	1	3C to 3D	25
Crushed	4"-0"	31	6	4A to 4B	186
Crushed	3/4"-0"	10	6	4A to 4B	60
Crushed	4"-0"	25	3	4C to 4D	75
Crushed	3/4"-0"	10	2	4C to 4D	20
Crushed	4"-0"	25	2	6B to 6C	50
Crushed	3/4"-0"	10	2	6B to 6C	20
Crushed	4"-0"	25	3	7A to 7B	75
Crushed	4"-0"	25	2	7K to 7L	50
Crushed	4"-0"	31	8	8A to 8B	248
Crushed	3/4"-0"	10	8	8A to 8B	80

EXHIBIT "B"
 ROAD SURFACING

TYPE OF ROCK: TURNOUTS	SIZE OF ROCK	VOLUME/TO	NO. TURNOUTS	PT. TO PT.	TOTAL VOLUME (CY)
Crushed	4"-0"	25	1	8C to 8D	25
Crushed	4"-0"	25	1	8G to 8H	25
Crushed	4"-0"	25	2	10E to 10F	50
Crushed	4"-0"	25	2	11 to 12	50
Crushed	4"-0"	25	1	13 to 14	25
Crushed	4"-0"	25	1	15 to 16	25
Crushed	3/4"-0"	12	45	117 to 118	540
Crushed	3/4"-0"	10	23	121 to 122	230

JCTS: TYPE OF ROCK	SIZE OF ROCK	VOLUME PER JCT.	NUMBER OF JUNCTIONS	POINTS	TOTAL VOLUME
Crushed	4"-0"	36	7	1A, 2A, 3A, 3C, 3G, 3E, 3F	252
Crushed	3/4"-0"	20	5	1A, 2A, 3A, 3C, 3G	100
Crushed	4"-0"	48	1	4A	48
Crushed	3/4"-0"	30	1	4A	30
Crushed	4"-0"	36	5	4C, 4E, 5A, 5C, 6B	180
Crushed	3/4"-0"	20	5	4C, 4E, 5A, 5C, 6B	100
Crushed	4"-0"	36	7	7A, 7C, 7E, 7G, 7I, 7J, 7K	252
Crushed	3/4"-0"	20	7	7A, 7C, 7E, 7G, 7I, 7J, 7K	140
Crushed	4"-0"	36	3	8C, 8E, 8G	108
Crushed	3/4"-0"	20	4	8A, 8C, 8E, 8G	80
Crushed	4"-0"	48	1	8A	48
Crushed	4"-0"	36	3	10A, 10C, 10E	108
Crushed	3/4"-0"	20	3	10A, 10C, 10E	60
Crushed	4"-0"	36	2	11, 13	72
Crushed	3/4"-0"	20	1	11	20
Crushed	3/4"-0"	20	2	17	40

EXHIBIT "B"
 ROAD SURFACING

JCTS: TYPE OF ROCK	SIZE OF ROCK	VOLUME PER JCT.	NUMBER OF JUNCTIONS	POINTS	TOTAL VOLUME
Crushed	4"-0"	36	1	I9	36
Crushed	3/4"-0"	20	4	I9, I11, I13, I19	80
Crushed	3/4"-0"	20	14	68+60 to 318+34 on I17 to I18	280
Crushed	3/4"-0"	20	4	I21 to I22	80
LANDINGS:		VOLUME/ LANDING	NUMBER OF LANDINGS	LOCATION	TOTAL VOLUME
Pit-run	6"-0"	80	3	4+00 and 9+70 on 1A to 1B, 1B	240
Pit-run	6"-0"	80	2	28+00 on 2A to 2B, 2B	160
Pit-run	6"-0"	80	6	3B, 3D, 3H, I2, I4, I6	480
Pit-run	4"-0"	100	1	3I	100
Pit-run	6"-0"	80	2	23+80 and 37+90 on 4A to 4B	160
Pit-run	6"-0"	80	3	4B, 4D, 4F	240
Pit-run	6"-0"	80	2	5B, 5D	160
Pit-run	6"-0"	80	2	6A, 6C	160
Pit-run	6"-0"	80	5	14+90 on 7A to 7B, 7B, 7D, 7F, 7H	400
Pit-run	6"-0"	80	6	7L, 7M, 8B, 8D, 8F, 8H	480
Pit-run	4"-0"	100	1	8I	100
Pit-run	6"-0"	80	3	10B, 8+05 on 10C to 10D, 10D	240
Pit-run	6"-0"	80	1	11+35 on 10E to 10F	80
TURNAROUNDS:		VOL./ T.A.	NUMBER OF TURNAROUNDS	LOCATION	TOTAL VOLUME
Crushed	4"-0"	24	1	1A to 1B	24
Crushed	4"-0"	24	1	I5 to I6	24
Crushed	4"-0"	24	2	4C to 4D, 6B to 6C	48
Crushed	4"-0"	24	3	7A to 7B, 7C to 7D, 7K to 7L	72
Crushed	4"-0"	24	2	8A to 8B, 8C to 8D	48
Crushed	4"-0"	24	2	8E to 8F, 8G to 8H	48
Crushed	4"-0"	24	1	9A to 9B	24
Crushed	4"-0"	24	1	10A to 10B	24
Crushed	4"-0"	24	2	10C to 10D	48
Crushed	4"-0"	24	2	10E to 10F	48

EXHIBIT "B"
 ROAD SURFACING

MISCELLANEOUS:		USE	LOCATION	TOTAL VOLUME
Riprap	24"-6"	Energy Dissipater	2+75 on I1 to I2	24
Riprap	24"-6"	Culvert Bedding	2+75 on I1 to I2	180
Crushed	1 1/2"-0"	Culvert Bedding	2+75 on I1 to I2	60
Crushed	4"-0"	Base Rock Replacement	2+75 on I1 to I2	75
Riprap	24"-6"	Fill Armor	2+75 on I1 to I2	100
Crushed	3/4"-0"	Traction Rock	2A to 2B	300
Crushed	1 1/2"-0"	Leveling Rock	I7 to I8	270
Crushed	1 1/2"-0"	Culvert Bedding/Backfill	I9 to I10	40
Crushed	24"-6"	Energy Dissipater	I9 to I10	12
Crushed	1 1/2"-0"	Leveling Rock	I11 to I12	70
Crushed	1 1/2"-0"	Culvert Bedding/Backfill	I11 to I12	40
Crushed	24"-6"	Energy Dissipater	I11 to I12	12
Crushed	1 1/2"-0"	Leveling Rock	I13 to I14	174
Crushed	1 1/2"-0"	Culvert Bedding/Backfill	I13 to I14	110
Crushed	1 1/2"-0"	Leveling Rock	I15 to I16	500
Crushed	1 1/2"-0"	Culvert Bedding/Backfill	I15 to I16	120
Crushed	24"-6"	Energy Dissipater	I15 to I16	24
Crushed	3/4"-0"	Leveling Rock	I17 to I18	1,600
Crushed	1 1/2"-0"	Culvert Bedding/Backfill	I17 to I18	910
Riprap	24"-6"	Energy Dissipaters for Cross Drains	I17 to I18	156
Riprap	24"-6"	Armor Rock	242+84 on I17 to I18	24
Riprap	24"-6"	Free Drain Fill Rock	41+00 on I17 to I18	400
Crushed	2"-1"	Free Drain Fill Rock	41+00 on I17 to I18	50
Riprap	24"-6"	Fill Armor	41+00 on I17 to I18	170
Crushed	4"-0"	Fill Base Rock Replacement	41+00 on I17 to I18	100
Riprap	24"-6"	Free Drain Fill Rock	71+77 on I17 to I18	400
Crushed	2"-1"	Free Drain Fill Rock	71+77 on I17 to I18	50
Riprap	24"-6"	Fill Armor	71+77 on I17 to I18	60
Crushed	4"-0"	Fill Base Rock Replacement	71+77 on I17 to I18	100

EXHIBIT "B"
 ROAD SURFACING

MISCELLANEOUS:		USE	LOCATION	TOTAL VOLUME			
Riprap	24"-6"	Free Drain Fill Rock	79+46 on I17 to I18	780			
Crushed	2"-1"	Free Drain Fill Rock	79+46 on I17 to I18	65			
Riprap	24"-6"	Fill Armor	79+46 on I17 to I18	100			
Crushed	4"-0"	Fill Base Rock Replacement	79+46 on I17 to I18	100			
Crushed	1 1/2"-0"	Leveling Rock	I19 to I20	320			
Crushed	1 1/2"-0"	Culvert Bedding/Backfill	I19 to I20	130			
Riprap	24"-6"	Energy Dissipater	I19 to I20	36			
Crushed	3/4"-0"	Leveling Rock	I21 to I22	1,100			
Riprap	24"-6"	Energy Dissipaters for Cross Drains	I21 to I22	24			
Riprap	24"-6"	Culvert Bedding	87+12 on I21 to I22	50			
Crushed	1 1/2"-0"	Culvert Bedding	87+12 on I21 to I22	50			
Riprap	24"-6"	Energy Dissipater	87+12 on I21 to I22	24			
Riprap	24"-6"	Fill Armor	87+12 on I21 to I22	100			
Crushed	4"-0"	Fill Base Rock Replacement	87+12 on I21 to I22	180			
Riprap	24"-6"	Culvert Bedding	98+74 on I21 to I22	50			
Crushed	1 1/2"-0"	Culvert Bedding	98+74 on I21 to I22	50			
Riprap	24"-6"	Energy Dissipater	98+74 on I21 to I22	24			
Riprap	24"-6"	Fill Armor	98+74 on I21 to I22	140			
Crushed	4"-0"	Fill Base Rock Replacement	98+74 on I21 to I22	180			
Riprap	24"-6"	Culvert Bedding	101+90 on I21 to I22	50			
Crushed	1 1/2"-0"	Culvert Bedding	101+90 on I21 to I22	40			
Riprap	24"-6"	Energy Dissipater	101+90 on I21 to I22	24			
Riprap	24"-6"	Fill Armor	101+90 on I21 to I22	60			
Riprap	4"-0"	Fill Base Rock Replacement	101+90 on I21 to I22	80			
Riprap	24"-6"	Fill Armor	Project No. 5	350			
Crushed	3/4"-0"	Culvert Backfill	Project No. 5	450			
Crushed	1 1/2"-0"	Base Rock Approaches	Project No. 5	220			
Crushed	3/4"-0"	Surface Course Replacement	Project No. 5	72			
ROCK TOTALS (CY)		3/4"-0"	1 1/2"-0"	2"-1"	4"-0"	6"-0"	24"-6"
51,856		18,110	3,104	165	24,304	2,800	3,374

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 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 sheepfoot 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, Road Improvement Segments, and Project No. 5	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 sheepfoot 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, Road Improvement Segments, and Project No. 5	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. 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, Road Improvement Segments, and Project No. 5	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 Culverts Nos. 43, 55, 59, 60, 83, 84, and 85 (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.

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 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	1A to 1B	5+30
2	18	30	2A to 2B	10+30
3	18	40	2A to 2B	13+80
4	18	34	2A to 2B	21+60
5	18	40	2A to 2B	23+70
6	18	40	3C to 3D	4+85
7	18	40	3C to 3D	7+00
8	18	50	4A to 4B	0+00
9	18	40	4A to 4B	1+35
10	18	40	4A to 4B	3+27
11	18	40	4A to 4B	12+10
12	18	30	4A to 4B	26+30
13	18	30	4A to 4B	36+40
14	18	40	4C to 4D	0+00
15	18	40	4C to 4D	3+20
16	18	40	4C to 4D	9+00
17	18	30	5A to 5B	0+00
18	18	30	5C to 5D	0+00
19	18	40	5C to 5D	1+95
20	18	40	6B to 6C	4+68
21	18	30	7A to 7B	3+50
22	18	30	7A to 7B	7+00
23	18	30	7A to 7B	12+50
24	18	30	7C to 7D	5+40
25	18	40	7E to 7F	0+00
26	18	40	7G to 7H	0+00
27	18	30	7I to 7J	4+90
28	18	40	7K to 7L	0+00
29	18	30	7K to 7L	8+60
30	18	30	7K to 7L	11+80
31	18	40	8A to 8B	3+00
32	18	40	8A to 8B	5+66
33	18	30	8A to 8B	9+40

EXHIBIT "C"
 CULVERT SPECIFICATIONS

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
34	18	30	8A to 8B	23+00
35	18	40	8A to 8B	45+35
36	18	40	8A to 8B	57+10
37	18	40	8A to 8B	60+36
38	18	40	8E to 8F	3+40
39	18	40	8G to 8H	1+94
40	18	30	8G to 8H	5+50
41	18	40	10C to 10D	0+00
42	18	30	10E to 10F	4+98
43*	36	70	I1 to I2	2+75
44	18	40	I9 to I10	3+00
45	18	40	I11 to I12	6+00
46	18	40	I13 to I14	3+00
47	18	30	I13 to I14	5+80
48	18	40	I13 to I14	11+60
49	24	70	I15 to I16	17+42
50	18	30	I15 to I16	29+04
51	18	30	I15 to I16	40+36
52	18	40	I17 to I18	11+62
53	18	40	I17 to I18	31+94
54	18	40	I17 to I18	37+75
55*	36	80	I17 to I18	41+00
56	18	40	I17 to I18	42+00
57	18	40	I17 to I18	46+46
58	18	40	I17 to I18	52+27
59*	36	78	I17 to I18	71+77
60*	36	104	I17 to I18	79+46
61	18	40	I17 to I18	92+89
62	18	40	I17 to I18	97+64
63	18	40	I17 to I18	109+26
64	18	40	I17 to I18	115+06
65	18	40	I17 to I18	147+27
66	24	40	I17 to I18	155+72

EXHIBIT "C"

CULVERT SPECIFICATIONS

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
67	18	40	I17 to I18	157+30
68	18	40	I17 to I18	161+53
69	24	40	I17 to I18	163+11
70	18	40	I17 to I18	167+34
71	18	40	I17 to I18	173+14
72	18	40	I17 to I18	178+95
73	18	40	I17 to I18	213+80
74	18	30	I17 to I18	219+61
75	18	34	I17 to I18	231+22
76	18	40	I17 to I18	242+84
77	18	40	I17 to I18	266+07
78	18	40	I17 to I18	312+54
79	18	40	I19 to I20	11+60
80	18	30	I19 to I20	25+20
81	18	30	I19 to I20	29+04
82	18	30	I19 to I20	34+85
83*	36	70	I21 to I22	87+12
84*	48	80	I21 to I22	98+74
85*	48	55	I21 to I22	101+90

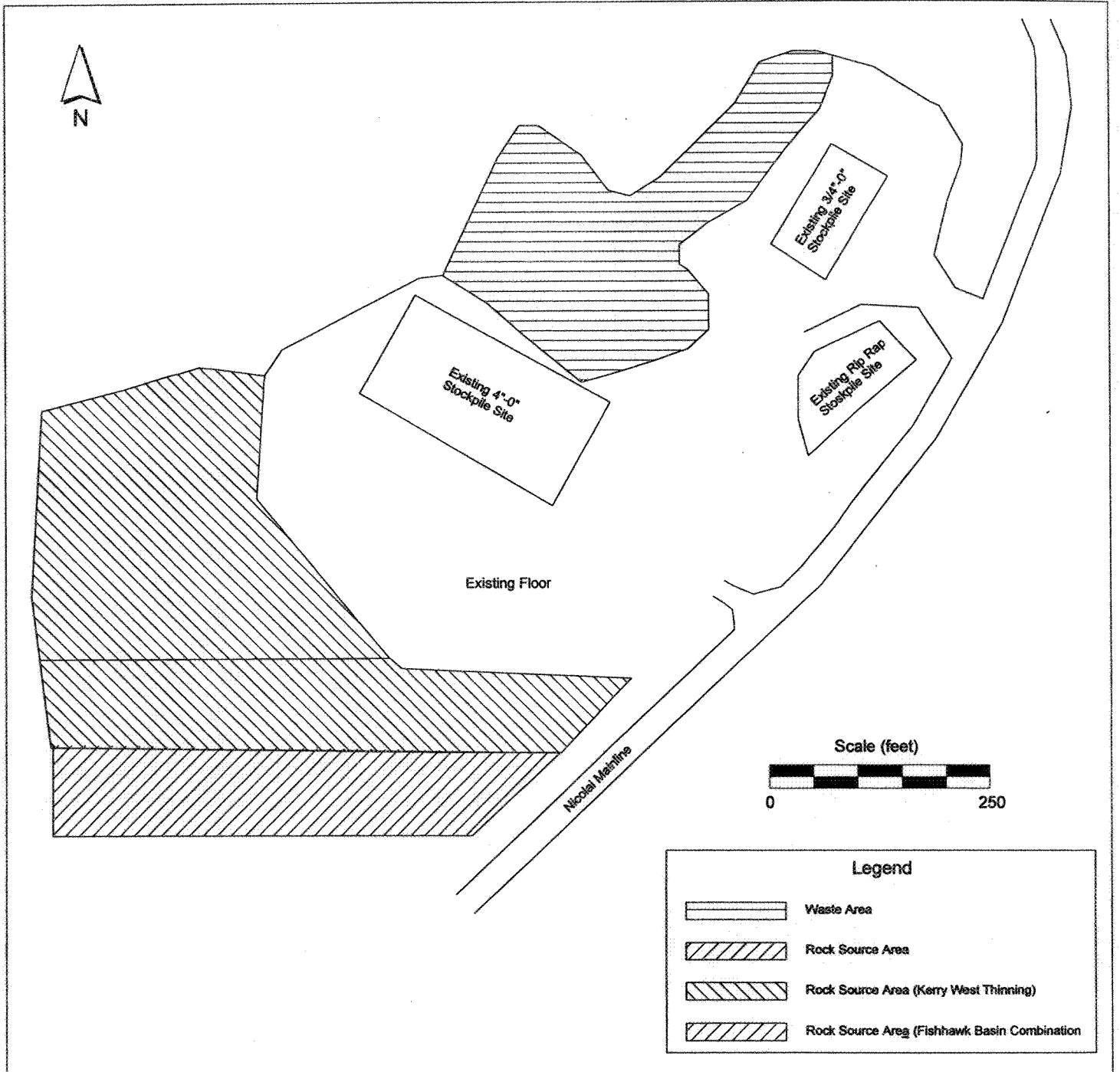
*Indicates culverts that do not require markers.

EXHIBIT "D"

ROCK PIT DEVELOPMENT AND USE

- (1) PURCHASER shall schedule and coordinate Viewpoint 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) PURCHASER shall obtain a FPA Burn Permit prior to debris disposal.
- (6) All overburden shall be hauled to the designated waste area 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) 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 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

Viewpoint Quarry
SE1/4, Section 4, T7N, 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.

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	55-85%
	Passing	1/4" sieve	35-50%
Of the fraction passing 1/4" sieve, 40% to 60% shall pass the No. 10 sieve.			
<u>For 2"-1"</u>	Passing	2 1/2" sieve	100%
	Passing	2" sieve	90-100%
	Passing	1 1/2" sieve	35-70%
	Passing	1" sieve	0-15%
<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

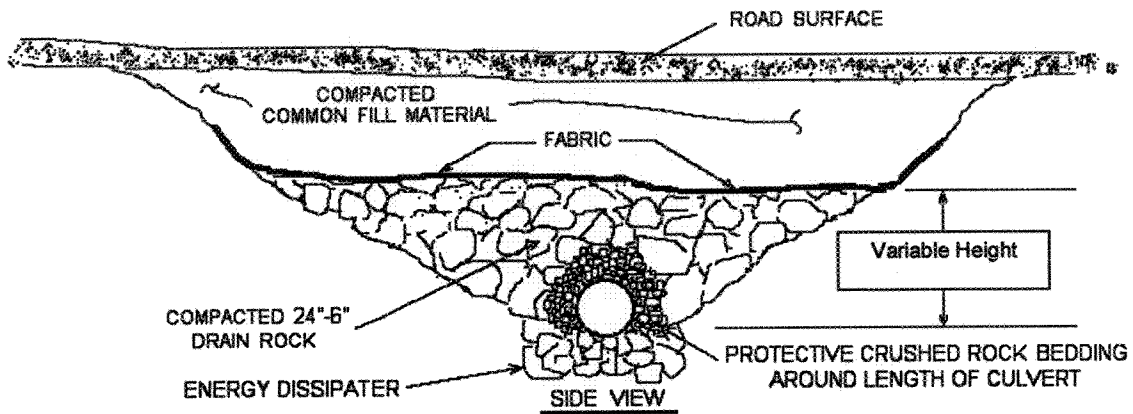
<u>For 6"-0" Pit-Run</u>	Passing	10" sieve	100%
	Passing	6" sieve	65%

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"

TYPICAL FREE DRAINING FILL AND DRAINAGE BLANKET SPECIFICATIONS



Drainage Fabric Specifications:

Use nonwoven fabric designed for subsurface drain purposes, which meets or exceeds the following requirements:

	Test Method	Properties
1. Water Flow Rate	ASTM D 4491	85 gal/min/ft ²
2. Water Permeability	ASTM D 4491	0.30 cm/sec
3. Grab Tensile Strength	ASTM D 4632	250 lb
4. Mullen Burst Test	ASTM D 3766	460 lb
5. Mass	ASTM D 4533	10 oz/yd ²
6. Thickness	ASTM D 5199	100 mills
7. UV Resistance	ASTM D 4355 Xenon Arc	70% retained

EXHIBIT "G"

ROAD VACATING AND FILL REMOVAL SPECIFICATIONS: V1 to V2, V3 to V4, V5 to V6, V7 to V8

- (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.
- (3) Sidecast Pullback. Excavate/pullback previously sidecast materials below the road at designated locations. Developed slopes shall be pulled back to a 1½ :1 slope or to natural ground contours. The beginning position for sidecast pullback shall be no greater than 20 feet vertical distance from the existing road surface.
- (4) Use of Excavated Materials.
 - (a) Sidecast Pullback. All excavated materials shall be placed on the interior (cut) side of the road, and utilized to restore the cutslope to natural contours or to a minimum 10% outslope for drainage.
 - (b) 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.
 - (c) Woody Debris may be incorporated in embankment material and/or placed on the surface of compacted embankment material.
- (5) Construct Waterbars at designated locations and as directed by STATE. Construct waterbars according to the specifications in Exhibit J, and as directed by STATE.
- (6) Existing Road Rock on V5 to V6 and V7 to V8.
 - (a) Grade existing road rock into the interior (cut) side of the road, and utilized to restore the cutslope to natural contours or to a minimum 10% outslope for drainage.
 - (b) Rip existing subgrade to a minimum depth of 12 inches.
- (7) Block Roads. Use excavated material from fill removals or sidecast pullback areas to block roads from vehicle access, as directed by STATE.
- (8) 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.
- (8) 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.

EXHIBIT "G"

ROAD VACATING AND FILL REMOVAL SPECIFICATIONS: V1 to V2, V3 to V4, V5 to V6, V7 to V8

SPECIFIC INSTRUCTIONS:

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
V1 to V2	0+00	Point V1. Begin sidecast pullback. Block road.
	0+50	Remove fill. Develop 4 foot stream channel.
	3+75	Remove fill. Develop 6 foot stream channel.
	4+50	End sidecast pullback.
	5+18	Point V2. Block road.
V3 to V4	0+00	Point V3. Block road.
	7+25	Begin sidecast pullback.
	7+85	Remove culvert.
	8+39	End sidecast pullback.
	13+66	Remove culvert.
	24+57	Begin sidecast pullback.
	26+05	End sidecast pullback.
38+05	Point V4.	
V5 to V6	0+00	Point V5. Block road.
	4+50	Point V6. Block road.
V7 to V8	0+00	Point V7. Block road.
	13+00	Remove culvert.
	17+00	Remove culvert.
	18+50	Point V8. Block road.

EXHIBIT "H"

WARNER CREEK STREAM CROSSING

PURCHASER shall design and construct an open-bottom stream crossing structure between Point S1 and Point S2. Specific objectives for this project include:

1. Replacement of the existing culvert with a structure which preserves a natural stream channel (waterway) a minimum of 12 feet wide.
2. Restoration of juvenile and adult fish passage.
3. A total project cost not exceeding \$60,988.
4. A minimum of 3 alternative proposals are submitted to STATE for consideration.
5. A minimum HS 25 Load Rating.
6. A minimum service life of 50 years for materials used in construction.

STATE has prepared a Site Survey for the purpose of establishing the location(s) of the existing road, stream and stream crossing and is shown on Pages 3 and 4.

The project requires site investigation, sequential design and construction. All project design(s) shall be prepared by a Professional Engineer licensed in Oregon and approved by STATE.

STATE may adjust the credit in Section 74. Credit for Project Work and/or modify the requirements and minimum specifications, subject to findings and recommendations made by the Engineer.

PROJECT REQUIREMENTS AND MINIMUM SPECIFICATIONS

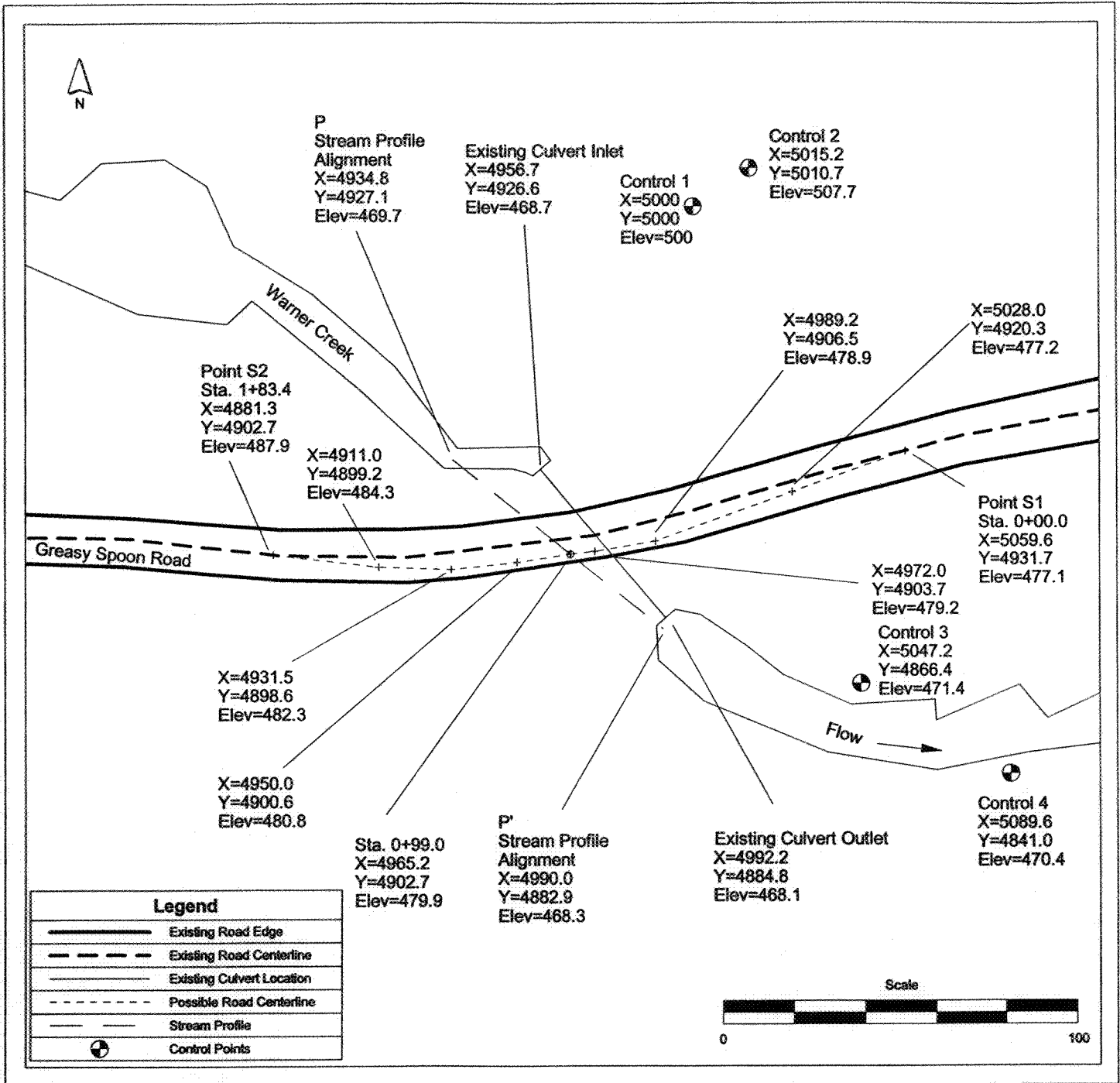
- A. Coordination, Scheduling, Supervision and Certification of Work. PURCHASER is responsible for the coordination, scheduling, supervision and certification of completed construction work, including, but not limited to:
1. Coordination of site investigation(s), preliminary designs, final project designs, and project construction work with STATE and Western Oregon Electric.
 2. Notifying Western Oregon Electric Cooperative, Inc., (Telephone No. 800-777-1276) prior to conducting any operations in the area, and, coordination with the above listed utility in field locating underground utility lines. Operations conducted near utility lines shall be in accordance with the recommendations of Western Oregon Electric. PURCHASER shall be responsible for any damage to utility lines resulting from PURCHASER'S activities.
 3. Preparing and obtaining the FPA Written Plan and any necessary permits. STATE has prepared a Draft FPA Written Plan (on file at the Astoria District Office) for the purpose of providing drainage basin assessments.
 4. Performing any necessary field surveys, layout and staking.
 5. Scheduling and supervision of construction work.
 6. Written certification of completed construction work shall be made by the Engineer.
- B. Site Investigation(s) shall be made prior to any project design. The investigation(s) shall include, but not be limited to:
1. Field review(s) of the existing road and stream channel.
 2. Sub-surface exploration.
 3. Determination of the depth and orientation of stream bedload, erodible rock (soft, decomposed or fractured), and scour resistant bedrock foundation materials.
 4. Determination of the scour potential and bearing capacity of bedrock foundation materials.

EXHIBIT "H"

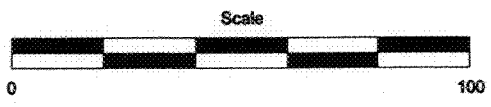
WARNER CREEK STREAM CROSSING

- C. Preliminary (Alternative) Design Proposals. Preliminary design proposals shall be presented to STATE for review, prior to preparation of any final project design(s).
1. Preliminary design proposals are defined as "viable alternative solutions" which meet the objectives and requirements of the project. Preliminary design proposals shall include a description of each proposal and total cost estimate.
 2. STATE is responsible for timely review of preliminary design proposals, selection of the preferred design, and, issuing notice to proceed with the final project design.
- D. Final Project Design. The project shall meet the specifications in Exhibits B, E and the following minimum requirements:
1. Project Plans shall be prepared and submitted to STATE. Plans shall include all information necessary for the review, administration and inspection of the project by STATE, including but not limited to:
 - a) Design calculations
 - b) Scaled drawings, elevations and section drawings for the structure, including sizes and dimensions of components.
 - c) Descriptions of any special tools and/or equipment required, including lifting capacity and the general process to install and connect the components.
 - d) Quantity Estimates for earthwork and construction materials.
 - e) A total project cost estimate, including, site investigation, engineering services, supervision, supplied materials and construction of the project. Applicable labor and equipment rates shall be used and documented in the cost estimate.
 2. The stream crossing shall prevent the scouring of any footing, substructure, road approach, embankment and/or stream bank.
 3. The structure shall accommodate Western Oregon Electric utility lines.
 4. The road running surface shall be a minimum of 16 feet wide.
- E. Construction Requirements. The work shall be conducted in an efficient manner that minimizes delays.
1. In stream work shall be conducted during periods of low water flows and between July 15 and August 31, annually.
 2. Minimum 1½ cubic yard track mounted excavator type equipment shall be used for embankment excavation, stream channel development and riprap rock placement.
 3. All woody debris encountered during excavation shall be removed. Excavated materials shall be end hauled to the designated waste area shown on Exhibit A and sloped for drainage and stability.
 4. Waste areas shall be cleared of woody debris and the debris piled adjacent to the waste area(s). The debris shall then be redistributed over the waste area after materials have been hauled and sloped.
 5. The existing (removed) culvert shall be hauled away to an approved refuse site off of STATE land.
 6. Select materials shall be utilized for embankment construction and thoroughly compacted.
 7. Riprap rock shall be utilized for armoring embankment slopes and streambanks. Existing riprap rock may be salvaged and re-used for the project.
 8. Crushed rock shall be utilized for the construction and restoration of road surfaces and may be obtained from designated rock sources.
 9. Erosion control measures shall be applied to all exposed excavation areas, bare soils and waste materials.

EXHIBIT "H"
 WARNER CREEK STREAM CROSSING



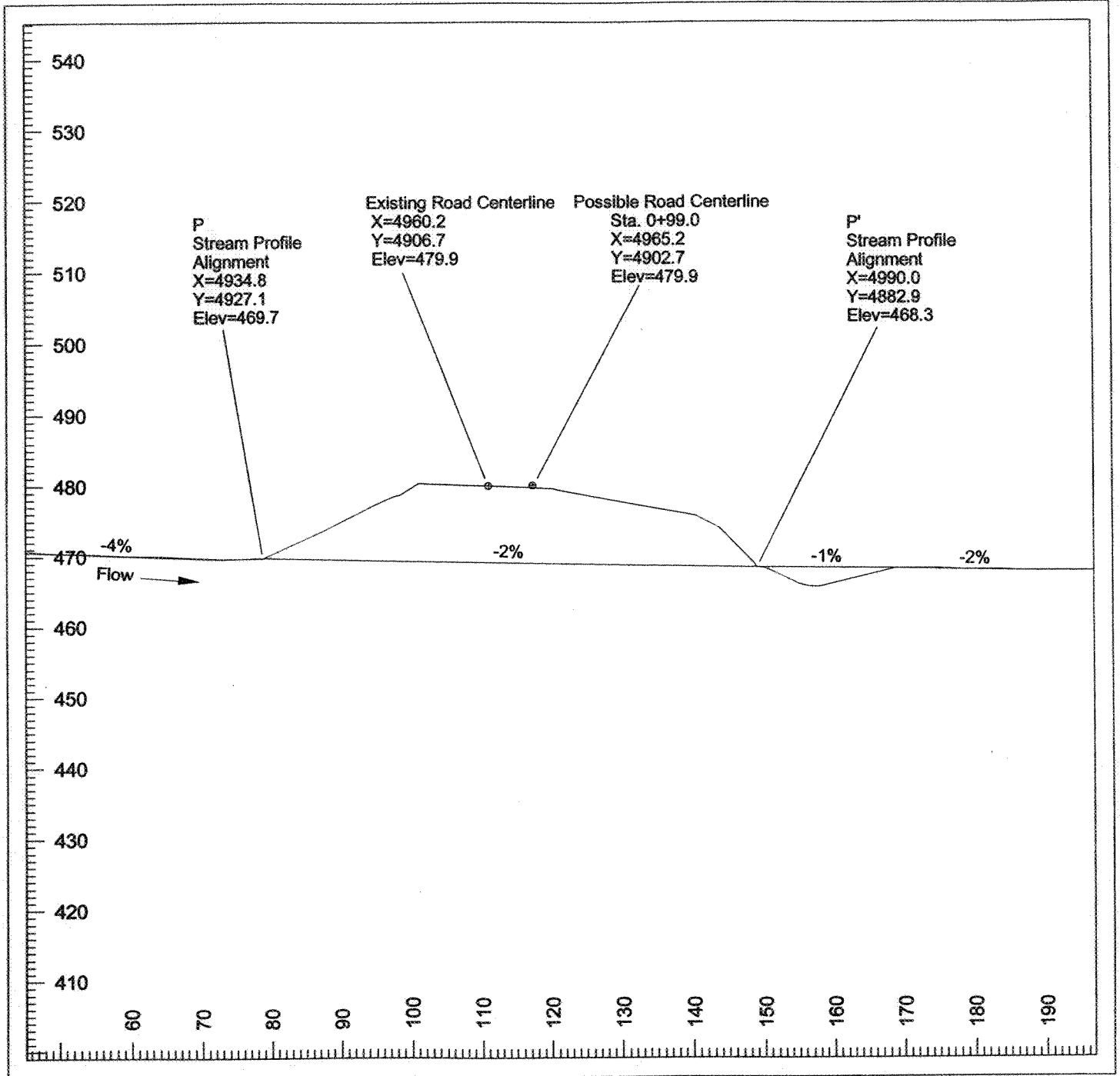
Legend	
	Existing Road Edge
	Existing Road Centerline
	Existing Culvert Location
	Possible Road Centerline
	Stream Profile
	Control Points



Oregon Department of Forestry
 Astoria District
 Engineering Unit

Warner Creek
 SW1/4, Section 1, T6N, R6W, W. M.
 Clatsop County, Oregon

EXHIBIT "H"
WARNER CREEK STREAM CROSSING

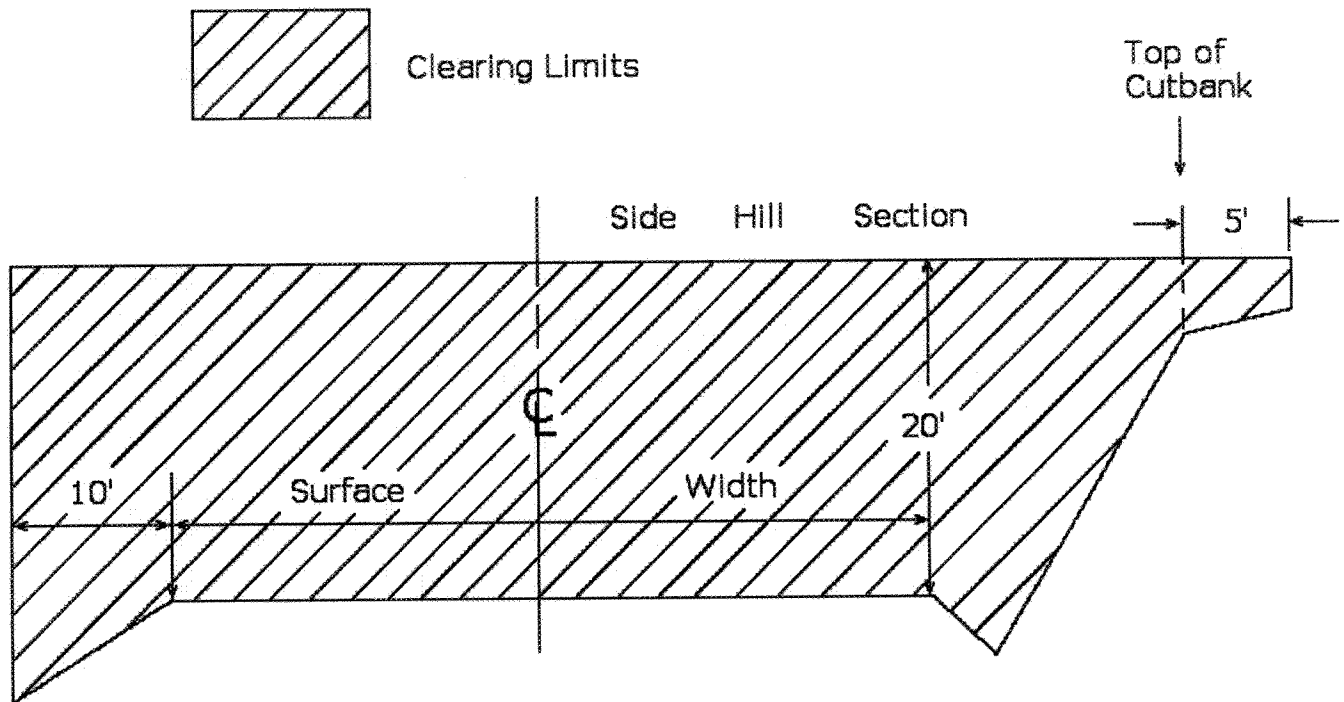


Oregon Department of Forestry
Astoria District
Engineering Unit

Warner Creek
SW1/4, Section 1, T6N, R6W, W. M.
Clatsop County, Oregon

EXHIBIT "I"

LOGGING ROAD BRUSHING SPECIFICATIONS

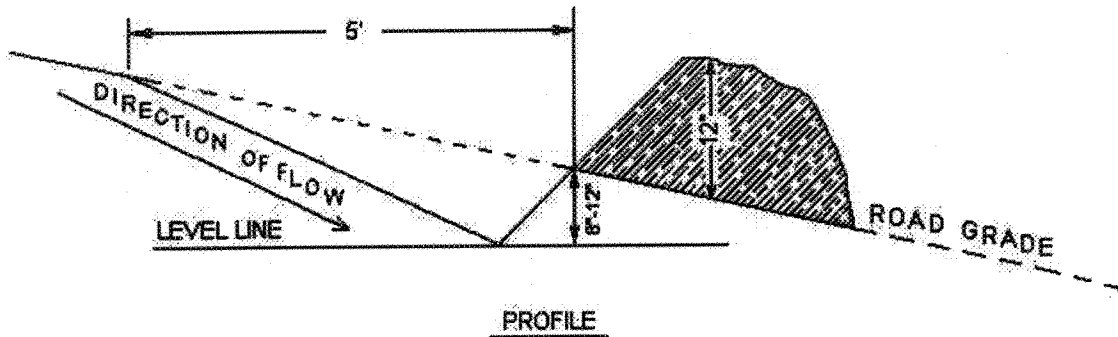


REQUIREMENTS

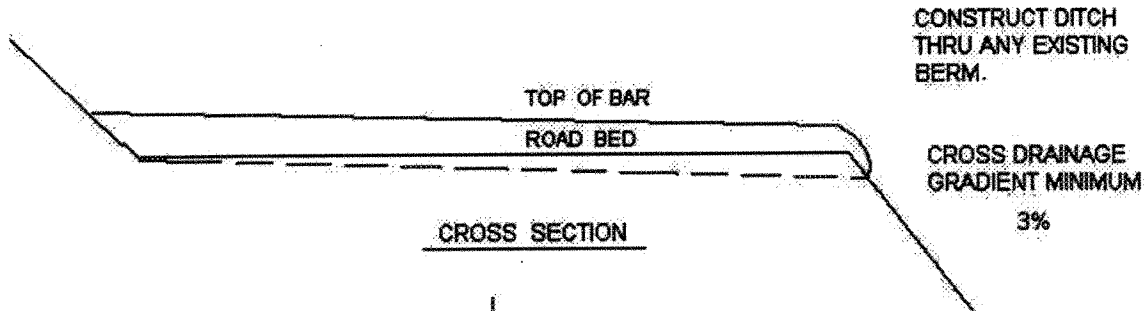
- (1) The minimum clearing distance:
 - (a) 20 feet vertical distance from road surface.
 - (b) 15 feet horizontal distance from road shoulder, includes 5 feet beyond the top of the cutbank.
 - (c) 10 feet horizontal distance on the downslope side of the road shoulder.
 - (d) All fill slopes shall be cleared from the road shoulder to the toe of the fill.
- (2) Brush and trees shall be cut to a maximum height of 6 inches above the ground surface or obstructions such as rocks or existing stumps.
- (3) Debris resulting from the brushing operation shall be removed from the roadway, cutslope, ditches, and water courses and may be scattered downslope from the road or placed in other stable locations. Large debris, 6 inches or larger in diameter, shall be cut into lengths of 6 feet or less to facilitate rapid decay, unless otherwise approved by STATE.
- (4) Conifer trees larger than 10 inches in diameter at stump height, located within the clearing limit but outside of the ditchline or shoulder, shall not be cut down, but shall be limbed for road visibility.
- (5) Brush all road side vegetation on segments I7 to I8, I11 to B1, I15 to I16, I19 to I20, I21 to I22, B2 to B3.

EXHIBIT "J"

WATERBAR SPECIFICATIONS



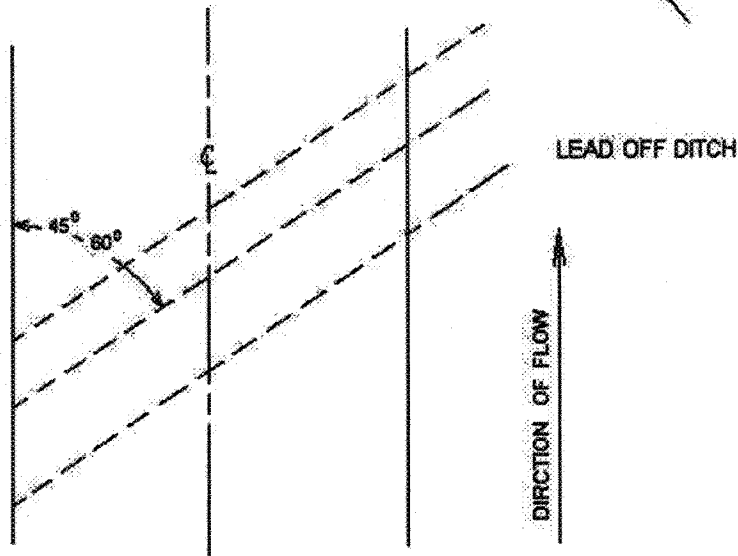
PROFILE



CROSS SECTION

SPACING OF WATERBARS:

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



PLAN VIEW

EXHIBIT "K"

SIDECAST PULLBACK SPECIFICATIONS

TYPICAL CROSS SECTION OF SIDECAST PULLBACK

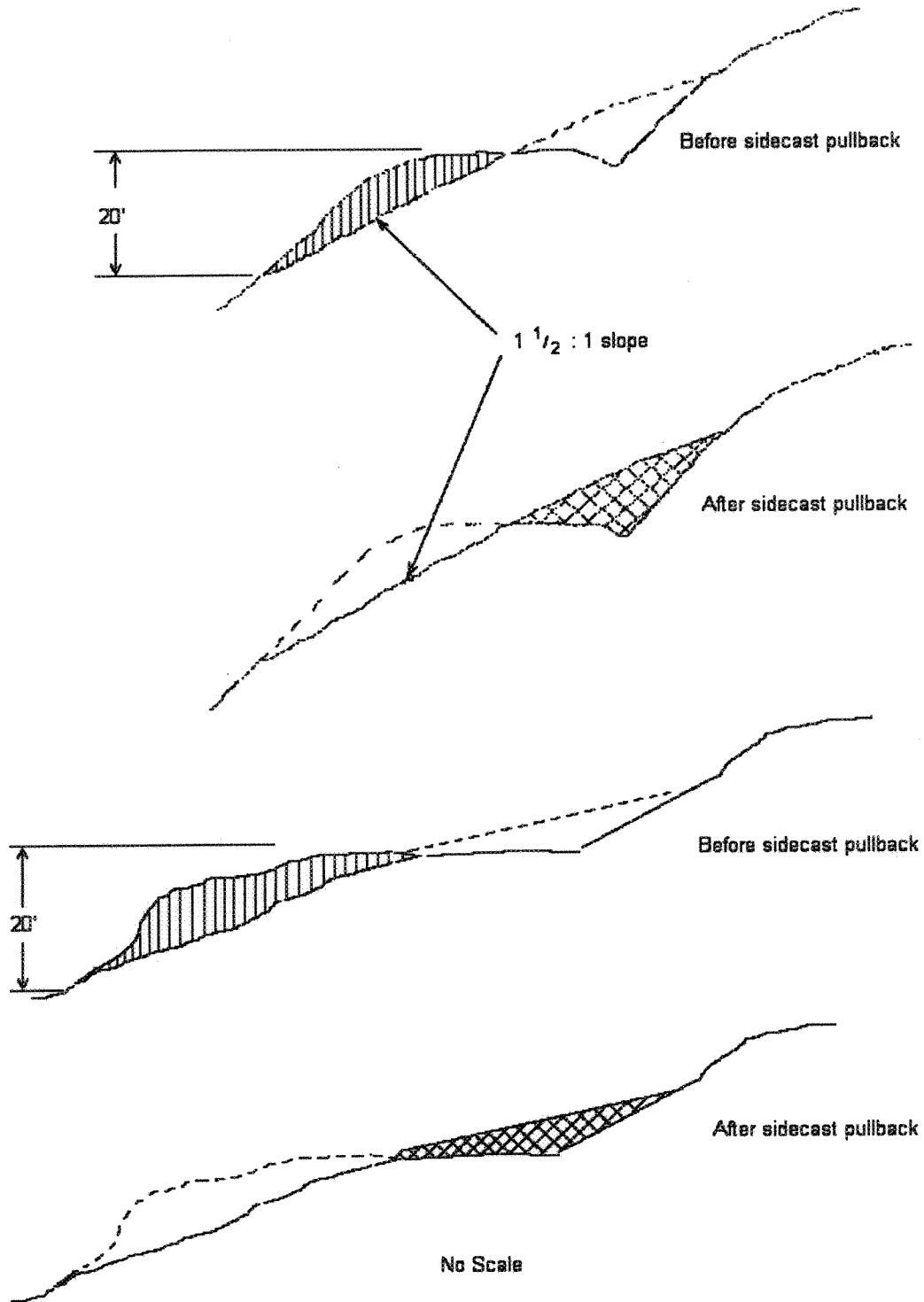


EXHIBIT "L"

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 tree) 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 – On Areas 2, 6, 11, and 12, an average of at least 600 cubic feet of hard conifer logs per acre shall be retained throughout the excavator piling areas. At least 2 of these logs per acre must be at least 24 inches in diameter, at the large end, where available. Hard conifer logs must be in Decay Class 1 or 2, as indicated by intact bark and original wood color. Down logs shall be well distributed across the area. On Area 4, an average of at least 900 cubic feet of the same type of down logs shall be retained.

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 "L"

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. For shovel piling, 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 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 the specified Project Period and started within 14 calendar days after completion of yarding activities on Areas 1, 2, 3, 4, 6, 8, 10, 11, and 12. 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.

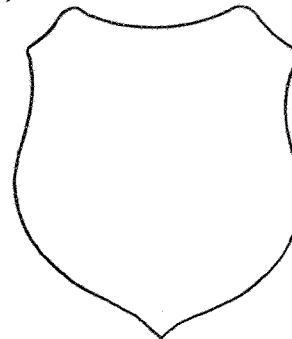
EXHIBIT "M"
OREGON DEPARTMENT OF FORESTRY

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 Fishhawk Basin Combination
 COUNTY Clatsop/Columbia
- (13) STATE CONTRACT NUMBER 341-02-61
- (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)	<input checked="" type="checkbox"/>
UTILITY/PULP (all species)	<input checked="" type="checkbox"/>
NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE	
OTHER:	_____
OTHER:	_____

(10) APPROVED SCALING LOCATIONS	Species	Yard	Truck

(20) REMARKS: _____

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

- (11) NOTICE OF CANCELLATION OF BRAND:
 Effective Date: _____

(21) SIGNATURES:

 Purchaser or Authorized Representative Date

 State Forester's Representative

 State Forester Representative Date

EXHIBIT "M"

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.