



Oregon Department of Forestry

2600 State St Salem OR 97310

PART III: EXHIBITS

EXHIBIT B

TIMBER SALE OPERATIONS PLAN

(See page 2 for instructions)

Date Received by State: _____

(5) State Brand Information (Complete)

(1) Contract Number: FG-341-2020-W00236-01

(2) Sale Name: Razorback

(3) Contract Expiration Date: 10/31/2022

(4) Purchaser Name: _____

(6) State Representatives:

<u>Name</u>	<u>Circle One</u>	<u>Phone No.</u>	<u>Cell No.</u>	<u>Alt Phone</u>
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			

(7) Purchaser Representatives:

<u>Name</u>	<u>Circle One</u>	<u>Phone No.</u>	<u>Cell No.</u>	<u>Alt Phone</u>
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			

(8) Name of Subcontractors and Start Dates:

<u>Project No.</u>	<u>Subcontractor Name.</u>	<u>Start Date</u>	<u>Completion Date</u>	<u>Cell No.</u>	<u>Alt Phone</u>

	<u>Subcontractor Name.</u>	<u>Start Date</u>	<u>Cell No.</u>	<u>Alt Phone</u>
FELLING				
YARDING				

(9) Comments:

(10) Operations Map: Attach a copy of timber sale Exhibit A or other suitable map which plainly shows the items listed on the instruction sheet.



Oregon Department of Forestry

2600 State St Salem OR 97310

PART III: EXHIBITS

EXHIBIT B

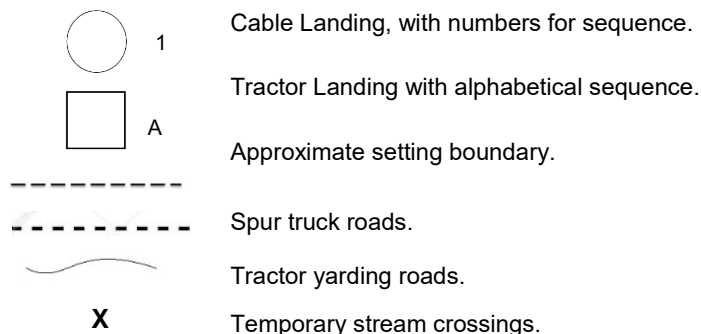
INSTRUCTION SHEET FOR OPERATIONS PLAN

SUBMIT ONE COPY OF PLAN STATE

Operations shall be limited to the work shown in the plan until a revised plan or supplemental plan is submitted covering additional work. Compliance with this plan is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act. If STATE has prepared a required Forest Practices Act (FPA) "Written Plan" for operations, PURCHASER shall comply with all provisions of the Written Plan.

Explanation of Item No.(from Page 1)

- (5) All sales require you to use a brand furnished by STATE. If the State brand has not been assigned when the plan is submitted, it will be furnished and assigned later. Complete drawing. If more than one brand is assigned to the sale, complete both drawings.
- (6) The contract requires you to have a designated representative available on the sale area or work location who is authorized to receive in your behalf any notice or instruction given by STATE and to take action in regard to performance under the contract. If logging and project work is widely separated, a representative is required for each.
- (7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.
- (8) Show names of subcontractors to be used for any or all phases of the operations. If subcontractors are not Known, or are changed later, give notification to the STATE representative prior to commencement of work by subcontractor.
- (9) Show projected dates for commencement of both projects and logging. If projected dates need to be changed at a later date, notification must be given to the STATE representative by supplemental plan or otherwise, prior to commencement of such operations.
- (10) The STATE representative will furnish extra copies of Exhibit A of the contract for your use in preparing the operations map. The map shall use the following legend and show:
 1. Landing locations, approximate setting boundaries, and probable sequence of logging the settings. Number the settings in sequence.
 2. Locations of spur roads planned for construction, other than required by the timber sale contract. Provide spur road specifications
 3. Locations of proposed tractor yarding roads. Show if and how marked on the ground.
 4. Locations of temporary stream crossings.
 5. List the sequence of performing project work.
 6. Location of rock sources - attach pit development plans.





Oregon Department of Forestry

2600 State St Salem OR 97310

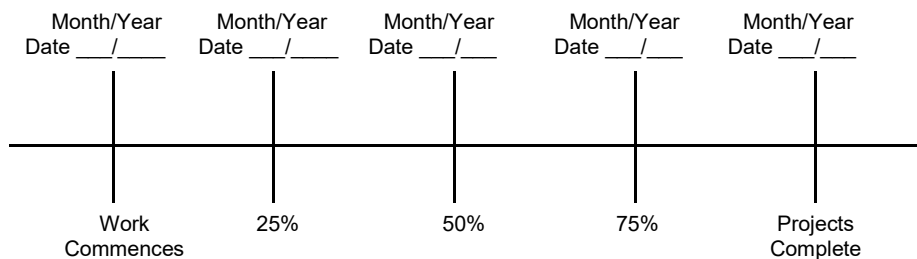
PART III: EXHIBITS

EXHIBIT B OPERATIONS PLAN

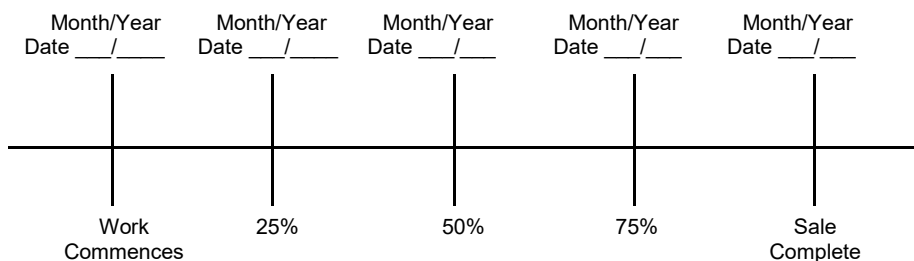
Completion Timeline

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

Projects



Harvest & Other Requirements



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

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

APPROVED; Date: _____

SUBMITTED BY:
PURCHASER

STATE OF OREGON - DEPARTMENT OF
FORESTRY

Title _____

Title _____



Oregon Department of Forestry
EXHIBIT C - SAWMILL GRADE (WESTSIDE SCALE)
SCALING INSTRUCTIONS - LOCATION APPROVAL - BRAND INFORMATION
Forest Grove - NWOA

(1) ORIGINAL REGISTRATION ☐ Date _____
REVISION NUMBER 000 ☐ Date _____
CANCELLATION ☐ Date _____

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

(3) FROM: Forest Grove Phone (503) 357-2191
(State Forestry District)
Address: 801 GALES CRK RD
FOREST GROVE, OR 97116-1199

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

(5) MINIMUM SCALING SPECIFICATIONS	
SPECIES	MINIMUM NET VOLUME
Conifers	10
Hardwoods	10

*Apply minimum volume test to whole logs over 40' Westside

(6) WESTSIDE SCALE:
Use Region 6 actual taper rule. Logs over 40'.

(7) Weight Scale Sample ☐ YES ☒ NO

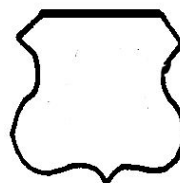
(8) APPROVED SCALING LOCATIONS (as shown on the ODF Approved Locations web-site)	Species	Yard	Truck	Weight

(9) **SALE NAME:** Razorback
COUNTY: Tillamook

(10) **STATE CONTRACT NUMBER:**
FG-341-2020-W00236-01

(11) **STATE BRAND REGISTRATION NUMBER:**

(12) **STATE BRAND INFORMATION:**



(13) **PAINT REQUIRED:** YES ☒
COLOR: Orange

(14) SPECIAL REQUESTS (Check applicable)	
PEELABLE CULL (all species).....	<input checked="" type="checkbox"/>
NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE	<input checked="" type="checkbox"/>
ADD-BACK VOLUME - Deductions due to delay...	<input checked="" type="checkbox"/>
OTHER :	

(15) **REMARKS**

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

(16) _____

Purchaser or Authorized Representative Date

State Forester Representative Date

State Forester Representative PRINT NAME



Oregon Department of Forestry
EXHIBIT C - SAWMILL GRADE
INSTRUCTIONS FOR FORM 343-307a (rev. 11/11)
Forest Grove - NWOA

- (1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires logging and hauling to be complete, recall branding hammers, date and sign where indicated, write diagonally across page "CANCEL", and send to TPSO.

(2)

Columbia River Log Scaling & Grading Bureau
 P.O.Box 7002, Eugene, OR 97401
 Phone: (541) 342-6007 Fax: (541) 342-2631
 Email: services@crls.com

Pacific Rim Log Scaling Bureau, Inc.
 8288 28th Court North East, Lacey, WA 98516
 Phone: (360) 528-8710 Fax: (360) 528-8718
 Email: office@prlsb.com

Mountain Western Log Scaling & Grading Bureau
 P.O.Box 580, Roseburg, OR 97470
 Phone: (541) 673-5571 Fax: (541) 672-6381
 Email: info@southernoregonlogscaling.com

Yamhill Log Scaling & Grading Bureau
 P.O.Box 709, Forest Grove, OR 97116
 Phone: (503) 359-4474 Fax: (503) 359-4476
 Email: yamhilllog@frontier.com

Northwest Log Scalpers Inc.
 6137 NE 63rd St, Vancouver, WA, 98661
 Phone: (360) 553-7212 ext. 4 Fax: (360) 553-7213
 Email: info@nwlogscalpers.com

Pacific Log Scaling & Grading Bureau, Inc.
 P.O.Box 23939, Portland, OR 97281
 Phone: (503) 684-5599 Fax: (503) 639-4880
 Email: PacLogScale@sol.com

- (3) State District office, address and phone.
- (4) Enter Purchaser's business name, address, and phone number as it appears on the Contract.
- (5) Minimum Scaling Specifications.
- (6) Westside - Region 6 actual taper segment scale. Check Yes or No. Special Service Rules on file with TPSO. See: Segment Scaling and Grading of Long Logs - All Species - State Forestry Department Scaling Practices (Westside).
- (7) Weight Scale Sample - Check box if sale is to be a Weight Scale Sample. All specifics for handling, scaling and processing will be attached or explained in the Remarks section item (15).
- (8) Show scaling locations only applicable to TPSO. Location name should appear as it does on the ODF Approved Scaling Location web site: http://www.odf.state.or.us/DIVISIONS/management/asset_management/ScalingLocation.asp Locations with scaling and processing directions specific to their location should be on a separate form. Species should be identified if not capable of receiving "all" species. Check appropriate box for either: yard, truck scale, or weight. Refer to the web site listed above for the locations approval status.
- (9) Enter sale name and county.
- (10) Enter sale Contract number.
- (11) Enter Oregon's State Brand Registry Number (**REQUIRED**).
- (12) Show brand assigned to timber sale. One brand only. If more than one brand is assigned to the sale: (1) make a separate form for each brand and (2) on each form, explain and show other brand(s) in the Remarks section item (15).
- (13) Check yes for Paint Required and designate "Orange" for color. Non required removal volumes may sometimes require blue paint.
- (14) Special Requests. These are requests that will be applied to ODF timber sales. All boxes applicable to the timber sales designated in the Exhibit C form must be "marked". If "Other" is indicated, it must contain a description and any necessary comments.
- (15) Use this space to designate any weight conversion factors, per load volumes, weight scale sample instructions or any other explanations to clarify scaling, processing and/or mailing requirements. If additional scaling locations are approved, revise original or current form showing all (old and new) locations. Check REVISION box at top of form and explain under remarks. Route as indicated.
- (16) Require purchaser to sign and date completed form in addition to State Forester Representative, sign and print name on the form.

Salem Distribution Instructions: Original will be mailed to Salem after it is electronically scanned and placed in the Salem transfer drive \\WPODFILL01\\Transfer\\ScalingInstructions or e-mailed directly to scaling@odf.state.or.us. Scaling Instructions for each brand should be scanned separately, for each approved TPSO.

Notify the District within one hour when branding or painting is inadequate for quick identification, the receipts are missing, not correctly or completely filled out, and/or when logs presented for scaling are impossible to scale accurately.

General Distribution: TPSO, Approved Scaling Locations(s), Purchaser, Specific distribution instructions are outlined on the last page of this report: Instructions for Form

EXHIBIT D
FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DRAINAGE
16 feet	12 feet	A to B	0+00 to 199+50	Ditch
16 feet	12 feet	A to M	0+00 to 195+90	Ditch
16 feet	12 feet	C to D	0+00 to 24+20	Ditch
14 feet	12 feet	E to F	0+00 to 2+30	Outslope
16 feet	12 feet	G to H	0+00 to 3+10	Ditch
16 feet	12 feet	I to J	0+00 to 24+50	Ditch
16 feet	12 feet	K to L	0+00 to 4+40	Ditch
16 feet	12 feet	N to O	0+00 to 32+20	Ditch
16 feet	12 feet	O to OO	0+00 to 10+00	Ditch
16 feet	12 feet	P to Q	0+00 to 8+00	Ditch
16 feet	12 feet	R to S	0+00 to 16+50	Ditch
16 feet	12 feet	S to SS	0+00 to 14+50	Ditch
16 feet	12 feet	T to U	0+00 to 18+50	Ditch
16 feet	12 feet	Point V	-	Ditch

CLEARING. This work shall consist of clearing, removing, and disposing of all trees, Snags, Down Timber, brush, surface objects, and protruding obstructions within the clearing limits. All danger trees, leaners, and Snags outside the clearing limits which could fall and hit the road shall be felled.

CLEARING CLASSIFICATION.

New Construction - Where clearing limits have not been marked, the clearing limits shall extend 5 feet back of the top of the cutslope and 5 feet out from the toe of the fill slope, or as directed by STATE.

Improvement -the "Road Brushing Specifications" in Exhibit G shall apply.

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 cut slopes shall be removed.

GRUBBING CLASSIFICATION.

New construction - from the top of the cut slope 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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

CLEARING AND GRUBBING DISPOSAL. Clearing and grubbing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing and grubbing debris shall be left in a stable location, and not left lodged against standing trees. Clearing and grubbing debris may be scattered through openings in the timber outside of the cleared right-of-way, except for the following areas where debris shall be fully contained and hauled to a designated waste area:

- Where end-haul is required
- On side slopes exceeding 55 percent
- On unstable areas
- In any stream channel (Type F, N or D) or where material may enter the stream channel.

Clearing, grubbing, and associated disposal shall be completed prior to subgrade approval.

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-specified lines, grades, dimensions, and plans when provided.

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

Suitable excavated material shall be used for the formation of fills, shoulders, and drainage structure backfills. Embankment materials shall be free of woody debris, brush, muck, sod, frozen material, and other deleterious materials.

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

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

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

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

DRAINAGE

Subgrade. Subgrade shall be crowned, outsloped, or insloped at 4 to 6 percent as shown on the "Forest Road Specifications" table in this Exhibit.

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

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

TURNOUTS. Increase roadbed width an additional 8 feet for both subgrade and surfacing. Length shall be at least 25 feet, plus 25-foot approaches at each end. Location: Intervisible but not greater than 750 feet apart.

SLOPES. Top of cut slope shall be rounded.

Solid Rock

Fractured Rock

Soil - side slopes 50% and over

Soil - side slopes less than 50%

Cut Slopes

Vertical to ¼ :1

¼:1

½:1

¾:1

Fill Slopes

1½:1

1½:1

LANDINGS. Landings shall be constructed no less than 50 feet wide and no more than 70 feet wide unless otherwise stated or approved by STATE. Surface is to be outsloped or crowned for drainage with general grade no more than 3 percent. Surface as shown in the "Road Surfacing" table in this Exhibit, with 2 feet of subgrade extending out from base of the surfacing.

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

SEASONAL WINTERIZATION. All unsurfaced roads or unfinished subgrades shall be waterbarred in accordance with the specifications in Exhibit H, and blocked from vehicular traffic prior to October 31, annually and as directed by STATE.

EROSION CONTROL. Install bio bags, silt fence, or straw bales for erosion control in project areas and ditch lines where sedimentation or erosion is possible, as directed by STATE. Each Bio-bag shall be installed with a minimum of two wooden stakes.

GENERAL ROAD CONSTRUCTION (AND RECONSTRUCTION) INSTRUCTIONS:

- 1 Excavated Materials. Excavated materials shall be utilized for road construction and hauled in where required. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage.
- 2 Drainage Ditches. Construct ditchlines, including ditchouts, as directed by STATE. Cut slopes of ditchlines and ditchouts shall not exceed a 1:1 slope. Construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE.
- 3 Culvert Installation. Fill construction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit.
- 4 Settling Ponds. Construct up to 3 settling ponds for erosion control in project areas and ditchlines where sedimentation or erosion is possible as directed by STATE. Excavated material shall be hauled to the designated waste areas designated on Exhibit A. Waste materials shall be sloped and compacted for drainage. Settling pond dimensions shall be a finished length of 8 feet, width of 3 feet, and 3 feet in depth, or as directed by STATE.
- 5 Fill Armor and Energy Dissipator Construction. Where rock is specified for fill armor, rock shall be machine placed and tamped at a 1½:1 slope, beginning at the toe of the fill. Where rock is used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with Exhibit E.
- 6 Subgrade Preparation and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, ditchouts, fill construction, settling ponds and other specified work prior to the application of surfacing rock.
 - (b) Subgrade shall be crowned, outsloped, or insloped at 4 to 6 percent.
 - (c) Upon completion of above required work, apply, process, and compact surfacing rock in accordance with specifications in the "Compaction and Processing Requirements" in this Exhibit. Final road surface shall be crowned, outsloped, or insloped at 4 to 6 percent.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
O to OO	0+00	Point O. Begin road construction; crown road, construct ditchline.
	6+10	Install culvert No. 9 (18" x 30') as cross drain.
	10+00	Point OO. End road construction. Construct landing.
S to SS	0+00	Point S. Begin road construction; crown road, construct ditchline.
	10+00	Construct 100' spur with landing on right.
	14+50	Point SS. End road construction. Construct landing.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

- 1 Roadside Brushing. Conduct roadside brushing as specified in Exhibit G.
- 2 Excavated Materials. Excavated materials shall be utilized for road and fill construction and hauled in where required. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage.
- 3 Bank Slough Removal. Excavate all bank slough. Bank slough material shall not be pulled across existing surfacing rock. Excavated material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A.
- 4 Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include, skewing the culvert and/or installing the culvert at gradients equal to or exceeding the drainage (or ditch) gradient. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. All woody debris encountered during fill excavation shall be removed. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Unsuitable backfill material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A. Backfill materials shall be hauled in where necessary.
- 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. Ditch debris including woody debris shall be loaded and hauled to designated waste areas, and shall be accomplished with the use of an excavator and dump truck. 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.
- 6 Settling Ponds. Construct settling ponds as directed by STATE. Excavated material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A. Waste materials shall be sloped and compacted for drainage. Settling pond dimensions shall be a finished top diameter of 8 feet, bottom diameter of 3 feet and 3 feet in depth as directed by STATE. Backslopes shall be ¾:1.
- 7 Fill Armor and Energy Dissipator Construction. Where rock is specified for fill armor, rock shall be machine placed and tamped at a 1½:1 slope, beginning at the toe of the fill. Where rock is used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with Exhibit E.
- 8 Subgrade Preparation and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, fill reconstruction, ditchouts, settling ponds, and other specified work prior to the application of new surfacing rock.
 - (b) Cut out all potholes and/or washboard sections from the existing surfacing.
 - (c) Process (grade and mix) the existing surface. Provide for a crown, outslope, or inslope of 4 to 6 percent, and compact in accordance to the "Compaction and Processing Requirements" in this Exhibit.
 - (d) Upon completion of above required work, apply, process, and compact surfacing rock in accordance to this Exhibit.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
A to B	0+00	Point A. Begin road improvement; clean or establish ditch.
	1+00	Surface Y-junction on right.
	7+40	Bridge
	13+12	Live water. Remove existing culvert. Replace with Culvert No. 1 (36" x 60'). Install new culvert outlet approximately 8ft higher in fill. Place 20cy of riprap at outlet as energy dissipator.
	21+92	Junction on left.
	36+54	Junction on left.
	61+37	Junction on left.
	66+40	Junction on right.
	81+15	Junction on right.
	89+00	Live water. Existing culvert. Install 2 settling ponds in ditchline below inlet and 2 settling ponds in ditchline above inlet.
	89+60	Junction on right.
	90+20	Live water. Remove existing culvert. Replace with Culvert No. 2 (72" x 50'). Retain fill armor at outlet to be replaced after new culvert installation. Add 10cy of fill armor at inlet. Fill plunge pool at outlet with 30cy of clean shot rock.
	102+90	Junction on right.
	108+85	Junction on left.
	109+90	Install Culvert No. 3 (18" x 30') as disconnect.
	115+42	Install Culvert No. 4 (18" x 40') as disconnect. Install 3 settling ponds in ditchline before inlet.
	125+50	Install Culvert No. 5 (18" x 40') as disconnect.
	126+30	Live water. Remove existing culvert. Replace with Culvert No. 6 (30" x 50').
	131+00	Junction on left.
	140+20	Junction on left.
	150+70	Junction with road segment C to D on right.
	158+10	Live water. Remove existing culvert. Replace with Culvert No. 10 (36" x 40').
	175+50	Junction with road segment G to H on left.
	193+10	Junction with road segment I to J on right.
	196+90	Junction with trail on right.
	199+50	Point B. End road improvement. Improve truck turnaround.
A to M	0+00	Point A. Begin road improvement; clean or establish ditch.
	33+40	Junction on left.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS:

	72+55	Junction on left.
	82+40	Junction on left.
	113+70	Junction on right.
	115+00	Junction with road segment N to O on left.
	122+50	Install Culvert No. 7 (18" x 40') as disconnect.
	153+05	Junction with road segment N to O on left.
	160+35	Junction on right.
	188+85	Junction with road segment R to S on left.
	195+90	Point M. End road improvement.
C to D	0+00	Point C. Begin road improvement; clean or establish ditch.
	7+65	Junction with road segment E to F on left.
	24+20	Point D. End road improvement.
E to F	0+00	Point E. Begin road improvement; clean or establish ditch.
	2+30	Point F. End road improvement. Improve landing.
G to H	0+00	Point G. Begin road improvement; clean or establish ditch.
	3+10	Point H. End road improvement. Improve landing.
I to J	0+00	Point I. Begin road improvement; clean or establish ditch.
	9+65	Junction with road segment K to L on right.
	24+50	Point J. End road improvement. Improve landing.
K to L	0+00	Point K. Begin road improvement; clean or establish ditch.
	4+40	Point L. End road improvement. Improve landing.
N to O	0+00	Point N. Begin road improvement; clean or establish ditch.
	22+75	Junction with road segment P to Q on right.
	32+20	Point O. End road improvement. Improve landing.
P to Q	0+00	Point P. Begin road improvement; clean or establish ditch.
	8+00	Point Q. End road improvement. Improve landing.
R to S	0+00	Point R. Begin road improvement; clean or establish ditch.
	1+60	Junction with road segment T to U on left.
	16+50	Point S. Junction with road segment S to SS on left. End road improvement. Improve landing.
T to U	0+00	Point T. Begin road improvement; clean or establish ditch.
	18+50	Point U. End road improvement. Improve landing.
Point V.	-	Live water. Excavate fill, remove existing culvert. Replace with Culvert No. 8 (30" x 75'). Reconstruct fill.

EXHIBIT D

ROCK TABLE

ROAD SEGMENT: A to B				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 199+50				
				Volume (CY) Per		Number of		
Culvert Bedding /Backfill	1 ½" - 0	Culvert No. 1	Varies	Culvert	40	Culverts	1	40
Culvert Bedding /Backfill	1 ½" - 0	Culvert No. 2	Varies	Culvert	50	Culverts	1	50
Culvert Bedding /Backfill	1 ½" - 0	Culvert Nos. 3, 4 & 5	Varies	Culvert	20	Culverts	3	60
Culvert Bedding /Backfill	1 ½" - 0	Culvert No. 10	Varies	Culvert	30	Culverts	1	30
Energy Dissipator	36" – 24"	Culvert No. 1	Varies	Culvert	20	Culverts	1	20
Plunge Pool Fill	Shot rock	Culvert No. 2	Varies	Culvert	30	Culverts	1	30
Fill Armor	24" – 12"	Culvert No. 2	Varies	Fill	30	Fills	1	30
Surfacing Rock	1 ½" - 0	A to B	6"	Station	31	Stations	199.5	6,216
Turnout	1 ½" - 0	A to B	6"	Turnout	14	Turnouts	17	238
Turnaround	1 ½" - 0	Point B	6"	Turnaround	20	Turnarounds	1	20
Total Rock for Road Segment:								6,734

ROAD SEGMENT: A to M				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 195+90				
				Volume (CY) Per		Number of		
Culvert Bedding /Backfill	1 ½" – 0	Culvert No. 7	Varies	Culvert	20	Culverts	1	20
Surfacing Rock	1 ½" – 0	A to M	6"	Station	31	Stations	195.9	6,073
Turnout	1 ½" - 0	A to M	6"	Turnout	14	Turnouts	18	252
Total Rock for Road Segment:								6,345

ROAD SEGMENT: C to D				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 24+20				
				Volume (CY) Per		Number of		
Surfacing Rock	1 ½" – 0	C to D	6"	Station	31	Stations	24.2	751
Turnout	1 ½" - 0	C to D	6"	Turnout	14	Turnouts	2	28
Total Rock for Road Segment:								779

ROAD SEGMENT: E to F				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 2+30				
				Volume (CY) Per		Number of		
Surfacing Rock	1 ½" – 0	E to F	6"	Station	31	Stations	2.3	72
Junctions	1 ½" – 0	E to F	6"	Junction	12	Junctions	1	12
Landing	1 ½" - 0	Point F	6"	Landing	47	Landings	1	47
Total Rock for Road Segment:								131

EXHIBIT D

ROCK TABLE

ROAD SEGMENT: G to H				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 3+10				
				Volume (CY) Per		Number of		
Surfacing Rock	1 ½" - 0	G to H	6"	Station	31	Stations	3.1	97
Junctions	1 ½" - 0	G to H	6"	Junction	12	Junctions	1	12
Landing	1 ½" - 0	Point H	6"	Landing	47	Landings	1	47
Total Rock for Road Segment:								156

ROAD SEGMENT: I to J				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 24+50				
				Volume (CY) Per		Number of		
Surfacing Rock	1 ½" – 0	I to J	6"	Station	31	Stations	24.5	760
Junctions	1 ½" – 0	Point I	6"	Junction	12	Junctions	1	12
Turnout	1 ½" – 0	I to J	6"	Turnout	14	Turnouts	2	28
Turnaround	1 ½" – 0	Point J	6"	Turnaround	10	Turnarounds	1	10
Landing	1 ½" - 0	Point J	6"	Landing	47	Landings	1	47
Total Rock for Road Segment:								857

ROAD SEGMENT: K to L				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 4+40				
				Volume (CY) Per		Number of		
Surfacing Rock	1 ½" - 0	K to L	6"	Station	31	Stations	4.4	137
Junctions	1 ½" - 0	Point K	6"	Junction	12	Junctions	1	12
Turnout	1 ½" - 0	K to L	6"	Turnout	14	Turnouts	1	14
Landing	1 ½" - 0	Point L	6"	Landing	47	Landings	1	47
Total Rock for Road Segment:								210

ROAD SEGMENT: N to O				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 32+20				
				Volume (CY) Per		Number of		
Surfacing Rock	1 ½" - 0	N to O	6"	Station	31	Stations	32.2	999
Junctions	1 ½" - 0	Point N	6"	Junction	12	Junctions	1	12
Landing	1 ½" - 0	Point O	6"	Landing	47	Landings	1	47
Total Rock for Road Segment:								1,058

ROAD SEGMENT: O to OO				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 10+00				
				Volume (CY) Per		Number of		
Surfacing Rock	Pit-run	O to OO	10"	Station	53	Stations	10	530
Turnout	Pit-run	O to OO	10"	Turnout	24	Turnouts	1	24
Turnaround	Pit-run	Point OO	10"	Turnaround	16	Turnarounds	1	16
Landing	Pit-run	Point OO	10"	Landing	80	Landings	1	80
Total Rock for Road Segment:								650

EXHIBIT D

ROCK TABLE

ROAD SEGMENT: P to Q				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 8+00				
				Volume (CY) Per		Number of		
Surfacing Rock	1 ½" - 0	P to Q	6"	Station	31	Stations	8	248
Junctions	1 ½" - 0	Point P	6"	Junction	12	Junctions	1	12
Landing	1 ½" - 0	Point Q	6"	Landing	47	Landings	1	47
Total Rock for Road Segment:								307

ROAD SEGMENT: R to S				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 16+50				
				Volume (CY) Per		Number of		
Surfacing Rock	1 ½" - 0	R to S	6"	Station	31	Stations	16.5	512
Junctions	1 ½" - 0	Point R	6"	Junction	12	Junctions	1	12
Turnout	1 ½" - 0	R to S	6"	Turnout	24	Turnouts	1	24
Landing	1 ½" - 0	Point S	6"	Landing	47	Landings	1	47
Total Rock for Road Segment:								595

ROAD SEGMENT: S to SS				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 14+50				
				Volume (CY) Per		Number of		
Surfacing Rock	Pit-run	S to SS	10"	Station	53	Stations	14.5	769
Junctions	Pit-run	Point S	10"	Junction	24	Junctions	1	24
Turnout	Pit-run	S to SS	10"	Turnout	24	Turnouts	1	24
Turnaround	Pit-run	Point SS	10"	Turnaround	16	Turnarounds	1	16
Approach to Landing	Pit-run	10+00	10"	Approach	31	Approaches	1	31
Landing	Pit-run	10+00 & Point SS	10"	Landing	80	Landings	2	160
Total Rock for Road Segment:								1,024

ROAD SEGMENT: T to U				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	0+00 to 18+50				
				Volume (CY) Per		Number of		
Surfacing Rock	1 ½" - 0	T to U	6"	Station	31	Stations	18.5	574
Junctions	1 ½" - 0	Point T	6"	Junction	12	Junctions	1	12
Turnout	1 ½" - 0	T to U	6"	Turnout	24	Turnouts	1	24
Turnaround	1 ½" - 0	Point U	6"	Turnaround	10	Turnarounds	1	10
Landing	1 ½" - 0	Point U	6"	Landing	47	Landings	1	47
Total Rock for Road Segment:								667

ROAD SEGMENT: Point V				Sta. to Sta.				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	-				
				Volume (CY) Per		Number of		
Culvert Bedding /Backfill	1 ½" - 0	Point V	Varies	Culvert	40	Culverts	1	40
Surfacing Rock	1 ½" - 0	Point V	12"	Culvert	100	Culverts	1	100
Total Rock for Road Segment:								140

EXHIBIT D

ROCK TABLE

TOTAL ROCK	24"-12" Fill Armor	Pit-run	36" – 24" Energy Dissipator	Shot Rock	1 ½"-0 Crushed
	30 CY	1,674 CY	20 CY	30 CY	17,899 CY

Roads shall be uniformly graded, shaped and approved by STATE prior to rocking.

EXHIBIT D

ROCK ACCOUNTABILITY

PURCHASER shall obtain subgrade approval from STATE prior to rocking. Rocking shall be limited to periods when weather conditions are acceptable to STATE and when sediment will not enter streams. Additional surfacing needed because of construction season or construction practice is not included in the preceding ROAD SURFACING table, and shall be furnished at PURCHASER expense.

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

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

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

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

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

Subgrade. Subgrade surfaces of the road segments listed below shall be graded and compacted prior to rocking. Compaction shall be accomplished by traveling all surfaces from shoulder to shoulder until the surface is smooth and hard and visible deformation ceases. At least 3 passes shall be made over the entire width and length of the road. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

Subgrade shall be crowned, outsloped, or insloped at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	SUBGRADE COMPACTION OPTIONS
All road segments that require rock surfacing	Vibratory Roller

Fills. Embankments and fills shall be placed in (approximately) horizontal layers not more than 8 inches in depth. Each layer shall be separately, and thoroughly, compacted. Compaction equipment shall be operated over the entire width of each layer until visible deformation of the layers ceases. At least 3 passes shall be made over the entire width and length of each layer.

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

ROAD SEGMENT	FILL COMPACTION OPTIONS
All road segments	Vibratory Roller, Vibratory Hand-Operated, Backhoe-Mounted Tamper, or Dozer

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

Rock shall be compacted and processed during the same project period it is spread, unless otherwise approved in writing by STATE.

Rock shall be crowned, outsloped, or insloped at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	CRUSHED ROCK COMPACTION OPTIONS
All road segments requiring crushed rock	Vibratory Roller

Pit-Run Rock. The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of pit-run rock shall be moistened or dried to uniform moisture content suitable for maximum compaction and compacted in layers not to exceed 8 inches in depth. When more than 1 layer is required, each shall be shaped and compacted before the succeeding layer is placed. Any irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform. Each layer shall be compacted with a minimum of 3 passes over the entire width and length of the road. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

Rock shall be crowned, outsloped, or insloped at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	PIT-RUN COMPACTION OPTIONS
Segments requiring pit-run rock	Vibratory Grid Compactor or a combination of Vibratory Roller and Dozer

EXHIBIT D

COMPACTION EQUIPMENT OPTIONS

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.

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

Vibratory Grid Compactors. The roller shall have a grid surface and have an operating weight of 32,000 pounds or more. The rock shall be worked with a grader weighing at least 20,000 pounds during the grid rolling process. All rock shall come in contact with the vibratory grid compactor.

Dozer. A dozer/track-type tractor weighing a minimum of 45,000 pounds as directed by STATE shall be operated over the pit-run rock so that the entire surface comes in contact with the tracks.

EXHIBIT E
CULVERT SPECIFICATIONS

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

Culverts 36 inches in diameter and smaller shall be constructed of corrugated polyethylene. Culverts larger than 36 inches in diameter shall be constructed of corrugated aluminized Type 2 steel. Polyethylene culverts shall be double-walled and meet the requirements of AASHTO M-294-11, Type S, or ASTM F2648. Aluminized (Type 2) steel culverts shall meet the requirements of AASHTO M-36-03¹.

Joining shall be done with bands of like material and corrugations. Manufacturers' instructions shall be followed for prefabricated pipe assembly. Polyethylene joints shall be made with split couplings, corrugated to engage the culvert corrugations, and shall engage a minimum of 4 corrugations, 2 on each side of the culvert joint.

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

Culverts in live streams shall be installed with the inlet and outlet on grade with the stream bottom, unless otherwise specified in writing.

Cross Drain Culverts

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

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

Disconnect Culverts

The culvert inlet shall be located as close to the channel that it is disconnecting, while the culvert outlet shall be located as far from the channel as possible; discharge culvert outflow on the forest floor, allowing for filtration before the water enters the disconnected channel.

The foundation and trench walls for all culverts shall be free from logs, stumps, limbs, stones, and other objects which would dent or damage the culvert. The culvert trench shall be excavated 3 culvert diameters wide to permit compaction and working on each side of the culvert. Tamping shall be done in 6-inch lifts, 1 culvert diameter each side of the culvert. Bedrock shall be excavated as required to provide a uniform foundation for the full length of the culvert.

A bedding of crushed rock as specified shall be placed to provide a wide band of support and to transmit the load from above evenly over the entire length of the culvert for all live stream culverts and all culverts on road improvement segments.

Backfill shall consist of crushed rock on improvement segments and job-excavated soil free of stumps, limbs, rocks, or other objects which would damage the culvert on new construction segments.

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

EXHIBIT E

CULVERT SPECIFICATIONS

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

Lengths of individual culvert sections shall be not less than 10 feet, unless otherwise provided for in special instructions. The shortest culvert section length shall be placed at the inlet end.

The ends of each culvert shall be free of logs and debris which would restrict the free flow of water.

The intake end of cross drain and disconnect culverts shall be provided with a sediment catching basin 3 feet in diameter at the bottom. The outlet end of any culvert which would allow water to erode embankment soil shall be provided with an energy dissipator, half round, or other approved slope protection device. Construct lead-off ditches away from culvert outlets where the slope gradients restrict the free flow of water.

Culverts 36 inches in diameter or larger shall have 1:1 step beveled inlets.

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

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

The intake ends of culverts in fills less than 3 feet to the top of the culvert shall be marked by driving steel posts within 6 inches of the downgrade side. Posts shall be painted with a rust-resistant paint and be a minimum of 5 feet long, with the spade driven 2 feet into the ground. Install a culvert marker at each existing culvert that is missing a marker that could be reached by a grader blade.

Energy Dissipator and Settling Ponds shall be installed within 72 hours of culvert installation, unless otherwise approved in writing by STATE. Steel posts used with half round installation shall be painted with rust preventative paint.

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

Following are the minimum standard gauges for steel culvert and coupling bands. Some culverts may require different gauges and may be found in the culvert listing.

<u>Dia.</u>	<u>Steel Culvert</u>	<u>Thickness</u>		<u>Band Gauges</u>	<u>Band Widths (")</u>	
	<u>Gauge</u>	<u>Uncoated</u>	<u>Coated</u>		<u>Annular</u>	<u>Helical</u>
60-84	12	0.1046"	0.109"	16	24	24

Culverts larger than 60" in diameter shall have 5" x 1" corrugations.

EXHIBIT E
CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
1	36	60	A to B	13+12
2	72	50	A to B	90+20
3	18	30	A to B	109+90
4	18	40	A to B	115+42
5	18	40	A to B	125+50
6	30	50	A to B	126+30
7	18	40	A to M	122+50
8	30	75	Pt. V	-
9	18	30	O to OO	6+10
10	36	40	A to B	158+10

TOTAL LENGTHS BY DIAMETER			
18 INCH	30 INCH	36 INCH	72 INCH
180'	125'	60'	50'

EXHIBIT E
TYPICAL EMBEDDED ENERGY DISSIPATOR

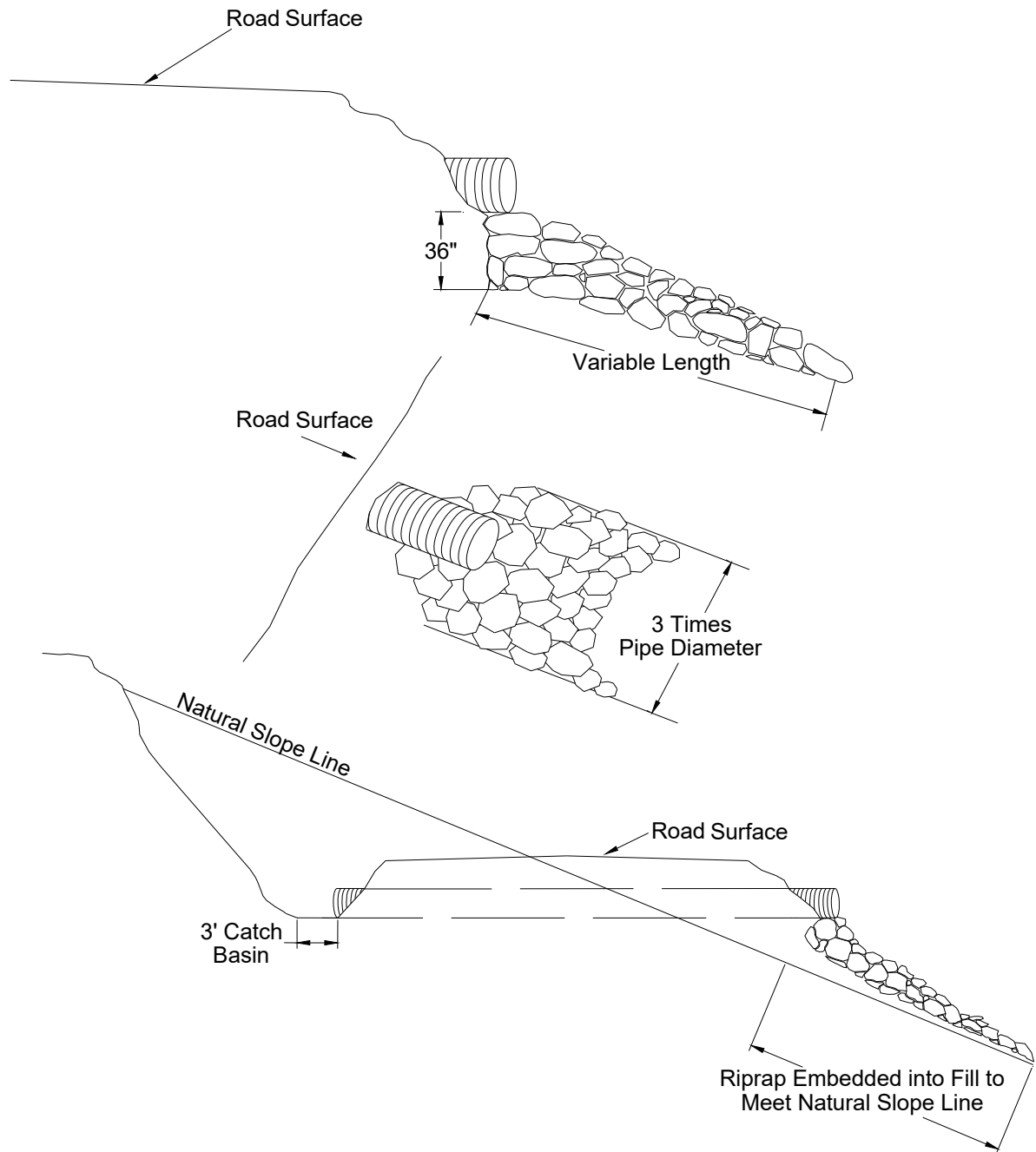


EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

1. PURCHASER shall prepare a written development plan for the quarry area. The plan shall be submitted to STATE for approval prior to conducting any operation in quarry area. The plan shall include, but not be limited to:
 - (a) Location of benches and roads to benches.
 - (b) Disposal site for woody debris, overburden and reject material.
 - (c) Time lines for rock quarry use.
 - (d) Erosion Control measures.
2. PURCHASER shall schedule and coordinate quarry and stockpile usage with other existing or planned activity requiring quarry or stockpile usage. PURCHASER shall notify STATE 5 days prior to the start of quarry development activities.
3. Overburden shall be removed for a distance of 20 feet beyond the developed rock source. All overburden and reject material shall be hauled to the designated waste area as directed by STATE.
4. PURCHASER shall conduct the operations relative to the disposal of waste material in such manner that sediment, rock, or debris shall not be washed, conveyed, or otherwise deposited in any stream.
5. The quarry floor shall be developed to provide for drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained.
6. The STATE shall be notified 24 hours prior to the beginning of blasting operations. Working days shall be defined as Monday through Friday, 7:00 a.m. to 4:30 p.m.
7. Purchaser shall identify a Blaster in Charge (BIC) for all blasting operations. The BIC will be qualified by experience to oversee all phases of the blasting operations. The BIC shall provide direct supervision at all times when blasting and explosives handling activities are occurring on STATE LANDS.
8. 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. Each shot shall also have a "tattle-tale" end cap so that it is known if all charges were detonated. The CONTRACTOR shall detonate or remove all non-detonated explosives from STATE LANDS. 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.
9. Benches shall be maintained/constructed at intervals of 40 feet or less in height and shall be a minimum of 20 feet in width. Any gravel or talus slopes shall be left with a working face at an angle of 60 percent or less. There shall be a minimum of one bench with an access road to it. Said bench shall be easily accessible with tractors.
10. Quarry face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.

EXHIBIT F

QUARRY DEVELOPMENT AND USE

11. Oversized material that is produced shall be piled in a designated area adjacent to the pit. It shall not be wasted.
12. The quarry site shall be left in a condition free from overburden and debris. Access roads to the quarry, and the quarry floor, shall be cleared at the termination of use. Unused shot rock material that is produced shall be piled in the vicinity of the quarry as directed by STATE. Dirt, overburden, and reject material shall be hauled to designated waste area.
13. The quarry floor shall be developed to provide for drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained. Ditches, culverts, waterbars and other direct conveyances of water from the quarry or stockpile site(s) shall be constructed to drain to the forest floor in locations that will provide filtration. Quarry access roads shall be cleared and blocked upon completion of quarry use as directed by STATE.
14. Proper winterization and storm-water control measures such as waterbarring, drainage, utilization of filter bales, mulching and/or blocking access shall be constructed and maintained to protect the watershed and Project Work, as directed by STATE.

EXHIBIT F
QUARRY DEVELOPMENT PLAN

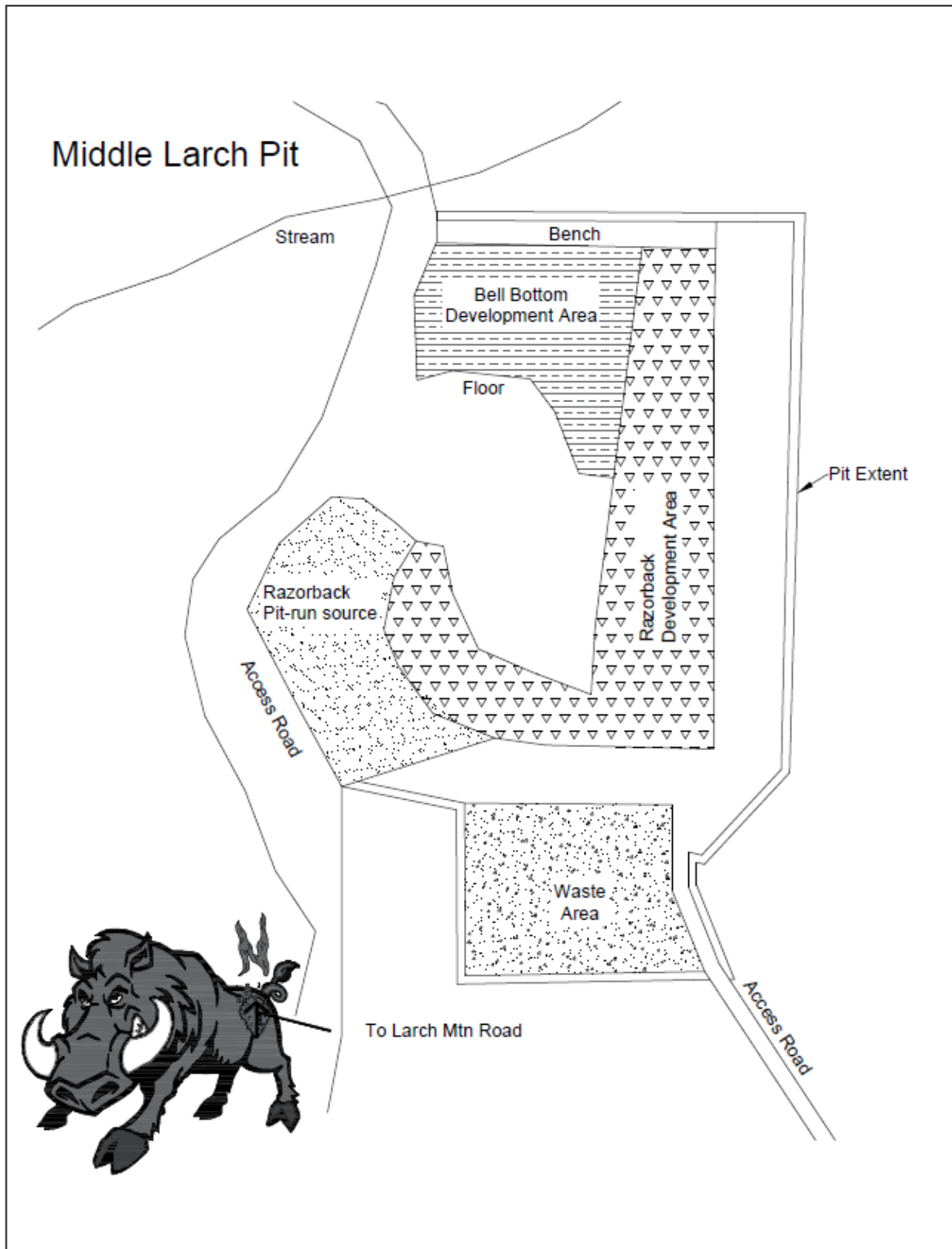


EXHIBIT F

CRUSHED ROCK SPECIFICATIONS

Materials. The material shall be fragments of rock crushed to the required size. 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 fine material. Excess fines are present, when greater than 5 percent of a total rock sample weight, passes a #200 sieve. Rock crushing shall be limited to periods when weather conditions are acceptable to STATE.

Quality and Grading Requirements. The base material shall be rock. River gravel shall not be used. Crushed rock shall meet the grading requirements that follow:

Hardness - Aggregate Hardness - Test Method AASHTO T 96: *30% Maximum

Durability – Test Method ODOT TM 208
Passing No. 20 Sieve: 30% Maximum

For the purpose of crushing rock specified under the projects in Section 2610, "Project Work," PURCHASER shall utilize a three-stage rock crusher, or equivalent, unless otherwise approved by STATE.

The rock crusher shall be calibrated to produce rock as specified in this exhibit. Prior to the commencement of production crushing, PURCHASER shall sample, test, and provide rock test results meeting STATE specifications. STATE may then sample and test crushed rock for approval to proceed. PURCHASER shall take one sample of each 2,000 cubic yards of crushed rock material produced thereafter, using approved AASHTO sampling procedures. PURCHASER shall submit samples to a certified laboratory or shall perform testing for gradation requirements using AASHTO T 11 and AASHTO T 27 testing procedures. Prior to testing, each sample shall be split, making one-half of the sample, with proper identification, available for testing by STATE. Each sample and the results of PURCHASER testing shall be made available to STATE within 24 hours of sampling. Any rock crushed prior to STATE approval to proceed shall not be credited to the required rock quantity. Any subsequent rock tests not meeting STATE specifications shall be reason for rejection of that portion of crushed rock produced after that test and shall not be credited to the required rock quantity. STATE may sample the crushed rock at any time during the operation. Results of STATE's tests shall prevail over all other test results.

EXHIBIT F

DURABLE CRUSHED ROCK SPECIFICATIONS

Grading Requirements

<u>For 1½"-0"</u>	Passing	2" sieve	100%
	Passing	1½" sieve	90-100%
	Passing	¾" sieve	60-90%
	Passing	¼" sieve	30-50%
	Passing	No. 10 sieve	15-30%
	Passing	No. 40 sieve	7-15%

PIT-RUN AND RIPRAP ROCK SPECIFICATIONS

Grading Requirements

<u>For Pit-Run</u>	Passing	10" sieve	100%
	Passing	6" sieve	60-85%
	Passing	3" sieve	30-50%
	Passing	¼" sieve	0-10%

For 36"-12" Riprap. A minimum of 50 percent of the material shall measure a minimum of 36 inches, measured in one dimension. Material shall be clean, well graded, and free of 2"-0" fines.

For 24"-12" 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.

For Riprap and Pit-run. Control of gradation shall be by visual inspection by STATE.

EXHIBIT G

ROAD BRUSHING SPECIFICATIONS

REQUIREMENTS

The minimum height of clearing shall be 15 feet from the road surface, and the minimum width of clearing on the down slope side of the road shall be 10 feet horizontal distance. The minimum width of brushing on the cut slope side of the road shall be dictated by the height of the cut slope as indicated in the three drawings above.

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

Trees larger than 6 inches in diameter at stump height, located within clearing limits but outside of the ditch line or shoulder, shall not be cut down, but shall be limbed for road visibility. Planted or established conifers, located within brushing limits but outside of the ditch line or shoulder, shall not be cut down, but shall be limbed for road visibility unless otherwise directed by STATE.

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

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

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

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

EXHIBIT G

ROAD BRUSHING SPECIFICATIONS

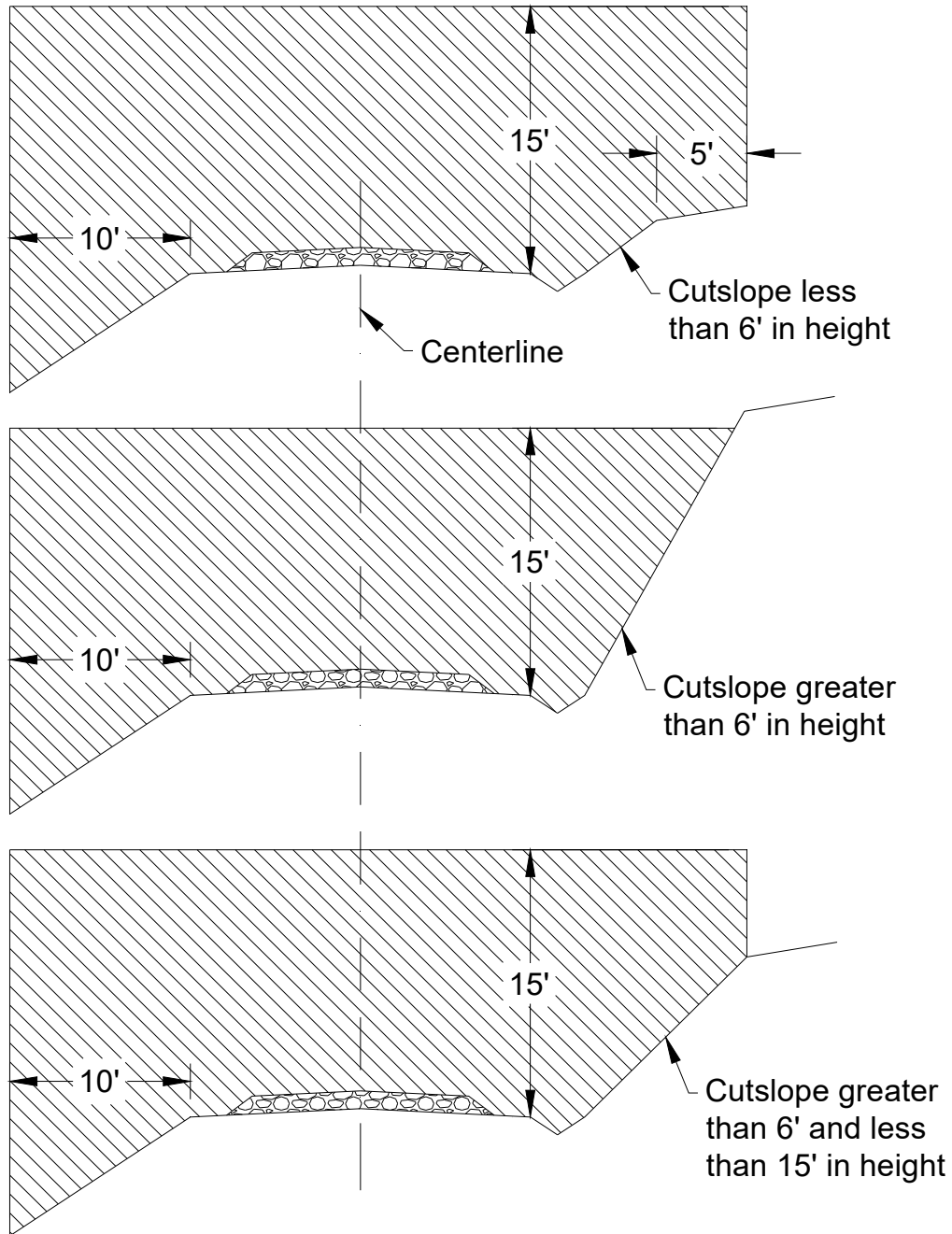
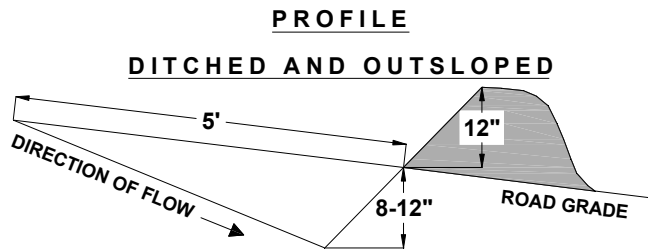
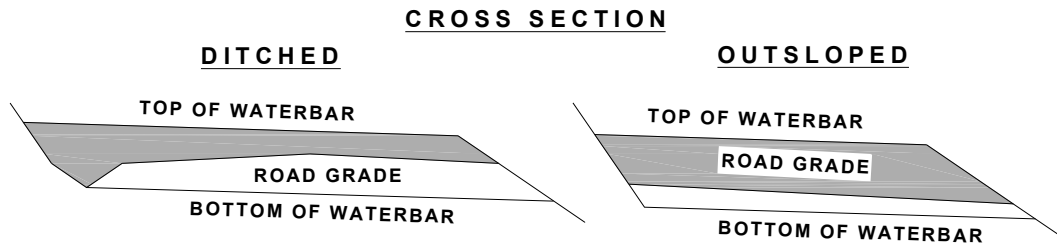


EXHIBIT H

WATERBAR SPECIFICATIONS



SPACING OF WATERBARS	
ROAD GRADE	DISTANCE
< 6 %	400'
6 - 10 %	200'
11 - 15 %	150'
> 15 %	100'



CONSTRUCT DITCHOUT THRU ANY EXISTING BERM.
CROSS DRAINAGE GRADIENT MINIMUM 3%.

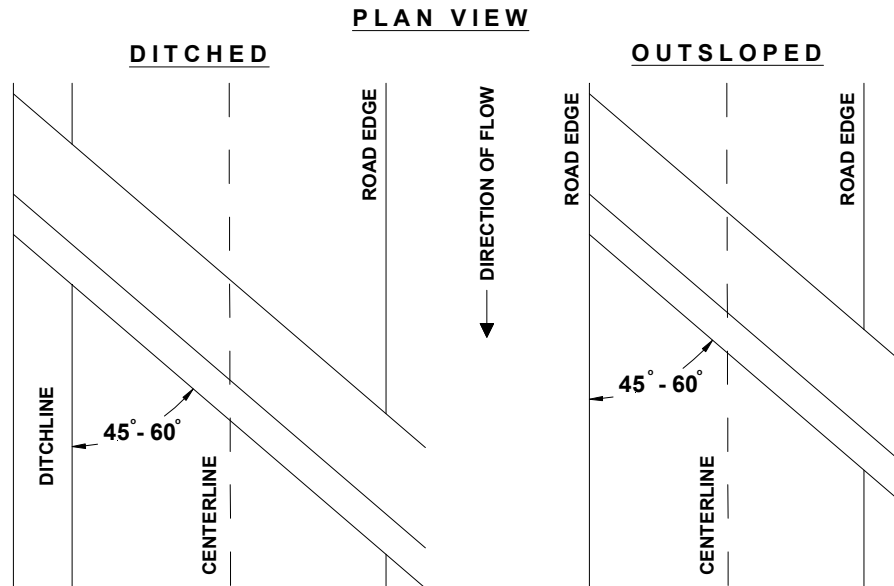
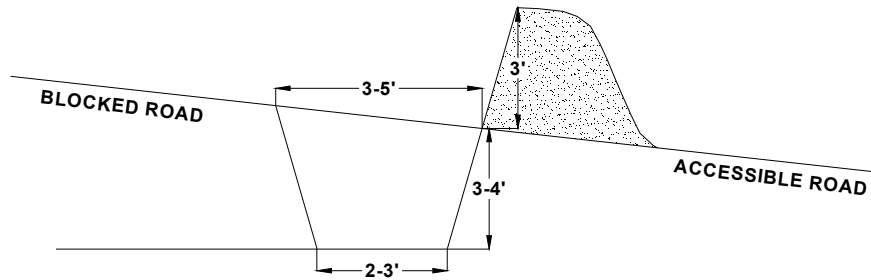


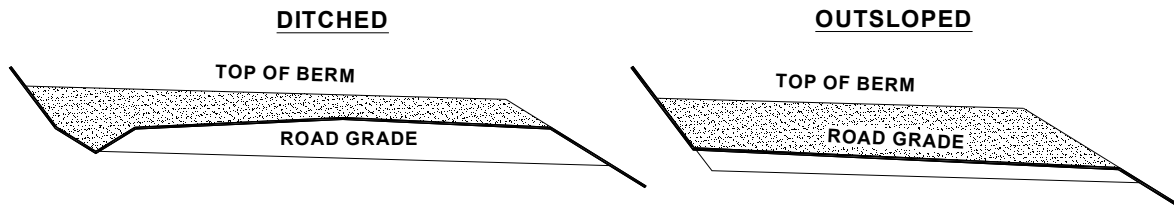
EXHIBIT H

TANK TRAP SPECIFICATIONS

PROFILE DITCHED AND OUTSLOPED

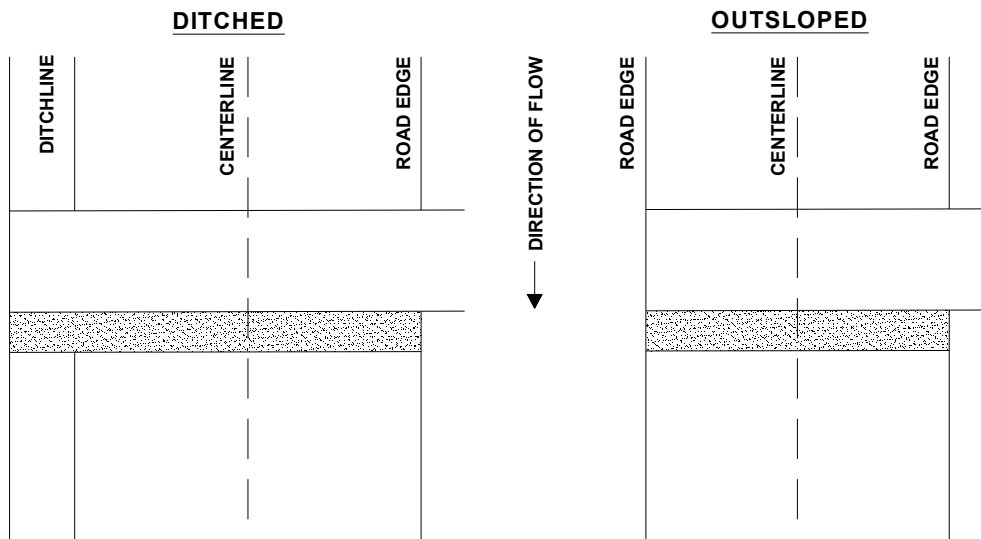


CROSS SECTION



CONSTRUCT DITCHOUT THRU ANY EXISTING BERM.
CROSS DRAINAGE GRADIENT MINIMUM 3%

PLAN VIEW



It should be sloped to drain with a relief ditch through the down slope edge of the road. The trench shall be behind the berm for approaching traffic.

EXHIBIT I

SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required seed, fertilizer, and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed and fertilizer to all waste areas, and bare soils resulting from Project Nos. 1 and 2. Apply straw mulch to all bare soils within 100' of streams resulting from Project Nos. 1 and 2 and to all waste areas.

Seeding Seasons. Seeding shall be performed only from March 1 through June 15 and August 15 through October 31. Seeding materials shall not be applied during windy weather or when the ground is excessively wet or frozen. Areas of disturbed soil shall be seeded by the end of the project period in which work was started. PURCHASER shall notify STATE within 24 hours of seeding and fertilizer application.

APPLICATION METHODS FOR SEED AND FERTILIZER

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

APPLICATION RATES FOR SEED AND FERTILIZER

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

SPECIES	MIXTURE	PURE LIVE SEED	GERMINATION
Annual Rye	33%	95%	>90%
Orchard Grass	33%	95%	>90%
Perennial Rye	34%	95%	>90%

Fertilizer: Chemical analysis shall be 16-20-0 and shall be applied at the rate of 200 pounds per acre. Fertilizer shall not be applied within 100 feet of streams.

Mulching Period. Straw mulch shall be applied within 24 hours of spreading grass seed and fertilizer.

APPLICATION RATES FOR MULCH

Place straw mulch to a reasonably uniform thickness of 1½ to 2½ inches. This rate requires between 2 and 3 tons of dry mulch per acre.

Application Locations:

Road Segment	Location
A to B	Culvert Nos. 1, 2, 3, & 10
Point V	Culvert No. 8
All waste areas	

EXHIBIT J

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 piles, so that 80 percent or more of the soil organic layer is exposed. All woody vegetation other than 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 sale area designated for piling and shall be more than 50 feet from any cutting edge, standing tree, or existing road. Logs that do not meet Section 2045 Log Removal requirements, and chunks, which are suitable for firewood shall be piled more than 25 feet away from Slash, near roads and Landings and alongside the road in locations designated by STATE.

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 J

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.

- Log Loader – shovel: Grapple with rake attachment shall be a hydraulically controlled, 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.

Equipment	Rate	Acres	Appraised Value
Log Loader	\$200 / acre	15	\$3,000

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 the Timber Sale Area. 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.