

EXHIBIT "B"

FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STA. TO STA.	DITCH REQ.	OUTSLOPE
16 feet	12 feet	1A to 1B	0+00 to 7+50	YES	NO
16 feet	12 feet	2A to 2B	0+00 to 15+50	YES	NO
16 feet	12 feet	2C to 2D	0+00 to 29+70	YES	NO
16 feet	12 feet	2E to 2F	0+00 to 11+80	YES	NO
16 feet	12 feet	2G to 2H	0+00 to 11+40	YES	NO
16 feet	12 feet	2I to 2J	0+00 to 29+20	YES	NO
16 feet	12 feet	2K to 2L	0+00 to 5+85	YES	NO
16 feet	12 feet	2M to 2N	0+00 to 13+80	YES	NO
16 feet	12 feet	2O to 2P	0+00 to 2+90	YES	NO
16 feet	12 feet	4A to 4B	0+00 to 16+75	YES	NO
16 feet	12 feet	4C to 4D	0+00 to 7+00	YES	NO
16 feet	12 feet	P1 to P2	0+00 to 5+42	YES	NO
16 feet	12 feet	P3 to P4	0+00 to 20+20	YES	NO
16 feet	12 feet	P5 to P6	0+00 to 20+88	YES	NO
16 feet	12 feet	P7 to P8	0+00 to 19+99	YES	NO
16 feet	12 feet	P9 to P10	0+00 to 3+51	YES	NO
16 feet	12 feet	I1 to I2	0+00 to 53+10	YES	NO
16 feet	12 feet	I3 to I4	0+00 to 17+85	YES	NO
20 feet	16 feet	I5 to I6	0+00 to 183+30	YES	NO
16 feet	12 feet	I7 to I8	0+00 to 1+90	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 10 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.

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

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

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

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

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

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

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

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

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

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

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

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

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

### DRAINAGE

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

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

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

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

Top of cutslope shall be rounded.

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**FOREST ROAD SPECIFICATIONS**

**GRADING**

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

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

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

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

**GENERAL ROAD CONSTRUCTION SPECIFICATIONS**

- (1) **Excavated Material.** All suitable excavated materials from the road construction and alignment shall be utilized for road and fill construction, and hauled in where necessary. Waste materials shall be placed in designated was
- (2) **Geotextile Road Fabric.** Install fabric in accordance with specifications in Exhibit G.
- (3) **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, as specified in Exhibit H.
- (4) **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. Crushed rock shall be used for backfilling around and installed culverts. Free draining fill construction shall be in accordance with Exhibit F.
- (5) **Equipment.** All excavation and riprap placement shall be performed using a minimum 1½ cubic-yard, track-mounted excavator.

**SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS**

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
2E to 2F	4+54	Construct free draining fill to base to a height of 2 feet.  Install geotextile fabric between free draining fill base and common materials. Then utilize common materials for a total fill height of 6 feet. Fill slope for free draining fill base shall be 1:1. Fill slope for common material shall be 1½:1. Utilize 170 cubic yards of 24"-6" rip-rap rock for free drain fill construction, and 36 cubic yards of ¾"-0" crushed rock for culvert bedding and backfill. Develop the stream channel above the new culvert inlet for minimum distance of 20 feet. Finished subgrade width shall be 18 feet.

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SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
2G to 2H	3+09	Construct free draining fill to base to a height of 6 feet.  Install geotextile fabric between free draining fill base and common materials. Then utilize common materials for a total fill height of 17 feet. Fill slope for free draining fill base shall be 1:1. Fill slope for common material shall be 1½:1. Utilize 200 cubic yards of 24"-6" rip-rap rock for free drain fill construction, and 75 cubic yards of ¾"-0" crushed rock for culvert bedding and backfill. Develop the stream channel above the new culvert inlet for minimum distance of 20 feet. Finished subgrade width shall be 20 feet.
P1 to P2	3+25 to 5+42	Widen road 8 feet right.
P3 to P4	3+66	Construct turnout right.
	5+00 to 7+00	Widen fill 1 foot left and right.
	8+40	Construct turnout right.
	15+14	Construct turnout right.
P5 to P6	5+50 to 7+25	Widen road 6 feet left.
	6+35	Construct turnout right.
	8+60 to 10+00	Widen road 6 feet left.
	9+43	Construct turnout right.
	10+25 to 11+74	Widen road 6 feet right.
	10+40 to 20+88	Install fabric in accordance to specifications in Exhibit G.
	13+35	Construct turnout left.
	16+11	Construct turnout left.
	20+07	Construct turnout right.
P7 to P8	0+00 to 19+99	Install fabric in accordance to specifications in Exhibit G.
	1+41	Construct turnout right.
	2+26 to 4+35	Widen road 6 feet left.
	2+75 to 4+91	Widen fill 2 feet left and right.
	3+55	Armor fill slopes utilizing 200 cubic yards of 24"-6" riprap rock.

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FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
P7 to P8 (Cont.)	4+98	Construct turnout left.
	13+42	Construct turnout left.
	16+51	Construct turnout left.
P9 to P10	0+00 to 3+51	Install fabric in accordance to specifications in Exhibit G.
	2+50 to 3+20	Reconstruct existing fill, replace existing culvert.

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) 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 may 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.
- (3) 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, as specified in Exhibit H.
- (4) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic-yard, track-mounted excavator.
- (5) 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.

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ROAD IMPROVEMENT INSTRUCTIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS

- (6) Subgrade Preparation and Application of New Surfacing Rock.
- (a) Complete culvert installations, fill reconstruction, and after 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 surface and add base rock. Provide for a crown of ½ inch per foot in road width and compact in accordance to Exhibit B.
  - (e) Upon completion of above required work, apply, process, and compact surfacing rock according Exhibit B.

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
I1 to I2	0+00	Point I1.
	2+25	Replace existing culvert, utilize 30 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill.
	4+77	Construct turnout right.
	6+30	Install culvert, utilize 30 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill.
	9+36	Construct turnout right.
	11+88	Install culvert, utilize 40 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Develop culvert inlet. Utilize 30 cubic yards of riprap to construct an energy dissipator.
	15+47	Install culvert, utilize 40 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Utilize 20 cubic yards of riprap to construct an energy dissipator.
	16+50	Construct turnout right.
	17+40	Utilize 220 cubic yards of 4"-0" crushed rock for sub-grade leveling.
	18+90	Install culvert, utilize 40 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Develop outlet ditch.
	20+50	Construct turnout left.
	25+20	Install culvert, utilize 40 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill.
	26+00	Construct turnout right.
	28+20	Construct turnout left.

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ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
I1 to I2 (Cont.)	28+83	Begin sub-grade leveling, utilize 260 cubic yards of 4"-0" crushed rock.
	29+70	Install culvert, utilize 40 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Utilize 30 cubic yards of riprap to construct an energy dissipator.
	30+30	End sub-grade leveling.
	31+10	Construct turnout left.
	35+10	Install culvert, utilize 30 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill.
	37+25	Construct turnout left.
	38+40	Point P1. Replace existing culvert, utilize 40 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Utilize 30 cubic yards of riprap to construct an energy dissipator.
	41+75	Construct turnout left.
	42+45	Point P3. Install culvert, utilize 30 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill.
	45+70	Install culvert, utilize 30 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill.
	47+45	Construct turnout left. Borrow Pit Location.
	49+65	Point P5. Replace existing culvert, utilize 30 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Utilize 50 cubic yards of riprap to construct an energy dissipator.
		53+10
I3 to I4	0+00	Point I3. Replace existing culvert, utilize 30 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill.
	3+50	Replace existing culvert, utilize 30 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill.
	6+20	Construct turnout right.
	12+10	Construct turnout left.
	14+50	Existing turnout right.
	17+85	Construct turnaround. Point I4.
I5 to I6	0+00	Point I5 - Microwave Road
	25+30	Utilize 12 cubic yards of riprap to construct an energy dissipator.

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ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
I5 to I6 (Cont.)	38+15	Replace existing culvert, utilize 24 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Utilize 12 cubic yards of riprap to construct an energy dissipator.
	44+35	Replace existing culvert, utilize 24 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Utilize 12 cubic yards of riprap to construct an energy dissipator.
	49+35	Replace existing culvert, utilize 24 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Utilize 12 cubic yards of riprap to construct an energy dissipator.
	53+90	Utilize 12 cubic yards of riprap to construct an energy dissipator.
	60+12	Utilize 12 cubic yards of riprap to construct an energy dissipator.
	65+65	Utilize 12 cubic yards of riprap to construct an energy dissipator.
	83+10	Utilize 12 cubic yards of riprap to construct an energy dissipator.
	88+35	Utilize 12 cubic yards of riprap to construct an energy dissipator.
	105+30	Replace existing culvert, utilize 24 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Utilize 12 cubic yards of riprap to construct an energy dissipator.
	108+35	Replace existing culvert, utilize 24 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Utilize 12 cubic yards of riprap to construct an energy dissipator.
	145+00	Install new culvert utilize 24 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Utilize 12 cubic yards of riprap to construct an energy dissipator.
	180+60	Utilize 12 cubic yards of riprap to construct an energy dissipator.
	183+30	Point I6. Replace existing culvert, utilize 24 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill.
	I7 to I8	0+00
0+50		Replace existing culvert, utilize 60 cubic yards of ¾"-0" crushed rock for culvert bedding/backfill. Armor fill slopes utilizing 40 cubic yards of 24"-6" riprap rock.
1+70		Utilize 30 cubic yards of riprap to construct an energy dissipator.
1+90		Point I8.



EXHIBIT "B"  
 ROAD SURFACING

ROAD SEGMENT	1A to 1B			POINT TO POINT		Sta. to Sta.		
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A to 1B		0+00 to 7+50		TOTAL VOLUME (CY)
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	7.50	375
Junctions	4"-0" Crushed	0+00	8	Junction	36	Junctions	1	36
Junctions	3/4"-0" Crushed	0+00	8	Junction	24	Junctions	1	24
Turn-Arounds	4"-0" Crushed		N/A	TA	24	Junctions	1	24
Culvert Bedding/Backfill	3/4"-0" Crushed	0+00	N/A					24
Landings	6"-0" Pit-run	1D	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			1A to 1B					543
ROAD SEGMENT	2A to 2B			POINT TO POINT		Sta. to Sta.		
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B		0+00 to 15+50		TOTAL VOLUME (CY)
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	15.50	775
Junctions	4"-0" Crushed	2A	8	Junction	36	Junctions	1	36
Junctions	3/4"-0" Crushed	2A	N/A	Junction	24	Junctions	1	24
Turnouts	4"-0" Crushed	5+20,12+50	8	Turnout	22	Turnouts	2	44
Turn-Arounds	4"-0" Crushed		N/A	TA	24	Junctions	1	24
Landings	6"-0" Pit-run	2B	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			2A to 2B					963
ROAD SEGMENT	2C to 2D			POINT TO POINT		Sta. to Sta.		
Application	Rock Size and Type	Location	Depth of Rock (inches)	2C to 2D		0+00 to 29+70		TOTAL VOLUME (CY)
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	29.70	1,485
Traction Rock	3/4"-0" Crushed	9+70 to 26+20	3	Station	19	Stations	16.50	314
Junctions	4"-0" Crushed	2C	N/A	Junction	36	Junctions	1	36
Junctions	3/4"-0" Crushed	2C	N/A	Junction	24	Junctions	1	24
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	3	66
Energy Dissipator	24"-6" riprap	9+60	N/A	Dissipator	12		1	12
Curve Widening	4"-0" Crushed	14+20 to 16+50	8	Station	11	Stations	3	33
Fill Widening	4"-0" Crushed		8	Station	5	Stations	8	40
Turn-Arounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-run	5+60,2D	N/A	Landing	60	Landings	2	120
Total Rock for Road Segment:			2C to 2D					2,154

EXHIBIT "B"  
 ROAD SURFACING

ROAD SEGMENT	2E to 2F			POINT TO POINT	Sta. to Sta.			
Application	Rock Size and Type	Location	Depth of Rock (inches)	2E to 2F		0+00 to 11+80		TOTAL VOLUME (CY)
				Volume (CY) per	Number of	Number of	Number of	
Base Rock	4"-0" Crushed		8	Station	50	Stations	11.80	590
Traction Rock	3/4"-0" Crushed		3	Station	19	Stations	3.00	57
Junctions	4"-0" Crushed	2E	8	Junction	36	Junctions	1	36
Curve Widening	4"-0" Crushed	4+10 to 7+90	8	Station	11	Stations	4	42
Fill Widening	4"-0" Crushed		8	Station	5	Stations	8	40
Free Drain Fill Rock	24"-6" Riprap	4+20 to 4+80	24					170
Free Drain Fill Rock	3/4"-0" Crushed	4+50	N/A					36
Turn-Arounds	4"-0" Crushed	11+00	N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-run	2F	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			2E to 2F					1,055
ROAD SEGMENT	2G to 2H			POINT TO POINT	Sta. to Sta.			
Application	Rock Size and Type	Location	Depth of Rock (inches)	2G to 2H		0+00 to 11+40		TOTAL VOLUME (CY)
				Volume (CY) per	Number of	Number of	Number of	
Base Rock	4"-0" Crushed		8	Station	50	Stations	11.40	570
Traction Rock	3/4"-0" Crushed	5+90 to 7+80	3	Station	19	Stations	1.90	36
Junctions	4"-0" Crushed	2G	8	Junction	36	Junctions	1	36
Turnouts	4"-0" Crushed	5+40	8	Turnout	22	Turnouts	1	22
Fill Widening	4"-0" Crushed		8	Station	5	Stations	1	4
Free Drain Fill Rock	24"-6" Riprap	3+00 to 3+25	24					200
Free Drain Fill Rock	3/4"-0" Crushed	3+10	N/A					75
Fill Armor	24"-6" Riprap							100
Turn-Arounds	4"-0" Crushed	11+00	N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-run	2H	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			2G to 2H					1,127
ROAD SEGMENT	2I to 2J			POINT TO POINT	Sta. to Sta.			
Application	Rock Size and Type	Location	Depth of Rock (inches)	2I to 2J		0+00 to 29+20		TOTAL VOLUME (CY)
				Volume (CY) per	Number of	Number of	Number of	
Base Rock	4"-0" Crushed		8	Station	50	Stations	29.20	1,460
Junctions	4"-0" Crushed		8	Junction	24	Junctions	1	24
Fill Widening	4"-0" Crushed		8	Station	5	Stations	2	10
Turnouts	4"-0" Crushed	13+30 & 21+40	8	Turnout	22	Turnouts	1	22
Energy Dissipator	24"-6" riprap	4+50	N/A	Dissipator	12		1	12
Turn-Arounds	4"-0" Crushed	27+00	N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-run	2J	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			2I to 2J					1,612

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ROAD SEGMENT	2K to 2L			POINT TO POINT		Sta. To Sta.		TOTAL
Application	Rock Size and Type	Location	Depth of Rock (inches)	2K to 2L		0+00 to 5+85		VOLUME (CY)
				Volume (CY) per	Number of			
Base Rock	4"-0" Crushed		8	Station	50	Stations	5.85	293
Traction Rock	¾"-0" Crushed	2+00 to 4+50	3	Station	19	Stations	2.50	48
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	1	22
Junctions	4"-0" Crushed	2K	8	Junction	36	Junctions	1	36
Landings	6"-0" Pit-run	2L	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			2K to 2L					459
ROAD SEGMENT	2M to 2N			POINT TO POINT		Sta. to Sta.		TOTAL
Application	Rock Size and Type	Location	Depth of Rock (inches)	2M to 2N		0+00 to 13+80		VOLUME (CY)
				Volume (CY) per	Number of			
Base Rock	4"-0" Crushed		8	Station	50	Stations	13.80	690
Turnouts	4"-0" Crushed	8+50	8	Turnout	22	Turnouts	1	22
Junctions	4"-0" Crushed	2M	8	Junction	24	Junctions	1	24
Junctions	¾"-0" Crushed	2M	N/A	Junction	12	Junctions	1	12
Turn-Arounds	4"-0" Crushed	12+50	N/A	TA	24	Turnarounds	1	24
Landings	6"-0" Pit-run	2N	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			2M to 2N					832
ROAD SEGMENT	2O to 2P			POINT TO POINT		Sta. to Sta.		TOTAL
Application	Rock Size and Type	Location	Depth of Rock (inches)	2O to 2P		0+00 to 2+90		VOLUME (CY)
				Volume (CY) per	Number of			
Base Rock	4"-0" Crushed		8	Station	50	Stations	2.90	145
Junctions	4"-0" Crushed	2O	8	Junction	24	Junctions	1	24
Landings	6"-0" Pit-run	2P	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			2O to 2P					229
ROAD SEGMENT	4A to 4B			POINT TO POINT		Sta. to Sta.		TOTAL
Application	Rock Size and Type	Location	Depth of Rock (inches)	4A to 4B		0+00 to 16+75		VOLUME (CY)
				Volume (CY) per	Number of			
Base Rock	4"-0" Crushed		8	Station	50	Stations	16.75	838
Turnouts	4"-0" Crushed		8	Turnout	36	Turnouts	3	108
Junctions	¾"-0" Crushed		8	Junction	24	Junctions	1	24
Landings	6"-0" Pit-run	4B	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			4A to 4B					1,030
ROAD SEGMENT	4C to 4D			POINT TO POINT		Sta. To Sta.		TOTAL
Application	Rock Size and Type	Location	Depth of Rock (inches)	4C to 4D		0+00 to 7+00		VOLUME (CY)
				Volume (CY) per	Number of			
Base Rock	4"-0" Crushed		8	Station	50	Stations	7.00	350
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	2	44
Junctions	4"-0" Crushed		8	Junction	36	Junctions	1	36
Landings	6"-0" Pit-run	4D	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			4C to 4D					490

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT	I5 to I6			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I5 to I6 Volume (CY) per Station	183.3	Number of Stations	183.30	
Base Rock	3/4"-0" Crushed		4	Station	32	Stations	183.30	5,866
Subgrade Leveling	3/4"-0" Crushed		N/A					528
Turnouts	3/4"-0" Crushed		4	Turnout	19	Turnouts	35	665
Junctions	3/4"-0" Crushed		4	Junction	36	Junctions	8	288
Culvert Backfill	3/4"-0" Crushed	38+15	N/A		24		1	24
Energy Dissipator	24"-6" Riprap	38+15	N/A	Dissipator	12		1	12
Culvert Backfill	3/4"-0" Crushed	44+35	N/A		24		1	24
Energy Dissipator	24"-6" Riprap	44+35	N/A	Dissipator	12		1	12
Culvert Backfill	3/4"-0" Crushed	49+35	N/A		24		1	24
Energy Dissipator	24"-6" Riprap	49+35	N/A	Dissipator	12		1	12
Culvert Backfill	3/4"-0" Crushed	105+30	N/A		24		1	24
Energy Dissipator	24"-6" Riprap	105+30	N/A	Dissipator	12		1	12
Culvert Backfill	3/4"-0" Crushed	108+35	N/A		24		1	24
Culvert Backfill	3/4"-0" Crushed	145+00	N/A		24		1	24
Energy Dissipator	24"-6" Riprap	145+00	N/A	Dissipator	12		1	12
Culvert Backfill	3/4"-0" Crushed	183+30	N/A		36		1	36
Energy Dissipator	24"-6" Riprap	183+30	N/A	Dissipator	12		1	12
Energy Dissipator	24"-6" Riprap	25+30,53+90	N/A	Dissipator	12		2	24
Energy Dissipator	24"-6" Riprap	60+12,65+65	N/A	Dissipator	12		2	24
Energy Dissipator	24"-6" Riprap	83+10,88+35	N/A	Dissipator	12		2	24
Energy Dissipator	24"-6" Riprap	180+60	N/A	Dissipator	12		1	12
Total Rock for Road Segment:			I5 to I6					7,683
ROAD SEGMENT	P1 to P2			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	P1 to P2 Volume (CY) per Station	0+00 to 5+42	Number of Stations		
Base Rock	4"-0" Crushed		8	Station	50	Stations	5.42	271
Curve Widening	4"-0" Crushed	3+25 to 5+42	8	Station	33	Stations	2.17	72
Junctions	4"-0" Crushed		8	Junction	25	Junctions	2	50
Surface Rock	3/4"-0" Crushed		4	Station	25	Stations	5.42	136
Curve Widening	3/4"-0" Crushed	3+25 to 5+42	4	Station	16	Stations	2.17	35
Junctions	3/4"-0" Crushed		4	Junction	12	Junctions	2	24
Total Rock for Road Segment:			P1 to P2					587
ROAD SEGMENT	P3 to P4			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	P3 to P4 Volume (CY) per Station	0+00 to 20+20	Number of Stations		
Base Rock	4"-0" Crushed		8	Station	50	Stations	20.20	1,010
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	3	66
Surface Rock	3/4"-0" Crushed		4	Station	25	Stations	20.20	505
Turnouts	3/4"-0" Crushed		4	Turnout	11	Turnouts	3	33
Total Rock for Road Segment:			P3 to P4					1,614

EXHIBIT "B"  
 ROAD SURFACING

ROAD SEGMENT	P5 to P6			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	P5 to P6		0+00 to 20+88		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	Station	50	Stations	20.88	1,044
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	5	110
Curve Widening	4"-0" Crushed	5+50 to 7+25	8	Curve widening	38	Segments	1	38
Curve Widening	4"-0" Crushed	8+60 to 10+00	8	Curve widening	29	Segments	1	29
Curve Widening	4"-0" Crushed	10+25 to 11+74	8	Curve widening	31	Segments	1	31
Surface Rock	3/4"-0" Crushed		4	Station	25	Stations	20.88	522
Turnouts	3/4"-0" Crushed		4	Turnout	11	Turnouts	5	55
Curve Widening	3/4"-0" Crushed	5+50 to 7+25	4	Curve widening	16	Segments	1	16
Curve Widening	3/4"-0" Crushed	8+60 to 10+00	4	Curve widening	15	Segments	1	15
Curve Widening	3/4"-0" Crushed	10+25 to 11+74	4	Curve widening	15	Segments	1	15
Total Rock for Road Segment:				P5 to P6				1,875
ROAD SEGMENT	P7 to P8			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	P7 to P8		0+00 to 19+99		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		10	Station	63	Stations	19.99	1,259
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	4	88
Curve Widening	4"-0" Crushed	2+26 to 4+35	8	Curve widening	38	Segments	1	38
Traction	3/4"-0" Crushed		2	Station	13	Stations	15	195
Junction	3/4"-0" Crushed		4	Junction	25	Junctions	1	25
Fill Armor	24"-6" Riprap	3+55						200
Total Rock for Road Segment:				P7 to P8				1,805
ROAD SEGMENT	P9 to P10			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	P9 to P10		0+00 to 3+51		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		10	Station	63	Stations	3.51	221
Junction	3/4"-0" Crushed		4	Junctions	25	Junctions	1	25
Total Rock for Road Segment:				P9 to P10				246

EXHIBIT "B"  
 ROAD SURFACING

ROAD SEGMENT	I1 to I2			POINT TO POINT	Sta. to Sta.		TOTAL VOLUME (CY)	
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2	0+00 to 53+10			
				Volume (CY) per	Number of			
Base Rock	4"-0" Crushed		8	Station	50	Stations	53.10	2,655
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	10	220
Junctions	4"-0" Crushed		8	Junction	50	Junctions	3	150
Turnarounds	4"-0" Crushed		8	Turnaround	28	Turnarounds	1	28
Subgrade Leveling	4"-0" Crushed	17+00 to 18+20						220
Subgrade Leveling	4"-0" Crushed	28+83 to 30+30						260
Surface Rock	3/4"-0" Crushed		4	Station	25	Stations	53.10	1,328
Turnouts	3/4"-0" Crushed		4	Turnout	11	Turnouts	10	110
Junctions	3/4"-0" Crushed		4	Junction	25	Junctions	3	75
Turnarounds	3/4"-0" Crushed		4	Turnaround	14	Turnarounds	1	14
Culvert Bedding/Backfill	3/4"-0" Crushed							440
Energy Dissipator	24"-6" Riprap	11+88						30
Energy Dissipator	24"-6" Riprap	15+47						20
Energy Dissipator	24"-6" Riprap	29+70						30
Energy Dissipator	24"-6" Riprap	38+40						30
Energy Dissipator	24"-6" Riprap	49+65						30
Total Rock for Road Segment:				I1 to I2				5,640
ROAD SEGMENT	I3 to I4			POINT TO POINT	Sta. to Sta.		TOTAL VOLUME (CY)	
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3 to I4	0+00 to 17+85			
				Volume (CY) per	Number of			
Turnouts	4"-0" Crushed		8	Turnout	22	Turnouts	2	44
Turnarounds	4"-0" Crushed		8	Turnaround	14	Turnarounds	1	14
Culvert Bedding/Backfill	3/4"-0" Crushed							60
Total Rock for Road Segment:				I3 to I4				118
ROAD SEGMENT	I7 to I8			POINT TO POINT	Sta. to Sta.		TOTAL VOLUME (CY)	
Application	Rock Size and Type	Location	Depth of Rock (inches)	I7 to I8	0+00 to 1+90			
				Volume (CY) per	Number of			
Culvert Bedding/Backfill	3/4"-0" Crushed							60
Energy Dissipator	24"-6" Riprap	1+70						70
Total Rock for Road Segment:				I7 to I8				130

ROCK TOTALS	24"-6"	6"-0"	4"-0"	3/4"-0"
30,190	1,060	720	16,499	11,911

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 700 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. 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 Nos. 35 and 60, which shall be constructed of aluminized steel, as specified on pages 2, 4 and 5 of Exhibit C. 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.

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.

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.

EXHIBIT "C"

CULVERT SPECIFICATIONS

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.

Culvert Nos. 35 and 60 (CMPA al. Ctd.) shall have 3" x 1" corrugations.

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.

Culvert Nos. 16, 35 and 60 shall have a 1:1 step beveled inlet.

Tamping is required.

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	18	40	1A to 1B	0+00
2	18	30	1A to 1B	2+90
3	18	40	2A to 2B	0+00
4	18	30	2A to 2B	4+50
5	18	30	2A to 2B	12+20
6	18	30	2C to 2D	4+90
7	18	40	2C to 2D	9+60
8	18	30	2C to 2D	12+80
9	18	30	2C to 2D	24+90
10	18	30	2E to 2F	2+20
11*	18	50	2E to 2F	4+50
12	18	40	2E to 2F	7+60
13	18	30	2E to 2F	10+50
14	18	30	2G to 2H	1+50
15	18	30	2G to 2H	2+70
16*	24	70	2G to 2H	3+10

EXHIBIT "C"  
 CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
17	18	30	2G to 2H	10+10
18	18	30	2I to 2J	4+50
19	18	30	2I to 2J	20+30
20	18	30	2I to 2J	28+50
21	18	30	2K to 2L	5+60
22	18	30	2M to 2N	1+80
23	18	30	2M to 2N	5+80
24	18	30	2M to 2N	12+00
25	18	30	2O to 2P	2+50
26	18	40	4A to 4B	0+50
27	18	30	4A to 4B	4+30
28	18	30	4A to 4B	8+70
29	18	30	4C to 4D	5+90
30	18	30	P5 to P6	3+36
31	18	30	P5 to P6	15+60
32	18	40	P5 to P6	18+50
33	18	40	P7 to P8	0+91
34	18	40	P7 to P8	2+30
35*	48 (12 gauge Aluminized Steel)	80	P7 to P8	3+55
36	18	60	P7 to P8	4+35
37	18	40	P7 to P8	11+00
38	18	60	P7 to P8	16+18
39	18	40	P9 to P10	2+90
40	18	35	I1 to I2	2+25
41	18	35	I1 to I2	6+30
42	18	50	I1 to I2	11+88
43	18	50	I1 to I2	15+47

EXHIBIT "C"  
 CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
44	18	40	I1 to I2	18+90
45	18	40	I1 to I2	25+20
46	18	50	I1 to I2	29+70
47	18	30	I1 to I2	35+10
48	18	45	I1 to I2	38+40
49	18	35	I1 to I2	42+45
50	18	35	I1 to I2	45+70
51	18	55	I1 to I2	49+65
52	18	35	I3 to I4	5+70
53	18	35	I3 to I4	9+20
54	18	33	I5 to I6	38+15
55	18	35	I5 to I6	44+35
56	18	35	I5 to I6	49+35
57	18	35	I5 to I6	105+30
58	18	35	I5 to I6	108+35
59	18	65	I5 to I6	183+30
60*	48 (12 gauge Aluminized Steel)	50	I7 to I8	0+50

\*Indicates culverts that do not require markers.

EXHIBIT "D"

ROCK QUARRY DEVELOPMENT AND USE

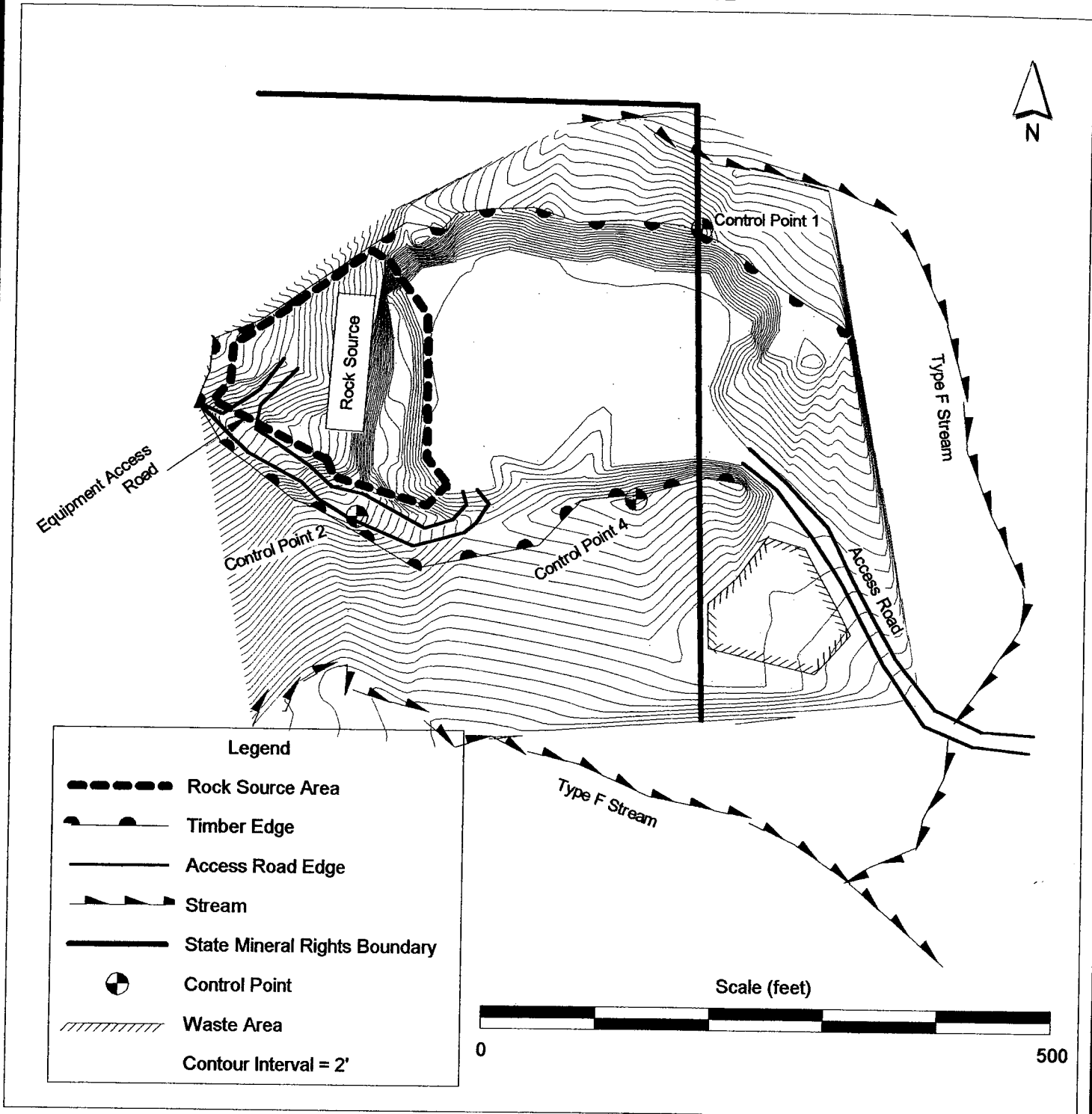
- (1) PURCHASER shall prepare a written development plan for the pit areas. The plan shall be submitted to STATE for approval prior to conducting any operation in either pit area. The plan shall include, but not be limited to:
  - (a) Location of benches and roads to benches.
  - (b) Disposal site for debris and overburden.
  - (c) Time lines for rock quarry use.
  - (d) Erosion Control measures.
- (2) Pit sites 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. Trees removed for Quarry development will be felled, bucked, and decked at a site acceptable to the STATE adjacent to the quarry.
- (3) Controlled blasting techniques shall be utilized for any blasting operations, and shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain as much material as possible within the quarry development area. PURCHASER shall maintain a comprehensive blasting log that contains all pertinent data for all blasting operations. The blasting log shall be submitted to the STATE after the completion of all blasting activity. The blasting log is intended for STATE record keeping purposes only.
- (4) PURCHASER shall conduct the operations relative to the disposal of waste material in such manner that silt, rock, debris, dirt, or clay shall not be washed, conveyed, or otherwise deposited in any stream. At the Munce quarry, seed and mulch all exposed waste materials in accordance with Exhibit L.
- (5) All overburden material shall be hauled to the designated waste area shown on Exhibit D for the Munce Quarry and Exhibit A for the Viewpoint Quarry and disposed of as directed by STATE.
- (6) Clear and grub the rock source area. All woody debris, including stumps and slash shall be disposed of 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. Said bench shall be easily accessible with tractors.
- (8) Pit face shall be developed in a uniform manner.
- (9) Oversized material that is produced or encountered during development shall be broken down and utilized for crushing or utilized for pit run rock as required in Exhibit B, or stored on site as directed by the STATE.
- (10) Proper winterization and storm-water control measures such as water barring, drainage, utilization of filter bales, mulching and/or blocking access shall be utilized and such measures maintained to protect the watershed and project work, as directed by STATE.
- (11) PURCHASER shall notify STATE 5 days prior to the start of quarry development activities.

EXHIBIT "D"

ROCK QUARRY DEVELOPMENT AND USE

- (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 bench access road shall be cleared, water barred and blocked upon completion of quarry use as directed by STATE.
- (13) Rock shall be utilized from Rock Source Area A in the Viewpoint Quarry prior to utilizing rock from Rock Source B.
- (14) Rock Source B in the Viewpoint Quarry includes a portion of the existing quarry floor. There is a hump in the existing floor that needs to be shot and utilized so that the floor is a uniform surface.
- (15) No rock development activity shall be allowed outside of the Mineral Right lines indicated on page 3 of 4 on Exhibit D for the Munce Quarry Operation.
- (16) Type F streams are on both sides of the Munce Quarry as indicated on page 3 of 4 of Exhibit D and are to be protected per the terms and conditions of this Timber Sale Contract.

EXHIBIT "D"  
MUNCE QUARRY DEVELOPMENT AND USE

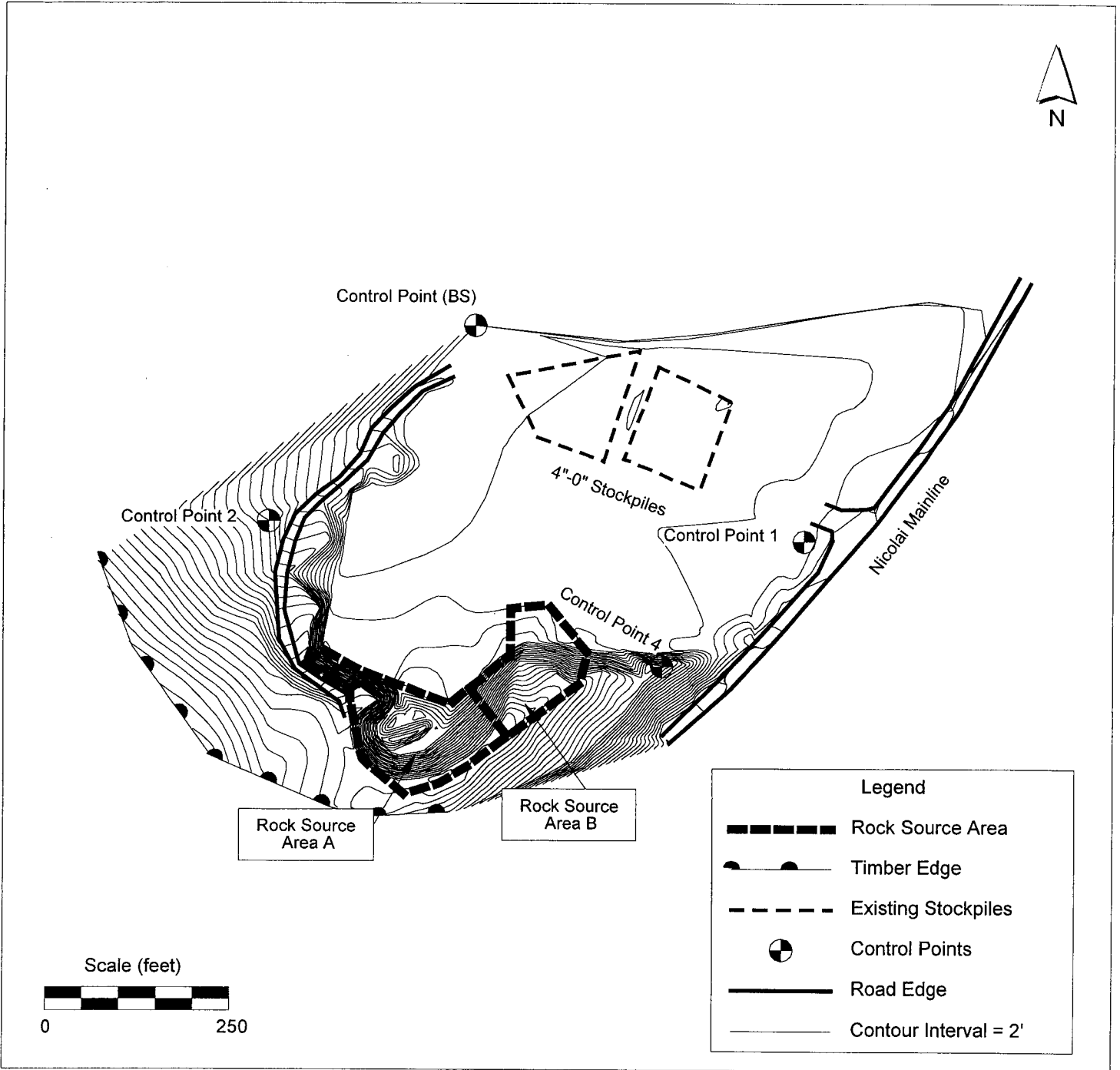


Oregon Department of Forestry  
Astoria District  
Engineering Unit

Munce Quarry  
NW1/4, NE1/4 Section 31, T5N, R8W,  
Clatsop County, Oregon



EXHIBIT "D"  
VIEWPOINT QUARRY DEVELOPMENT AND USE



Oregon Department of Forestry  
Astoria District  
Engineering Unit

Viewpoint Quarry  
SE1/4, SE1/4, Sec 4, T7N, R6W, W. M  
Clatsop County, Oregon

State Timber Sale Contract  
No. 341-04-63  
Kerry East

EXHIBIT "E"

CRUSHED ROCK SPECIFICATIONS

Materials. The material shall be fragments of rock or other hard, durable particles crushed to the required size and a filler of finely crushed stone, sand, or other finely divided mineral matter. The material shall be free from vegetation and lumps of clay. State may require screening and/or rejecting of materials utilized for production of crushed rock for the purpose of removing excess fines or dirt.

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

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

Hardness - Test Method AASHTO T 96 35% Maximum

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

<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 4"-0"</u>	Passing	5" sieve	100%
	Passing	4" sieve	90-100%
	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 gradation shall be as set forth in AASHTO T 27.

PIT-RUN AND RIPRAP ROCK SPECIFICATIONS

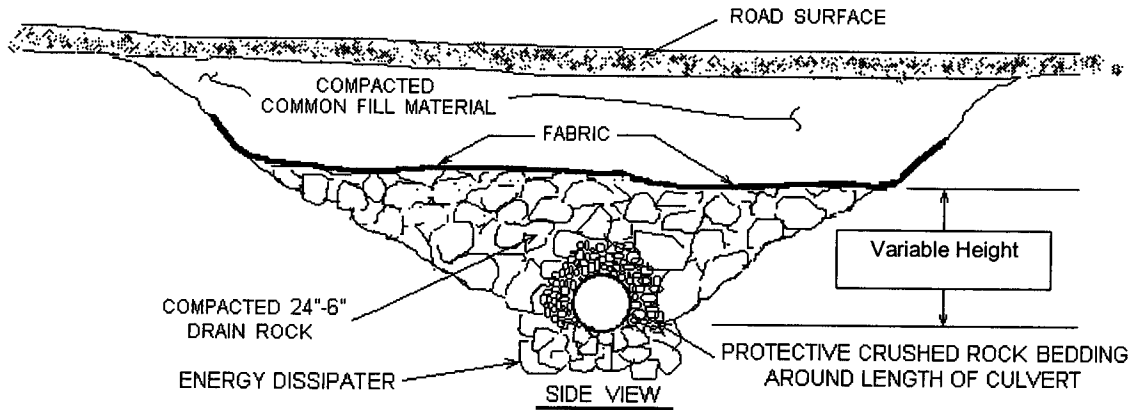
<u>For 6"-0" Pit-Run</u>	Passing	10" sieve	100%
	Passing	6" sieve	65%

For 24"-6" Riprap Rock 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 <sup>2</sup>
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 <sup>2</sup>
6. Thickness	ASTM D 5199	100 mills
7. UV Resistance	ASTM D 4355 Xenon Arc	70% retained

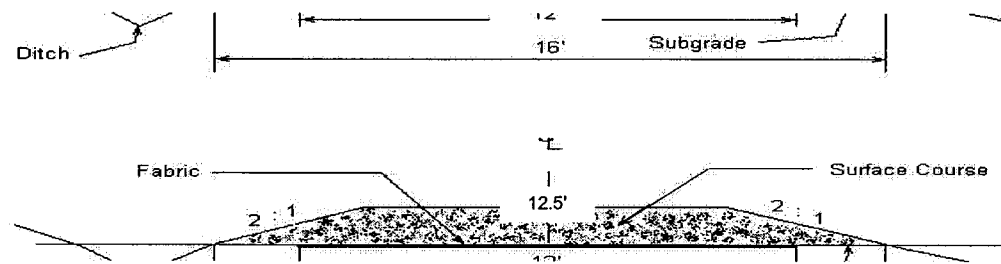
EXHIBIT "G"  
FABRIC SPECIFICATIONS

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

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

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

- (1) Typical cross section:



- (2) Subgrade surface shall be leveled and smoothed to remove humps and depressions which exceed 6 inches in height and depth. Small pieces of woody debris shall be removed or pushed below subgrade surface. Light vegetation (grass, weeds, leaves, and fine woody debris) may be left in place.
- (3) Fabric shall be installed directly on the prepared surface. Longitudinal and traverse joints shall be overlapped at least 3 feet.
- (4) Surfacing course material shall be placed to the designated thickness in one lift and spread in the direction of fabric overlap. Hauling and spreading equipment shall not be operated on the fabric until the total thickness of surfacing course material is placed.
- (5) Torn, punctured, or separated sections of the fabric shall be repaired, by installing a fabric patch over the break prior to placing the surfacing course material. The patch shall be at least 4 feet larger in horizontal dimensions than the break to be repaired.
- (6) Fabric failures resulting after rock placement and as evidenced by subgrade pumping or roadbed distortion shall be corrected. Correction measures shall consist of: (1) removing at least three-quarters the depth of surfacing course material in the affected area, (2) placing a fabric patch over the affected area with a minimum 4-foot overlap around the circumference of the area, and (3) replacing enough rock to cover the patch and blend in with the rest of the road.
- (7) Should STATE determine that installation of fabric on roads or portions of roads is not necessary, PURCHASER shall deliver an equivalent amount of road fabric to STATE.
- (8) Install fabric at the following locations: 2E to 2F, Station 4+50; 2G to 2H, Station 3+10; P5 to P6, Station 10+40 to 20+88; P7 to P8, Station 0+00 to 19+99; and P9 to P10, Station 0+00 to 3+51.

EXHIBIT "H"

TYPICAL EMBEDDED ENERGY DISSIPATOR

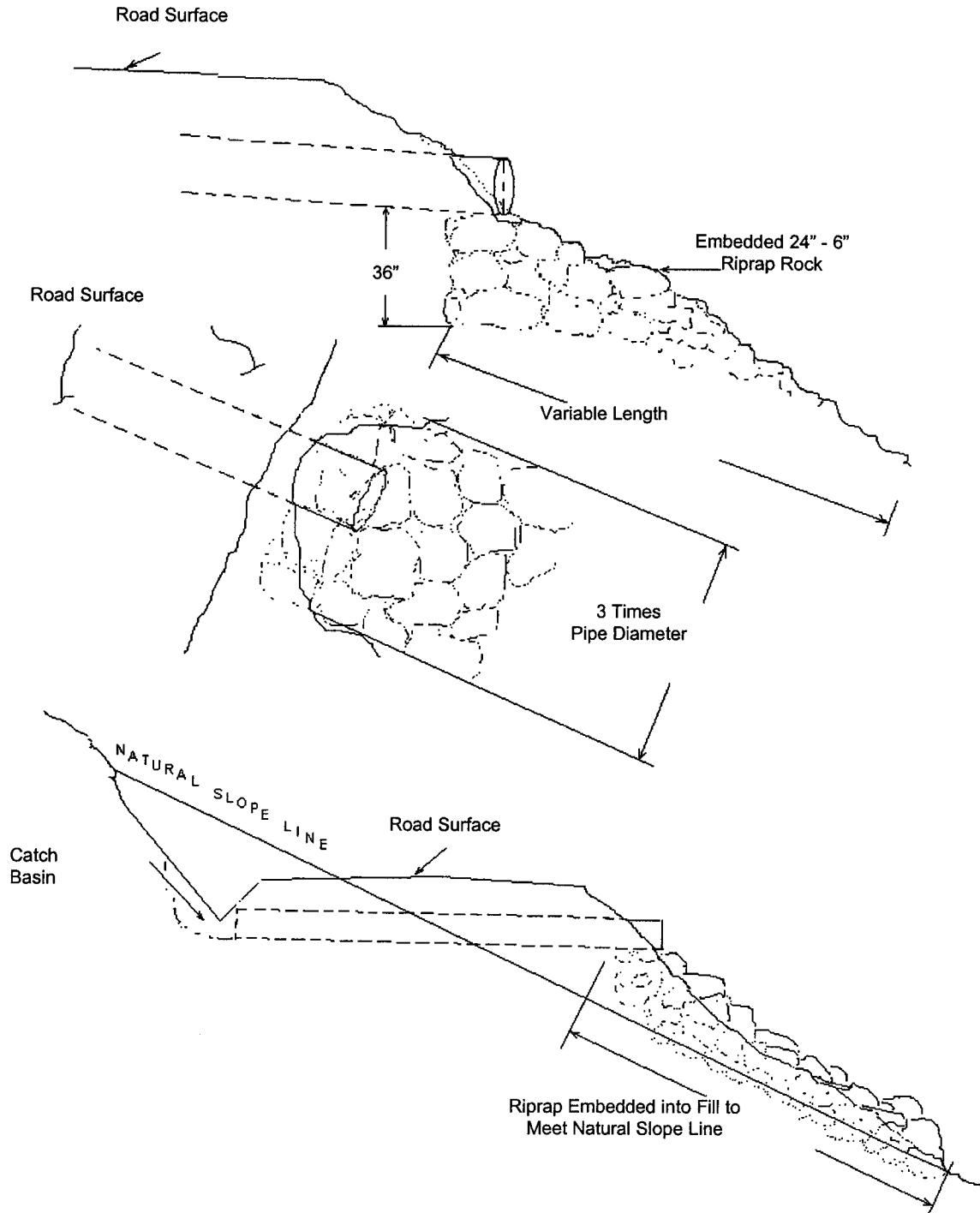


EXHIBIT "I"

ROAD VACATING SPECIFICATIONS

PURCHASER shall vacate at the following Points: V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12. And between the following points: V13 to V14, V15 to V16, V17 to V18, V19 to V20, and V21 to V22. Specific objectives for this project include:

- (a) Fill removal and stream channel development.
  - (b) Culvert removal.
  - (c) Restoration of natural contours by outsloping of the road prism.
  - (d) Sidecast pullback.
  - (e) Minimize disturbance of existing vegetation.
  - (f) A total project cost not exceeding \$40,000.
- (1) Tree Removal. Cut or remove all trees necessary to access the project area and to facilitate vacating operations, as directed by STATE. Timber shall NOT be removed as designated timber, unless located within posted timber sale boundaries or right-of-way boundaries.
  - (2) Fill Removal and Stream Channel Development. Remove fills to the natural stream course level(s). Stream channel(s) shall be excavated/developed to specified widths. Developed stream banks shall be sloped at natural contours or no steeper than 1½:1, as directed by STATE.
  - (3) Culvert Removal. Remove drainage structures and culverts. Removed culverts shall be hauled to an approved refuse site off of State Land.
  - (4) Outslope Road. Outslope road to restore natural contours or establish a minimum of 10% slope for drainage at designated locations. If the road grade exceeds 10%, outslope of the road shall be 2% greater than the road grade.
  - (5) Sidecast Pullback. Excavate/pullback previously sidecast materials below the road at designated locations. Developed slopes shall be pulled back to a 1 ½:1 slope or to natural ground contours. The beginning position for sidecast pullback shall be no greater than 20 feet vertical distance from the existing road surface, in accordance with Exhibit K.
  - (6) Use of Excavated Materials.
    - (a) Fill Excavation and Sidecast Pullback. 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% outsloped surface for drainage. Any excess material will be hauled to a designated waste area, as directed by STATE.
    - (b) Woody Debris may be incorporated in embankment material.
    - (c) Block Roads. Use excavated material from fill removals to block roads from vehicle access, as directed by STATE.
  - (7) Erosion Control. Erosion control shall be completed in a progressive manner. Grass seed and straw mulch shall be applied for every 500 feet of road vacated, prior to continuing work.
    - (a) All excavated material and bare soil shall utilize grass seed and straw mulch approved by STATE and in accordance with the specifications in Exhibit L. Applied mulch shall be a minimum of 2 inches deep and provide a uniform cover.
  - (8) Construct Waterbars as directed by STATE. Construct waterbars according to the specifications in Exhibit J.

EXHIBIT "I"

ROAD VACATING SPECIFICATIONS

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

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

Credit for Project Work. The final credit for Project No. 3 shall not exceed \$40,000 per Section 72, "Credit for Project Work," in the Timber Sale Contract. STATE may adjust the credit in Section 72 in the event that the work is completed prior to using all available credit rates.

Credit Rates. Rates credited toward completion of the project will be applied for periods of active operation on the project work only and exclusive of initial move in of equipment or supplies. The method of crediting PURCHASER will be determined by applying the following credit rates for equipment, personnel, and supplies.

- |      |  |                          |
|------|--|--------------------------|
| (1)  | C325 excavator, or equivalent, and operator.               | \$115 per operating hour |
| (2)  | C330 excavator, or equivalent, and operator.               | \$130 per operating hour |
| (3)  | D7 dozer, or equivalent, and operator.                     | \$ 90 per operating hour |
| (4)  | C966 front end loader, or equivalent, and operator.        | \$ 75 per operating hour |
| (5)  | C12G grader, or equivalent, and operator.                  | \$ 70 per operating hour |
| (6)  | C14G grader, or equivalent, and operator.                  | \$ 80 per operating hour |
| (7)  | Heavy Equipment transport and operator.                    | \$ 80 per operating hour |
|      | (For secondary mobilization of equipment for the project.) |                          |
| (8)  | 10-12 cubic yard dump truck and operator.                  | \$ 57 per operating hour |
| (9)  | 20 cubic yard, Off-Road dump truck and operator.           | \$ 67 per operating hour |
| (10) | 25 cubic yard, Off-Road dump truck and operator.           | \$ 95 per operating hour |
| (11) | Laborer(s) (Application of mulch only)                     | \$ 25 per operating hour |
| (12) | Straw Mulch  | \$ 5 per bale            |
|      | (Includes transport and staging of material at job site)   |                          |
| (13) | Grass Seed   | \$ 2 per pound           |

Record Keeping. PURCHASER shall keep an accurate log of operating time (exclusive of standby time, repair delays, down time, etc.) and invoices for all equipment, personnel, straw bales, and grass seed on a daily basis, and submit it to the STATE Representative upon request. STATE shall provide the form for recording the required log. If the log is determined by STATE to not be complete or accurate, then PURCHASER will not get credited for all or a portion of the work, as determined by STATE.

Verification. The STATE representative shall provide direction for the conduct of work according to the specifications, verify hours of operation, verify required record keeping, and determine credits for project work.

Continuous Operations. Operations shall provide for continual operation on the project, 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.

EXHIBIT "I"

ROAD VACATING SPECIFICATIONS

A Penalty of \$250 per day shall be assessed for any 8-hour work day that either equipment, personnel, or supplies are not operating or available due to failure to supply approved and acceptable equipment, personnel, or supplies in order to continue the project in an efficient and progressive manner. STATE may terminate the project in the event that work progress is not satisfactory to STATE.

Operators shall be experienced in operating the required equipment and be able to operate the equipment proficiently and efficiently. If STATE determines that an operator(s) or other personnel is/are not operating in a proficient and efficient manner, STATE considers the operator(s) or personnel not approved and not acceptable and may require the PURCHASER to do one or more of the following measures:

Replace operator(s) and/or personnel;  
Replace equipment;  
Terminate operations.

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

SPECIFIC INSTRUCTIONS/SPECIFICATIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
V1	N/A	Remove fill.
V2	N/A	Remove fill, develop 4 foot stream channel.
V3	N/A	Remove fill, develop 3 foot stream channel.
V4	N/A	Remove fill, develop 3 foot stream channel.
V5	N/A	Remove fill, develop 3 foot stream channel.
V6	N/A	Remove fill, develop 3 foot stream channel. Place debris in a stable location as designated by STATE.
V7	N/A	Remove fill, develop 3 foot stream channel.
V8	N/A	Remove fill, develop 3 foot stream channel. Place debris in a stable location as designated by STATE.
V9	N/A	Remove fill, develop 3 foot stream channel.
V10	N/A	Remove fill, develop 4 foot stream channel.
V11	N/A	Remove fill, develop 3 foot stream channel.
V12	N/A	Remove fill, develop 3 foot stream channel.
V13 to V14	0+00	Point V13. Begin vacating. Construct roadblock.
	0+20	Begin pullback/fill removal.



EXHIBIT "I"

ROAD VACATING SPECIFICATIONS

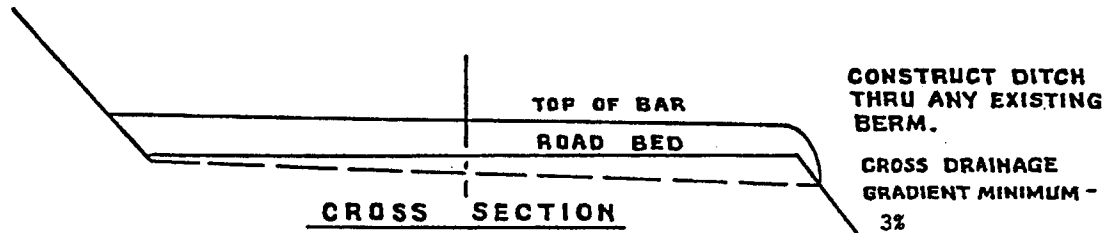
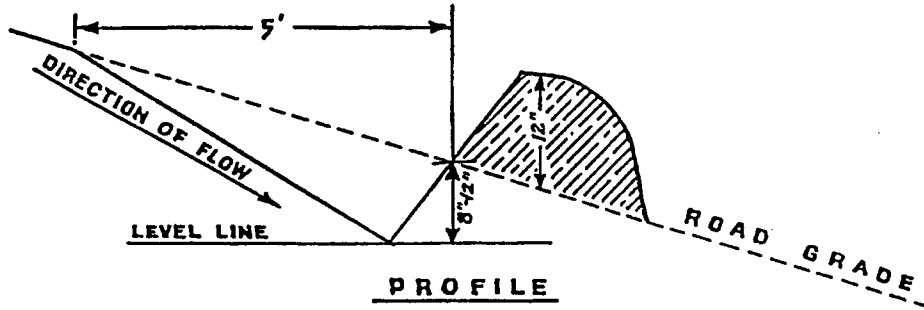
SPECIFIC INSTRUCTIONS/SPECIFICATIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
V13 to V14 (Cont.)	1+80	End pullback/fill removal.
	3+20	Remove culvert.
	5+40	Remove culvert.
	8+20	Point V14. End vacating. Construct roadblock.
V15 to V16	0+00	Point V15. Begin vacating. Construct roadblock.
	3+35	Begin fill/culvert removal. Remove all road fill and restore to natural contours. Fill material shall be hauled to a designated waste area.
	4+00	End fill/culvert removal.
	6+75	Begin fill/culvert removal. Remove all road fill and restore to natural contours. Fill material shall be hauled to a designated waste area.
	8+00	End fill/culvert removal.
V17 to V18	10+44	Point V16. End vacating. Construct roadblock.
	0+00	Point V17. Begin vacating. Construct roadblock. Begin fill/culvert removal.  Remove all road fill and restore to natural contours. Fill material shall be hauled to a designated waste area.
	0+75	End fill/culvert removal.
	2+45	Point V18. End vacating. Construct roadblock.
V19 to V20	0+00	Point V19. Begin vacating. Construct roadblock.
	3+40	Begin fill/culvert removal. Remove all road fill and restore to natural contours. Fill material shall be hauled to a designated waste area.
	4+30	End fill/culvert removal.
V21 to V22	12+15	Point V20. End vacating. Construct roadblock.
	0+00	Point V21. Begin vacating. Construct roadblock.
	0+25	Begin fill/culvert removal. Remove all road fill and restore to natural contours. Fill material shall be hauled to a designated waste area.
	0+50	End fill/culvert removal.
	3+30	Point V22. End vacating. Pullback slopes/remove all road fill and restore to natural contours. Fill material shall be hauled to a designated waste area.

State Timber Sale Contract  
 No. 341-04-63  
 Kerry East

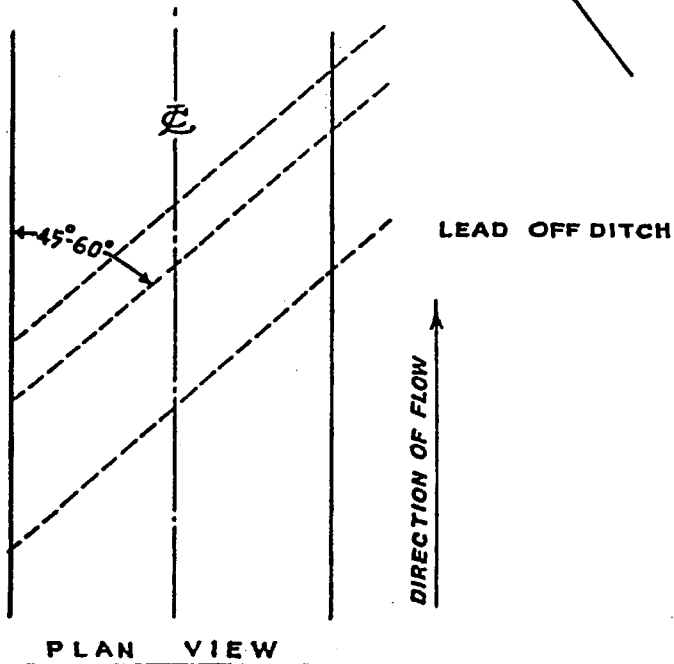
EXHIBIT "J"

WATERBAR SPECIFICATIONS



**SPACING OF WATERBARS**

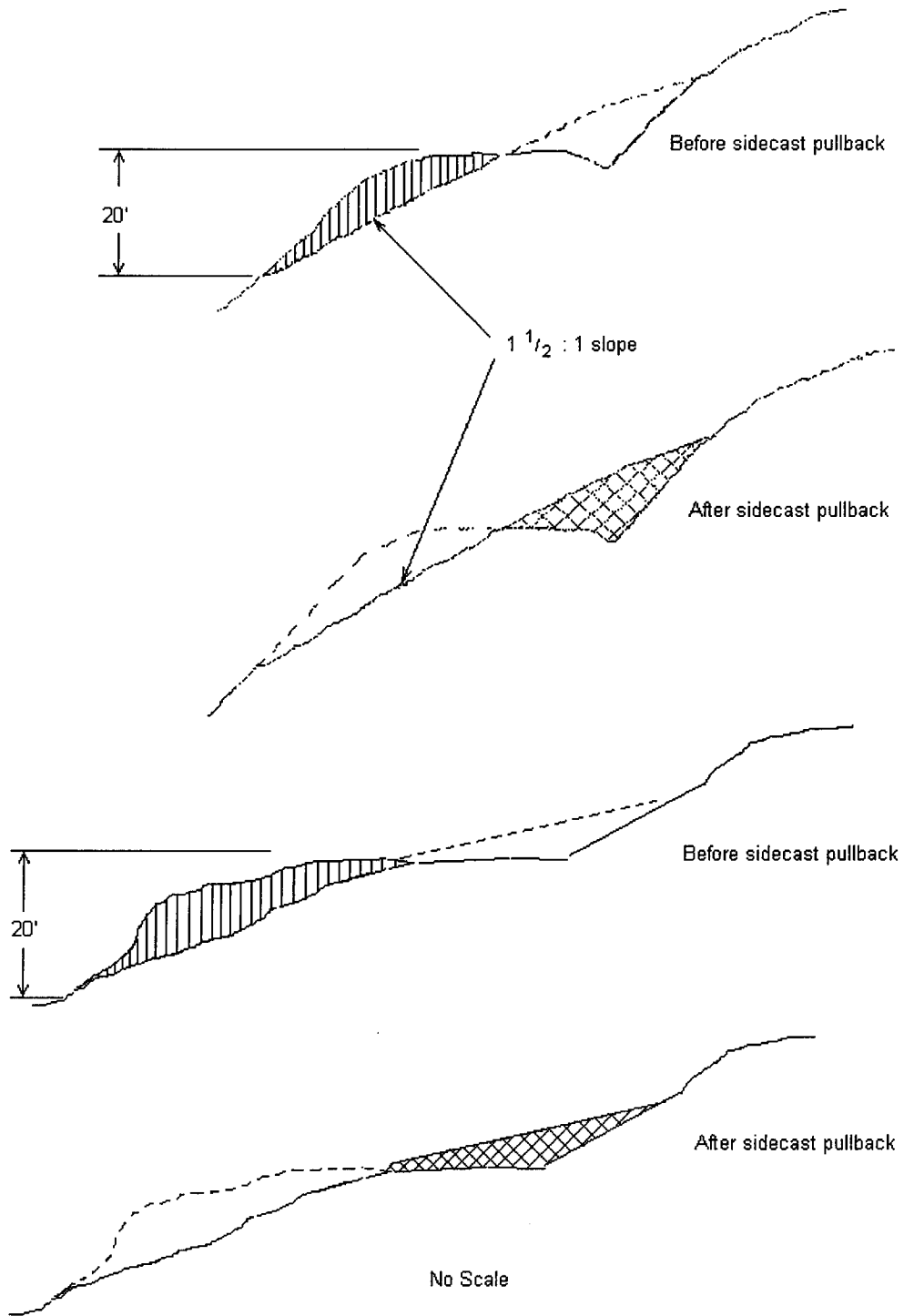
ROAD GRADE	DISTANCE
≤ 5%	400'
6-10%	200'
11-15%	150'
16-20% or greater	100'



**WATERBAR SPECIFICATIONS  
 FOR CROSS DITCHING #298**

EXHIBIT "K"

TYPICAL CROSS SECTION VIEW OF ROAD VACATING SIDECAST PULLBACK



State Timber Sale Contract  
No. 341-04-63  
Kerry East

EXHIBIT "L"

GRASS SEEDING AND MULCHING

This work shall consist of furnishing and placing required grass seed and straw mulch.

Seeding Seasons. Seeding shall be performed only from March 1 through June 15 and August 15 through October 31. Seeding materials shall not be applied during windy weather or when the ground is excessively wet or frozen. Work shall be performed during each specified seeding season on all completed and previously untreated sections. PURCHASER shall notify STATE 24 hours prior to seeding.

Application Methods for Grass Seed

Dry Method. Hand-operated seeding devices may be used when seed is applied in dry form.

Application Rates for Seed

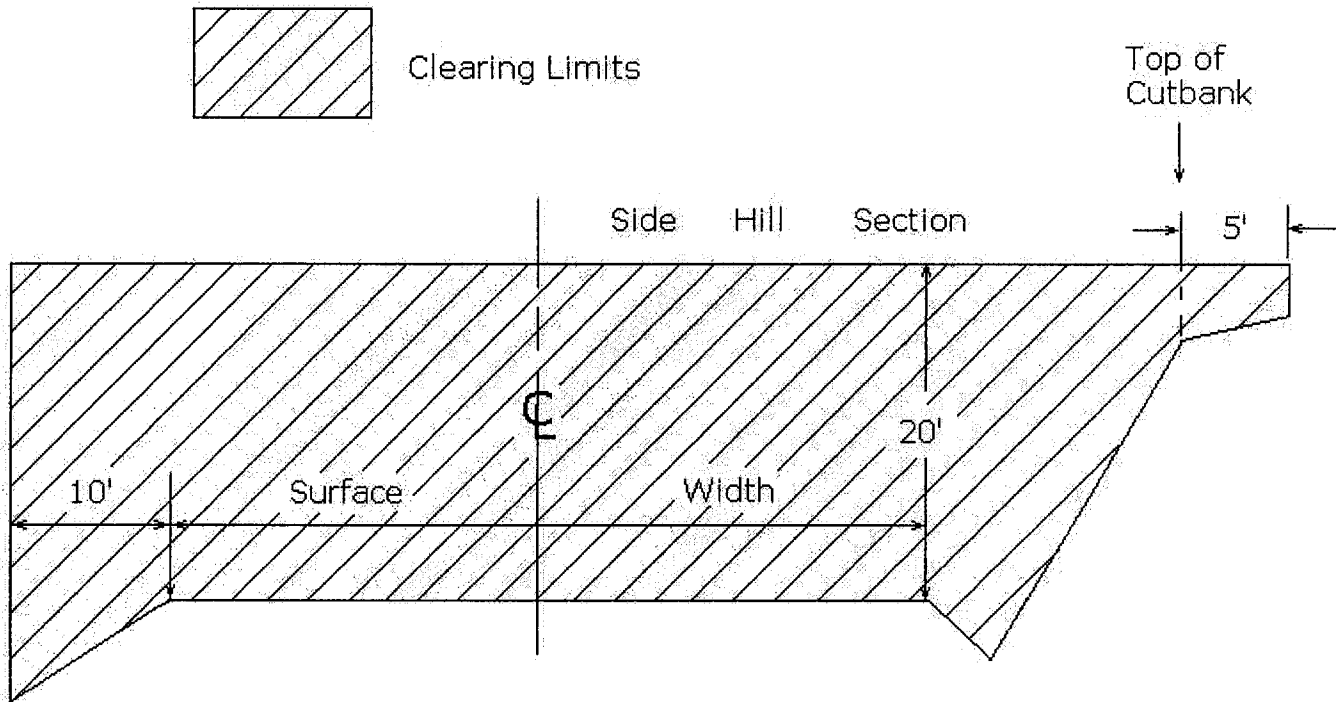
Seed listed below shall be applied at the following rate per acre: 100 lbs.

SPECIES	MIXTURE	PURE LIVE SEED	POISON AND/OR REPELLENT	GERMINATION
Annual Rye	33%	95%	0	>90%
Orchard Grass	33%	95%	0	>90%
Perennial Rye	34%	95%	0	>90%

Seeding and Mulching. Apply grass seed and straw mulch to all waste areas, and bare soils resulting from Project No. 3. Applied straw mulch shall be a minimum of 2 inches deep and provide a uniform cover.

EXHIBIT "M"

LOGGING ROAD BRUSHING SPECIFICATIONS



**REQUIREMENTS**

Clear roadside brush between Points: B1 to B2, B3 to B4, B5 to B6, B7 to B8, B9 to B10, B100 to B11, B12 to B13, B14 to B15, B16 to B17, B18 to B19, B20 to B21, B22 to B23, B24 to B25, B26 to B27, B28 to B29, B30 to B31, B32 to B33, B34 to B35, B36 to B37, B38 to B39, B40 to B41, B42 to B43, B44 to B45, B46 to B47, B48 to B49, B50 to B51, B52 to B53, B54 to B55, B56 to B57, B56 to B58, B59 to B60, B61 to B62, B63 to B64, B65 to B66, B67 to B68, B69 to B71, B72 to B73, B74 to B75, B76 to B77, B78 to B79, B81 to B82, B83-B84, B85-B86, B87-B88, B89-B91, B92-B93, B92-B94, I2 to B70, and B80 to B90.

The minimum height of clearing shall be 20 feet, and the minimum width of clearing on the cutslope side of the road shall be 5 feet beyond the top of the cutbank. On road surfaces, all brush and trees shall be cut flush to the road surface.

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

Debris resulting from the brushing operation shall be removed from the roadway, cutslope, ditches, 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.

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

EXHIBIT "N"

FOREST ROAD GATE DESIGN, CONSTRUCTION, AND INSTALLATION

Counter Balanced Swing Gate - With a Miami Lock Box

PURCHASER shall design, construct, and install one counter balanced swing gate at 11+75 on I1 to I2.

The project requires site visitation, preliminary design and approval, final design and approval, gate construction (including painting), and installation on above locations.

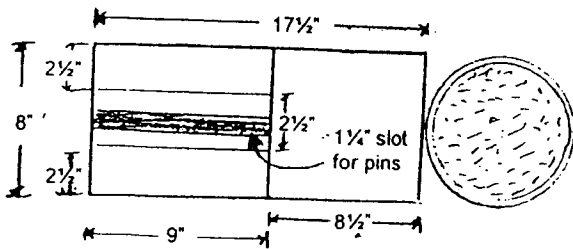
PROJECT REQUIREMENTS AND MINIMUM SPECIFICATIONS

- (1) Coordinate site visitation, preliminary designs, a final design, construction, and installation of gate with STATE.
- (2) Site visitation to determine the direction of swing and width for gate.
- (3) A preliminary detailed design proposal shall be submitted to STATE of the proposed gate to be installed and obtain written approval by STATE. STATE is responsible for timely review of preliminary designs, selection of the preferred design, and giving approval to prepare a final design. The design shall meet the following specifications:
  - (a) The gate shall be a counter balanced swing gate.
  - (b) The gate opening shall be a minimum of 18 feet.
  - (c) The gate must be constructed with a minimum of 1/4" x 4" x 4" steel tubing. The support post and attachment post shall be constructed with a minimum of 8" schedule 40 steel pipe.
  - (d) A blocking post shall be installed beside the road in the direction of the swing and have a three foot chain attached for securing the gate in the open position. The blocking post shall be constructed with a minimum of 4" schedule 40 steel pipe.
  - (e) All posts shall be embedded in concrete. Fill all posts with concrete. Posts shall have devices attached to prevent lifting out of the concrete.
  - (f) The gate must utilize a "Miami" type lock box capable of four locks. Supply four 2" pins, two 4" pins, and two 2" "dead" pins. (Refer to page 2 of Exhibit N for "Miami" type lock box design drawings)
  - (g) Prior to painting, gate and posts shall be cleaned and free of rust scale. Paint with a rust resistant primer coat and a topcoat of a rust resistant high visibility yellow paint.
- (4) The final detailed design shall be submitted to STATE for written approval before construction. STATE is responsible for timely review of the final design and giving approval to proceed with construction.
- (5) Construct the gate as to the specifications above and to the approved final design.
- (6) Install the gate at the proper location and as approved by STATE.

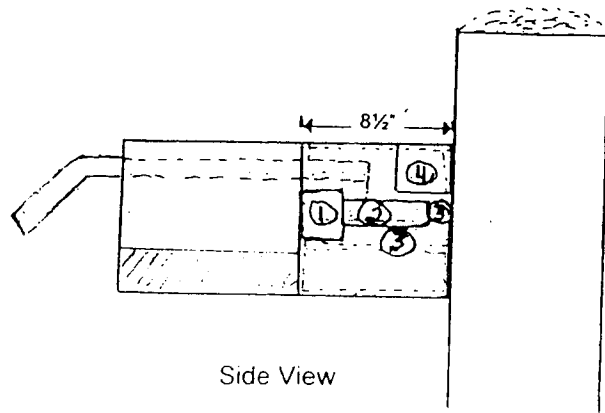
EXHIBIT "N"

FOREST ROAD GATE DESIGN, CONSTRUCTION, AND INSTALLATION

"MIAMI" LOCK BOX



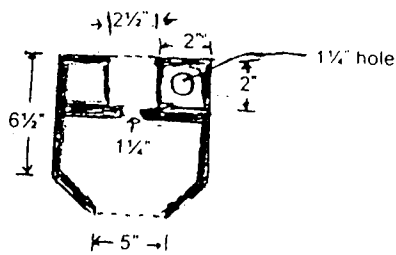
Top View



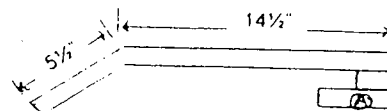
Side View

Locking Arm

- 1) = 2 1/2"
- 2) = 4 1/2"
- 3) = 1 1/2"
- 4) = 2" sq.

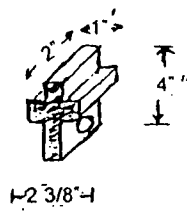


Uncovered End View



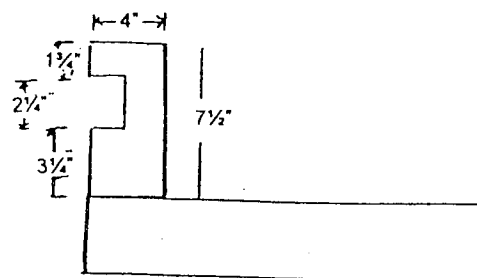
Slide Pin

A) 4" x 2" x 1"



Lock Pin

15/16" Round Stock  
 Locking Handle



Locking Arm

EXHIBIT "O"

WATERSHED REGULATIONS

PURCHASER shall take precautions necessary to protect the watershed from damage and to prevent pollution to the water supply. Precautions shall include, but not be limited to, the following regulations.

Laws, Rules, and Regulations. Comply with Oregon laws and with the rules and regulations of the Oregon State Board of Health relative to protection of watersheds and sanitation of public water supply.

Debris in Streams. Prevent, insofar as possible, logs, chunks, and other debris, resulting from logging and road building operations, from being deposited in streams. If such material should become deposited in streams, immediately remove the material to restore normal stream flow, using necessary care to prevent unnecessary damage to the stream channel and banks.

General Sanitary Conditions. Do not create any conditions which may permit breeding of flies or mosquitoes. Machinery, equipment, soil, and fuel storage shall not be located near streams. Waste oil shall be removed from the watershed. Camping shall not be permitted.

Privies. Place a clean, sanitary, and usable privy at each landing and other main points of operation on Areas 1, 3, 4, and 5 and require all personnel to use the privies. Privies shall be placed at locations approved by STATE not closer than 100 feet to any stream. The privies shall be constructed as follows, unless other types are approved by STATE prior to being placed in use:

The housing shall be waterproof and flyproof, and the toilet shall be equipped with a seat and cover. A receptacle shall be provided for all refuse and the privy shall be equipped with a separate urinal draining into the receptacle. The receptacle shall be not less than 45-gallon capacity and the refuse shall be removed from the receptacle and disposed of off the watershed area. The receptacle shall be vented through the roof of the privy housing.

Pit type privies shall not be permitted on the watershed.

Personnel. Persons with a history of typhoid fever, amoebic dysentery, or infectious hepatitis shall not be employed on the watershed. All personnel shall be required to use the privies. PURCHASER shall verbally instruct all personnel employed on the watershed in the required sanitary precautions to be observed and shall give each such person a copy of these regulations.

Overnight Camping Prohibited. No person shall remain on the watershed overnight, unless authorized in writing by STATE.



EXHIBIT "P"

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Description of Work to be Done

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

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

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

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

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

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

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

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

EXHIBIT "P"

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Equipment Type, Equipment Operation, and Conduct of Work

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

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

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

Equipment	Rate	Hours	Appraised Value
Excavator	\$ 95.00 / hour	144	\$13,680.00
Log Loader	\$ 70.00 / hour	195	\$13,680.00

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

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

Work Scheduling - work shall be accomplished only during dry weather conditions, and started within 14 calendar days after completion of yarding activities on Areas 4 and 5. 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.

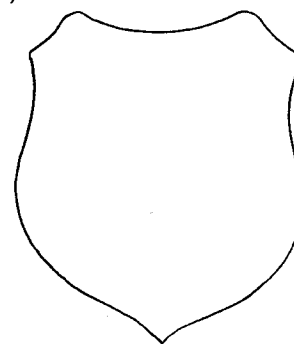
EXHIBIT "Q"  
OREGON DEPARTMENT OF FORESTRY

**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 Highway 202, Astoria, OR 97103
- (4) PURCHASER: \_\_\_\_\_  
 Address \_\_\_\_\_

- (12) SALE NAME Kerry East  
 COUNTY Clatsop
- (13) STATE CONTRACT NUMBER 341-04-63
- (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 (20).

- (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)
<b>NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE</b>
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 Representative Date

(11) NOTICE OF CANCELLATION OF BRAND:  
 Effective Date: \_\_\_\_\_

\_\_\_\_\_  
 State Forester's Representative

## EXHIBIT "Q"

## 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.