

PART III: EXHIBITS

State Timber Sale Contract
No. 341-19-16
Bell Bottom

EXHIBIT B

Page 1 of 3
629-Form 341-203
Revised 06/97

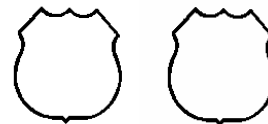
OREGON DEPARTMENT OF FORESTRY

TIMBER SALE OPERATIONS PLAN

(See Page 2 for instructions)

Date Received by STATE: _____

(5) State Brand Information (complete):



(1) Contract No.: 341-19-16

(2) Sale Name: Bell Bottom

(3) Contract Expiration Date: October 31, 2021

Project Completion Dates: _____

(4) Purchaser: _____

(6) Purchaser Representatives:

Projects: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Projects: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Projects: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Projects: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Home: _____

(7) State Representatives:

Projects: _____	Phone: _____	Cell/Other Phone: _____	Home: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Home: _____

(8) Name of Subcontractors & Starting Dates:

Projects: No(s) _____ - _____	Date: _____	Phone: _____
No(s) _____ - _____	Date: _____	Phone: _____
No(s) _____ - _____	Date: _____	Phone: _____
No(s) _____ - _____	Date: _____	Phone: _____
Logging: Felling _____	Date: _____	Phone: _____
Yarding: _____	Date: _____	Phone: _____

(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.

EXHIBIT B
INSTRUCTION SHEET FOR OPERATIONS PLAN

SUBMIT ONE COPY OF PLAN TO 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.

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 those required by the timber sale contract. Provide spur road specifications.
 - 3. Location of proposed tractor yarding roads. Show if and how marked on the ground.
 - 4. Location of temporary stream crossings.
 - 5. List the sequence of performing project work.
 - 6. Location of rock sources - attach pit development plans.



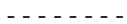
Cable Landing, with numbers for sequence.



Tractor Landing with alphabetical sequence.



Approximate setting boundary.



Spur truck roads.



Tractor yarding roads.



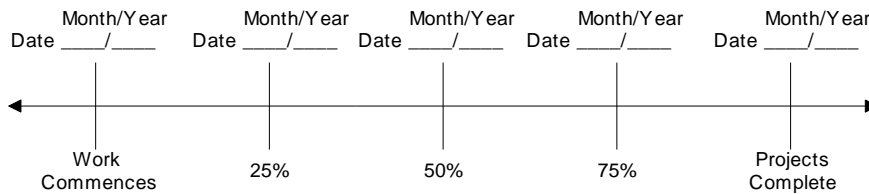
Temporary stream crossings.

EXHIBIT B
OPERATIONS PLAN

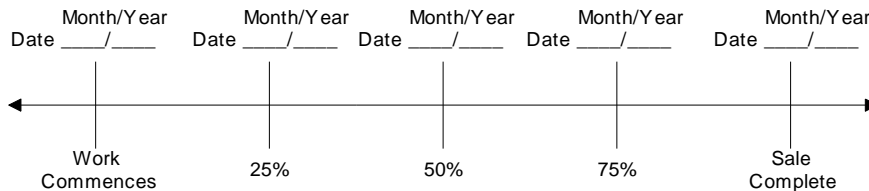
Completion Timeline

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, PURCHASERS 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 _____

Original: Salem
cc: District File
Unit
Purchaser
Operator
(Purchaser Representative) _____

EXHIBIT C – SAWMILL GRADE
INSTRUCTIONS FOR FORM 343-307a (rev. 11/11)

- (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) Designate Third Party Scaling Organization (TPSO).

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@mwlsgb.com

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

Northwest Log Scalers, Inc
5526 NE 122nd Ave, Portland, OR 97230
Phone: (503) 254-0600 Fax: (503) 408-0919
Email: info@nwlogscalers.com

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

EXHIBIT C – PULP SORT

PROCESSING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

(9) SALE NAME: Bell Bottom
COUNTY: Washington

(2) TO: _____
(Approved Pulp Processing Facility)

(10) STATE CONTRACT NUMBER: 341-19-16

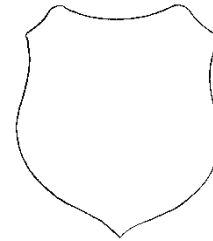
(3) FROM: Forest Grove (05) Phone (503) 357-2191
(State Forestry District)

(11) STATE BRAND REGISTRATION NUMBER _____

(4) PURCHASER: _____

(12) STATE BRAND INFORMATION: (COMPLETE BELOW)

(5) Scaling Bureau (TPSO) Processing Weight receipts:



Mailing Address: _____
Phone Number: _____

(6) **STATE Definition of Approved Pulp Sort:**

- Top portion of the tree (tops).
- All logs with a diameter (Big End) greater than 8 inches marked with blue paint.

(13) REMARKS: * _____

(7) PULP FACILITY PROCESSING INSTRUCTIONS:

- Pulp loads shall be weighed in lieu of scaling.
- One Ton = 2000 lbs (Short Ton).
- Pulp loads shall have a yellow Log Load Receipt attached.
- Gross weight and truck tare weight for each load shall be machine printed on the weight receipt.
- Weigher shall sign the weight receipt.
- Weigher shall record the Log Load Receipt number on the weight receipt.
- Weigher shall attach the Weight receipt to the Log Load Receipt and mail them weekly to the TPSO processing the Weight receipt.

Operator's Name (Optional inclusion by District):

(8) TPSO PROCESSING INSTRUCTIONS

- Mail to ODF weekly.
- Convert to mbf using 10 tons per mbf.

(14) SIGNATURES:

_____	_____
Purchaser or Authorized Representative	Date
_____	_____
State Forester Representative	Date
_____	_____
State Forester Representative PRINT NAME	

Notify the District within one hour when branding is inadequate for quick identification, the logs are marked with orange paint, the receipts are missing, not correctly or completely filled out, and/or logs do not meet the specifications of the STATE definition of Approved Pulp Sort.

Distribution: ORIGINAL: Salem / COPIES: TPSO, Approved Pulp Processing Location, Purchaser, District, Mgmt. Unit

EXHIBIT C – PULP SORT
INSTRUCTIONS FOR FORM 343-307b (rev. 11/11)

- (1) **Must Complete.** Check appropriate box. REVISION NUMBER requires comments in the Remarks Section (13). 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) **Must Complete.** Approved Pulp Processing Facility. Write in as written in the Approved Log Delivery Location http://www.odf.state.or.us/DIVISIONS/management/asset_management/ScalingLocation.asp
- (3) **Must Complete.** State Forestry District and District Phone Number.
- (4) **Must Complete.** Purchaser's business name as it appears on the Contract.
- (5) **Must Complete.** Third Party Scaling Organization that will be processing the weight tickets, mailing address, and phone number.

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@mwlsgb.com

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

Northwest Log Scalers, Inc.
5526 NE 122nd Ave, Portland, OR 97230
Phone: (503) 254-0600 Fax: (503) 408-0919
Email: info@nwlogscalers.com

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

- (6) **Must Complete.** Big end log not to exceed _____ inches. Big end of log is not to exceed 2 inches greater than the minimum removal specifications in the contract. Example: Minimum removal specifications 6 inches and 20 board feet, then the Big end of log not to exceed 8 inches. When conifer and hardwood removal specifications are different, use the smaller removal diameter to determine this specification.
- (9) **Must Complete.** Enter sale name and county. If more than one county write in all the counties that the sale is located in.
- (10) **Must Complete.** Enter sale Contract number.
- (11) **Must Complete.** Enter Oregon's State Brand Registry Number **(REQUIRED)**.
- (12) **Must Complete.** 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 (13).
- (13) Use this section to list any special instructions or the reason for any revisions in section item (1).
- (14) **Must Complete.** Purchaser required 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.

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 100+15	Ditch
16 feet	12 feet	B to C	0+00 to 98+40	Ditch
16 feet	12 feet	C to D	0+00 to 70+50	Ditch
16 feet	12 feet	E to F	0+00 to 4+85	Ditch
16 feet	12 feet	F to G	0+00 to 23+80	Ditch
16 feet	12 feet	H to I	0+00 to 3+00	Ditch
16 feet	12 feet	J to K	0+00 to 7+25	Ditch
12 feet	-	M to N	0+00 to 18+80	Ditch
16 feet	12 feet	O to P	0+00 to 2+50	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. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections.

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 - Where clearing limits have not been marked, the clearing limits shall extend 5 feet back of the top of the cutslope and 10 feet out from the toe of the fill slope, or as directed by STATE.

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 CLASSIFICATION.

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.

On road segment M to N from 13+55 to 18+80 - Scatter between road subgrade and marked clearing limits.

On all other road segments - Scatter in stable locations through openings in the timber outside of the cleared right-of-way, except areas 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. Clearing and grubbing debris shall be left in a stable location, and not left lodged against standing trees.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

Excavation shall conform to STATE-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.

All fills shall be machine compacted according to the "Compaction and Processing 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 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, or as staked on the ground, plus 25-foot approaches at each end. Location: Intervisible but not greater than 750 feet apart.

SLOPES - Top of cutslope shall be rounded.

Solid Rock

Cutslopes
Vertical to ¼ :1

Fill Slopes

Fractured Rock

¼ :1

Soil - side slopes 50% and over

½ :1

1½:1

Soil - side slopes less than 50%

¾ :1

1½:1

LANDINGS. Landings shall be constructed as posted in the field, no less than 50 feet wide and no more than 70 feet wide unless otherwise approved by STATE. Surface is to be crowned for drainage with general grade no more than 3 percent. Surface as shown in the "Road Surfacing" table in this Exhibit.

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 G, and blocked from vehicular traffic prior to October 31, annually and as directed by STATE.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

1. Excavated Materials. Excavated materials shall be utilized for road construction and hauled in where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage.
2. Settling Ponds. Construct settling ponds for erosion control in project areas and ditchlines where sedimentation or erosion is possible as directed by STATE. Settling pond dimensions shall be a finished length of 3 feet, width of 3 feet, and 3 feet in depth, or as directed by STATE. Backslopes shall be 3/4:1.
3. 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 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 at 4 to 6 percent.

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
F to G	0+00	Point F. Begin road construction; crown road, begin ditch.
	5+75	Install Culvert No. 15 (18" x 30') as cross drain.
	8+00	Begin drift forward to 10+25 to construct fill.
	9+75	Install Culvert No. 16 (18" x 30') as disconnect.
	10+25	Live Stream. Remove existing puncheon and install Culvert No. 17 (24" x 40').
	10+75	Construct three settling ponds in ditchline on left.
	11+00	Point H. Junction with H to I on left.
	11+50	End drift to 10+25
	16+80	Install Culvert No. 18 (18" x 30') as cross drain. Begin drifting material to 19+00 to maintain grade.
	19+00	End drift.
	23+80	Point G. End road construction, construct landing.
H to I	0+00	Point H. Begin road construction; crown road, begin ditch.
	3+00	Point I. End road construction, construct landing.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
J to K	0+00	Point J. Begin road construction; crown road, begin ditch.
	7+25	Point K. End road construction, construct landing.
M to N	0+00	Point M. Begin road construction.
	13+55	ODF / Hampton property line. Begin reducing clearing limits to 25' wide.
	18+80	Point N. End road construction.
O to P	0+00	Point O. Begin road construction; crown road, begin ditch. Install Culvert No. 19 (18" x 30') as disconnect across existing road.
	0+50	Construct three settling ponds in ditchline on right.
	2+50	Point P. End road construction.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

1. Excavated Materials. Excavated materials shall be utilized for road and fill construction and hauled in where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Waste materials shall be sloped and compacted for drainage.
2. Bank Slough Removal. Dig out all bank slough. Bank slough material 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.
3. 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. 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 this Exhibit.
4. Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels. Install a culvert marker at each newly installed culvert and at each existing culvert that is missing a marker that could be reached by a grader blade.
5. Settling Ponds. Construct 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 3 feet, width of 3 feet, and 3 feet in depth, or as directed by STATE. Backslopes shall be 3/4:1.
6. 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.
7. 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 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 (Round Top Road at Junction with Rice Road). Begin road improvement; crown road, begin ditch cleaning or construction.
	14+20	Remove old culvert on side of road from STATE land.
	80+80	Existing culvert, install marker.
	82+70	Existing culvert. Clean inlet.
	100+15	Point B. End improvement on Round Top Road.
B to C	0+00	Point B (Bell Camp Road). Begin road improvement; crown road, begin ditch cleaning or construction. Remove stumps within clearing limits.
	0+30	Existing culvert, begin ditch construction on left.
	8+55	Existing culvert, install marker. End ditch construction on left.
	15+15	Existing culvert, repair inlet, install marker.
	16+30	Hiking trail crossing.
	18+40	Remove large stump on right.
	19+35	Install Culvert No. 1 (18" x 30') as cross drain.
	20+60	Begin ditch construction on right.
	20+85	Remove large stump on right.
	24+70	End ditch construction on right.
	27+10	Begin ditch construction on right.
	29+50	End ditch construction on right.
	31+95	Install Culvert No. 2 (18" x 30') as disconnect.
	33+00	Live Stream. Remove existing culvert and install Culvert No. 3 (30" x 30').
	34+10	Install Culvert No. 4 (18" x 30') as disconnect.
	36+85	Begin ditch construction on left.
	38+75	Remove large stump on left.
	42+50	Remove large stump on left.
	44+75	End ditch construction on left.
	49+00	Remove existing culvert and install Culvert No 5 (18" x 30') as cross drain.
	61+70	Remove existing culvert and install Culvert No. 6 (18" x 30') as cross drain.
	65+55	Begin ditch construction on right.
	69+60	End ditch construction on right.
	73+00	Begin ditch construction on left.
	80+75	End ditch construction on left.
	88+20	Existing culvert, clean outlet, install marker.
	89+00	Begin ditch construction on right.
97+10	Existing culvert, install marker. Begin ditch construction on left.	
98+40	Point C. End improvement on Bell Camp Road.	

EXHIBIT D

FOREST ROAD SPECIFICATIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
C to D	0+00	Point C. Begin road improvement; crown road, begin ditch cleaning or construction. Begin widening road on left. Remove stumps from within clearing limits. Remove and haul trees painted with Blue "C" (6 total). Begin ditch construction on left.
	2+85	Existing culvert.
	3+40	Remove large stump on left.
	9+15	Timber sale boundary. Junction with spur to left. Construct ditchout to left and end ditch construction. Begin curve widening to 50' minimum radius.
	10+70	End corner improvement.
	11+50	Begin cut slope layback on right.
	13+05	Existing culvert, install marker. End cut slope layback.
	13+50	Begin road widening to left.
	14+50	Begin ditch construction on left.
	14+55	Begin cutslope layback.
	15+50	Install Culvert No. 7 (18" x 30') as disconnect. End ditch left. End road widening.
	15+55	End cutslope layback.
	16+05	Live Stream. Install Culvert No. 8 (24" x 40').
	16+30	Remove existing culvert and backfill with Pit-run.
	16+75	Existing culvert, install marker.
	17+20	Grade out vertical curve to establish consistent road grade.
	18+00	End road grade improvement.
	20+20	Existing culvert, install marker.
	21+40	Begin drift for fill at 23+75 and begin road alignment.
	23+75	Remove existing culvert and fill. Install Culvert No. 9 (30" x 50'). Place 36cy of rip-rap as Energy Dissipator at outlet of culvert. Place 24cy of pit-run around the inlet of culvert as fill armor. Place 24cy of pit-run around outlet of culvert as fill armor. Rebuild fill 5' higher and move centerline downstream 10'.
	25+50	End road realignment and drift.
	25+60	Begin road realignment to left, use material from cut slope on right to widen road to left. Begin cut slope layback. Remove large stump on right.
	27+20	Existing culvert, install marker. End road realignment.
	28+20	End cut slope layback.
	32+00	Existing culvert, install marker.
	35+05	Timber sale boundary. Remove and haul trees within Right-of-Way boundary.
	36+20	Begin cut slope layback.
	36+50	Existing culvert.
	38+05	Timber sale boundary.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
	38+30	End cut slope layback.
	38+80	Install Culvert No. 10 (18" x 30') as disconnect.
	39+15	Remove large stump on right.
	39+50	Live Stream. Remove existing culvert and install Culvert No. 11 (24" x 30').
	41+50	Existing culvert, install marker.
	42+25	Existing culvert, install marker.
	43+45	Existing culvert. Use material drifted from 43+60 to widen fill to left.
	43+60	Begin cut and drift back to 43+60.
	44+00	Remove large stump on left.
	44+55	End drift back.
	44+90	Point J. Junction with J to K to left.
	46+45	Begin ditch construction on left.
	47+30	End ditch construction on left.
	47+75	Install Culvert No. 12 (18" x 30') as cross drain.
	48+40	Live Stream. Remove existing culvert and install Culvert No. 13 (24" x 30'). Place 36cy of rip-rap as Energy Dissipator.
	50+00	Existing culvert, install marker.
	52+20	Existing culvert, install marker.
	54+00	Begin ditch construction on left.
	54+65	Existing culvert, install marker.
	56+20	End ditch construction on left.
	56+90	Begin ditch construction on left.
	57+90	End ditch construction on left.
	60+70	Existing culvert, install marker.
	61+20	Point E. Junction with E to F on left.
	64+70	Construct 3 settling ponds in ditchline on left.
	65+30	Live Stream. Existing culvert, install marker.
	66+00	Construct 3 settling ponds in ditchline on left.
	68+30	Live Stream. Install Culvert No. 14 (30" x 30')
	68+70	Construct 3 settling ponds in ditchline on left.
	70+50	Point D. End road improvement, improve landing. Ditch low spot on right out past landing.
E to F	0+00	Point E. Begin road improvement; crown road, begin ditch cleaning or construction.
	4+85	Point F. End road improvement, improve landing.

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: A to B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	A to B		0+00 to 100+15		
				Volume (CY) Per		Number of		
Surfacing Rock	1½"-0" Crushed	A to B	6	Station	31	Stations	100.15	3,105
Turnout	1½"-0" Crushed	A to B	6	Turnout	14	Turnouts	9	126
Total Rock for Road Segment:				A to B				3,231
ROAD SEGMENT: B to C				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	B to C		0+00 to 98+40		
				Volume (CY) Per		Number Of		
Surfacing Rock	1½"-0" Crushed	B to C	6	Station	31	Stations	98.4	3,051
Turnout	1½"-0" Crushed	B to C	6	Turnout	14	Turnouts	6	84
Culvert Bedding and Backfill	1½"-0" Crushed	Culvert Nos. 1 - 6	Varies	Culvert	24	Culverts	6	144
Total Rock for Road Segment:				B to C				3,279
ROAD SEGMENT: C to D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	C to D		0+00 to 70+50		
				Volume (CY) Per		Number of		
Surfacing Rock	6" - 0" Pit-run	C to D	10	Station	53	Stations	70.5	3,737
Turnouts	6" - 0" Pit-run	C to D	10	Turnout	24	Turnouts	9	216
Turnarounds	6" - 0" Pit-run		10	Turnaround	16	Turnarounds	1	16
Landing	6" - 0" Pit-run	Point D	10	Landing	150	Landings	1	150
Culvert Backfill	6" - 0" Pit-run	16+30	Varies	Backfill	24	Backfills	1	24
Culvert Bedding and Backfill	1½"-0" Crushed	Culvert Nos. 7 - 14	Varies	Culvert	24	Culverts	8	192
Curve Widening	6" - 0" Pit-run		Varies	Station	12	Stations	1.55	19
Energy Dissipator	36" - 24" Riprap	Culvert Nos. 9 & 13	Varies	Energy Dissipator	36	Energy Dissipators	2	72
Fill Armor	24" - 6" Riprap	Culvert No. 9	Varies	Fill	24	Fills	2	48
Total Rock for Road Segment:				C to D				4,474
ROAD SEGMENT: F to G				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	F to G		0+00 to 23+80		
				Volume (CY) Per		Number Of		
Surfacing Rock	6" - 0" Pit-run	F to G	12	Station	65	Stations	23.8	1,547
Turnouts	6" - 0" Pit-run	F to G	12	Turnout	29	Turnouts	2	58
Turnarounds	6" - 0" Pit-run		12	Turnaround	20	Turnarounds	1	20
Junctions	6" - 0" Pit-run	Points F & H	12	Junction	12	Junctions	2	24
Landings	6" - 0" Pit-run	Point G	12	Landing	180	Landings	1	180
Culvert Bedding and Backfill	1½"-0" Crushed	Culvert No.17	Varies	Culvert	24	Culverts	1	24
Total Rock for Road Segment:				F to G				1,853

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: H to I				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	H to I		0+00 to 3+00		
				Volume (CY) Per		Number Of		
Surfacing Rock	6" – 0" Pit-run	H to I	12	Station	65	Stations	3	195
Turnarounds	6" – 0" Pit-run		12	Turnaround	20	Turnarounds	1	20
Landings	6" – 0" Pit-run	Point I	12	Landing	180	Landings	1	180
Total Rock for Road Segment:								395
ROAD SEGMENT: J to K				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	J to K		0+00 to 7+25		
				Volume (CY) Per		Number Of		
Surfacing Rock	6" – 0" Pit-run	J to K	12	Station	65	Stations	7.25	472
Turnarounds	6" – 0" Pit-run		12	Turnaround	20	Turnarounds	1	20
Landings	6" – 0" Pit-run	Point K	12	Landing	180	Landings	1	180
Total Rock for Road Segment:								672
Point L: Stockpile Site Construction							TOTAL VOLUME (CY)	
Application	Rock Size and Type	Location	Depth of Rock (inches)					
Surfacing Rock	6" – 0" Pit-run	Standard Bell Stockpile Site	12		355			
ROAD SEGMENT: O to P				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	O to P		0+00 to 2+50		
				Volume (CY) Per		Number Of		
Base Rock	6" – 0" Pit-run	O to P	10	Station	53	Stations	2.5	133
Surfacing Rock	1½"-0" Crushed	O to P	3	Station	15	Stations	2.5	38
Culvert Bedding and Backfill	1½"-0" Crushed	Culvert No.19	Varies	Culvert	24	Culverts	1	24
Total Rock for Road Segment:								195

ROCK TOTALS (CY)	36" - 24" Riprap	24" - 6" Riprap	6" – 0" Pit-Run	1½"-0" Crushed
	72	48	7,191	6,764

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

Stockpile	Location	Approximate Dimensions (L x W x H)	Volume (Stockpile Measurement, CY)
1½"-0 Crushed	Standard Bell Stockpile Site	150' x 50' x 12'	2,000

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.

Stockpile Measurement. Purchaser shall construct stockpiles according to the dimensions determined by STATE and included in the Quarry development plan required by Exhibit F. Dimensions will consist of the length and width of the base, length and width of the top, and height of all four corners. The finished stockpile surface shall be smooth, uniform, and all corners filled in. All stakes and reference points shall be protected until stockpile measurements are accepted 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 at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

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

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 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 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 at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All road segments requiring crushed rock.	Vibratory Roller

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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 at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
Segments requiring pit-run rock.	Vibratory Grid Compactor, or a combination of Vibratory Roller & Dozer, as approved by STATE

EXHIBIT D

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. Vibratory Hand-Operated or Backhoe-Mounted Tamper. Vibratory hand-held or hydraulic tampers shall be used for compaction of backfill materials around culverts. The tamper shoe dimensions shall be a minimum of 10" X 13" and capable of a centrifugal force of 2,250 pounds.
3. 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.
4. Dozer. A dozer/track-type tractor weighing a minimum of 82,000 pounds 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 shall be constructed of corrugated double-walled polyethylene and meet the requirements of AASHTO M-294-06, Type S Culvert.

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.

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 specified in special instructions.

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

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

EXHIBIT E

CULVERT SPECIFICATIONS

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 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.

Compaction by tamping utilizing a Vibratory Hand-Operated or Backhoe-Mounted Tamper is required for all live water culverts and 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.

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.

Energy Dissipators and Settling Ponds shall be installed within 72 hours of culvert installation, unless otherwise approved in writing by STATE.

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

EXHIBIT E
 CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
1	18	30	B to C	19+35
2	18	30	B to C	31+95
3	30	30	B to C	33+00
4	18	30	B to C	34+10
5	18	30	B to C	49+00
6	18	30	B to C	61+70
7	18	30	C to D	15+50
8	24	40	C to D	16+05
9	30	50	C to D	23+75
10	18	30	C to D	38+80
11	24	30	C to D	39+50
12	18	30	C to D	47+75
13	24	30	C to D	48+40
14	30	30	C to D	68+30
15	18	30	F to G	5+75
16	18	30	F to G	9+75
17	24	40	F to G	10+25
18	18	30	F to G	16+80
19	18	30	O to P	0+00

TOTAL LENGTH IN FEET BY DIAMETER		
18 INCH	24 INCH	30 INCH
360	140	110

EXHIBIT E

TYPICAL EMBEDDED ENERGY DISSIPATOR

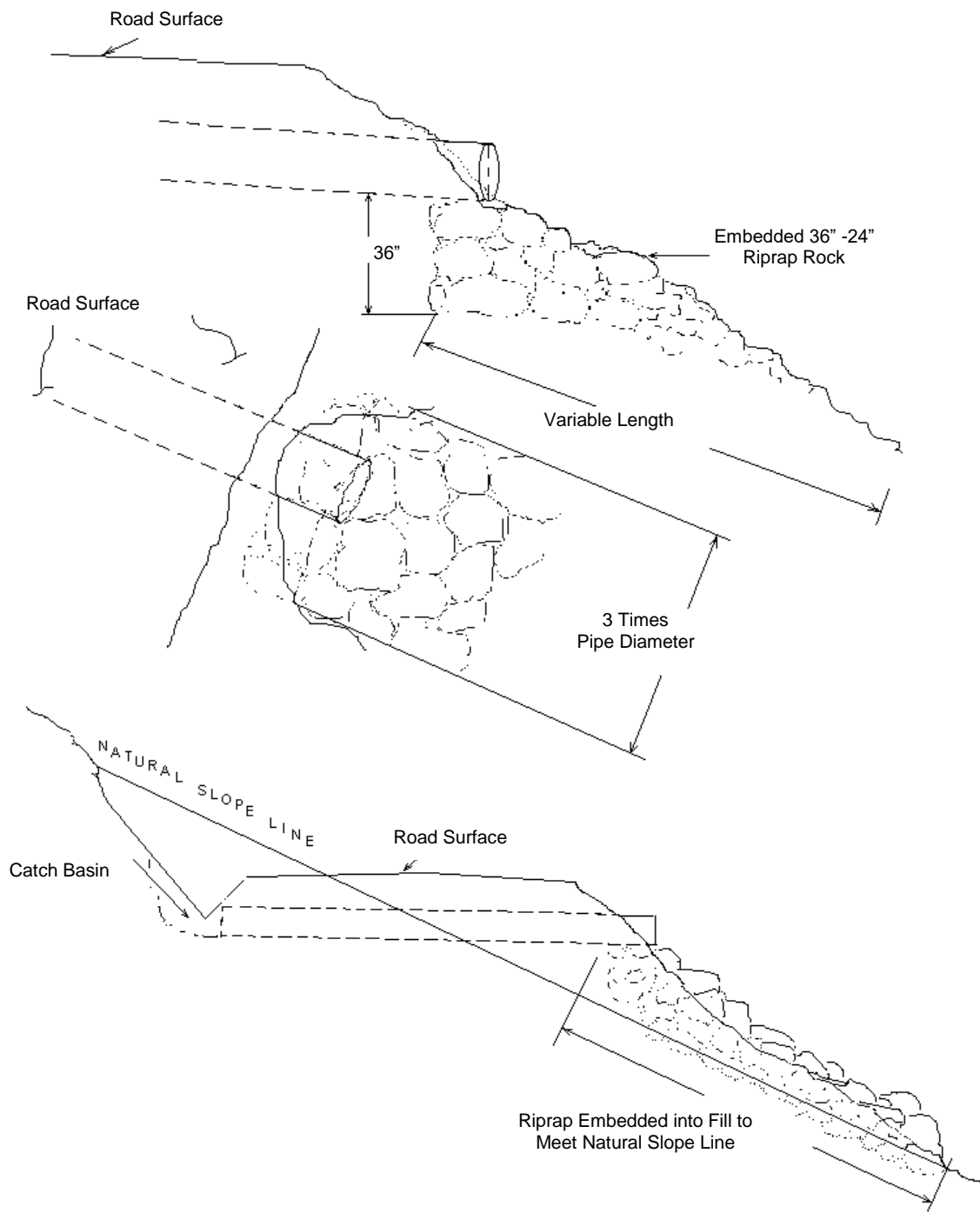


EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

1. PURCHASER shall prepare a written development plan for both quarry areas. 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) Drainage plan
 - (b) Location of benches and roads to benches.
 - (c) Disposal site for woody debris, overburden and reject material.
 - (d) Time lines for rock quarry use.
 - (e) 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. At both quarries, all overburden and reject material shall be hauled to the designated waste area as directed by STATE.

At the Middle Larch Quarry, overburden shall be removed to expose pit-run rock, as directed by STATE, from location shown on "Quarry Development Plan" in this Exhibit, and as marked in the field.
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. 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 PURCHASER 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.
8. 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.
9. Quarry face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.
10. Oversized material that is produced shall be piled in a designated area adjacent to the quarry. It shall not be wasted.

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

11. The quarry sites shall be left in a condition free from overburden and debris. Access roads to the quarry, and the quarry floor, shall be cleared of unused shot rock and dirt at the termination of use. Access roads shall be waterbarred to provide drainage as specified in Exhibit G and blocked as directed by STATE. 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.
12. At the Middle Larch Quarry, quarry floor shall be developed to drain to the southwest and away from the live stream to the north. PURCHASER shall maintain the existing waterbar across the existing road during all operations.
13. Proper winterization and storm-water control measures such as waterbarring, drainage, utilization of filter bales, mulching and/or blocking access shall be constructed and maintained to protect the watershed and Project Work, as directed by STATE.

EXHIBIT F
QUARRY DEVELOPMENT PLAN

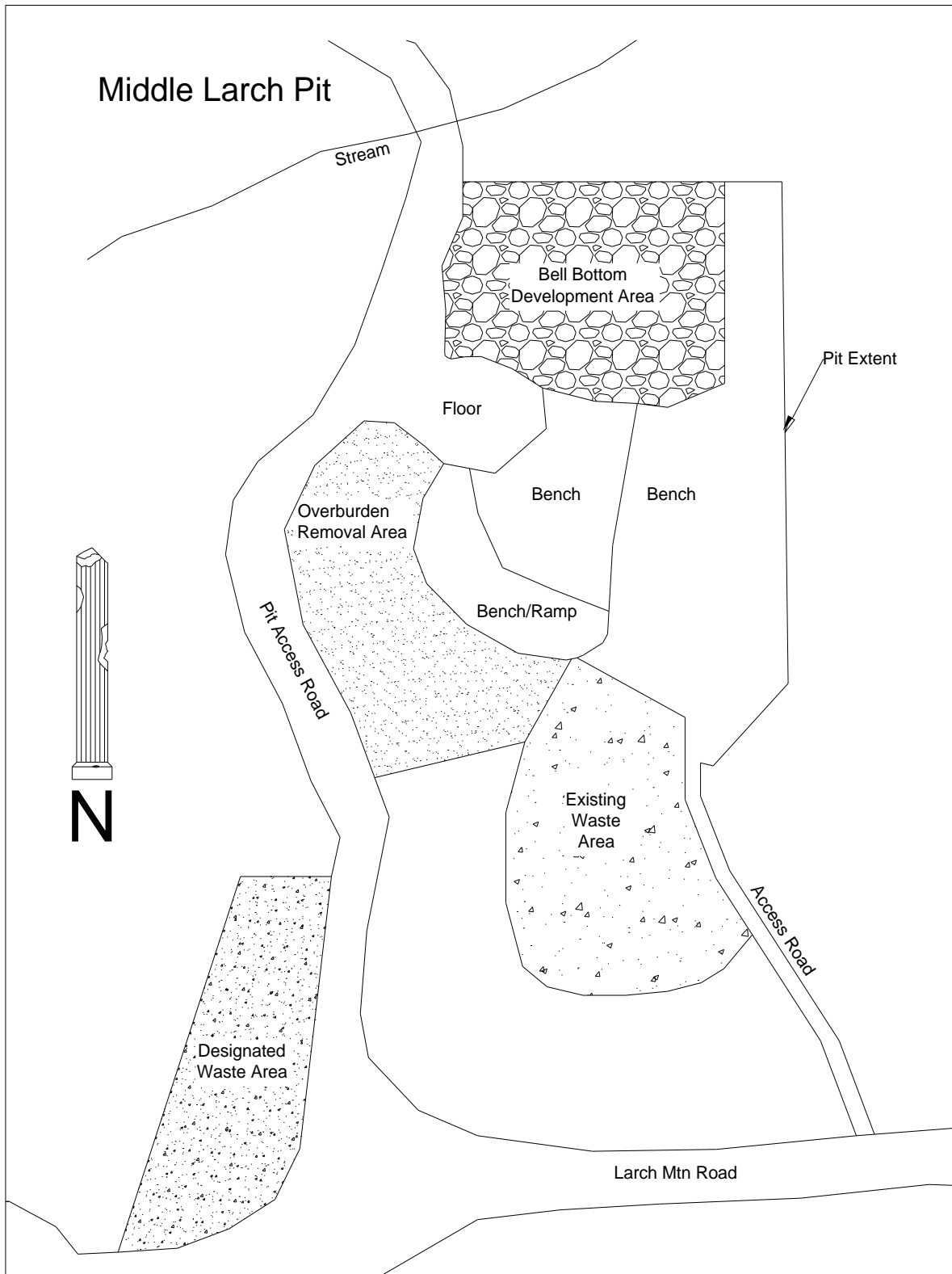


EXHIBIT F

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 - 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 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

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

<u>For Pit-Run</u>	Passing	10" sieve	100%
	Passing	6" sieve	60-85%
	Passing	3" sieve	30-50%
	Passing	¼" sieve	0-20%

Material shall be well graded, free of organic material and shall not have excessive fine materials.

For 36"-12" and 24"-6" Riprap A minimum of 50 percent of the material shall measure a minimum of 36 or 24 inches, measured in one dimension. Material shall be clean, well graded, and free of 2"-0" fines.

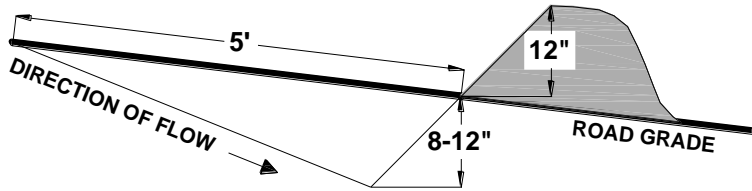
Control of pit-run and riprap gradation shall be by visual inspection by STATE.

EXHIBIT G

WATERBAR SPECIFICATIONS

PROFILE

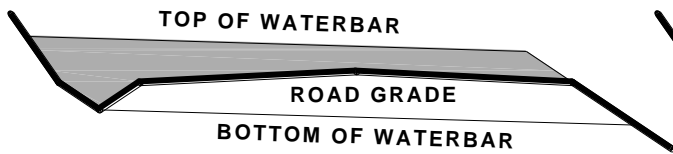
DITCHED AND OUTSLOPED



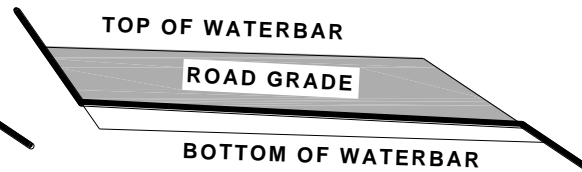
SPACING OF WATERBARS	
ROAD GRADE	DISTANCE
< 6 %	400'
6 - 10 %	200'
11 - 15 %	150'
> 15 %	100'

CROSS SECTION

DITCHED



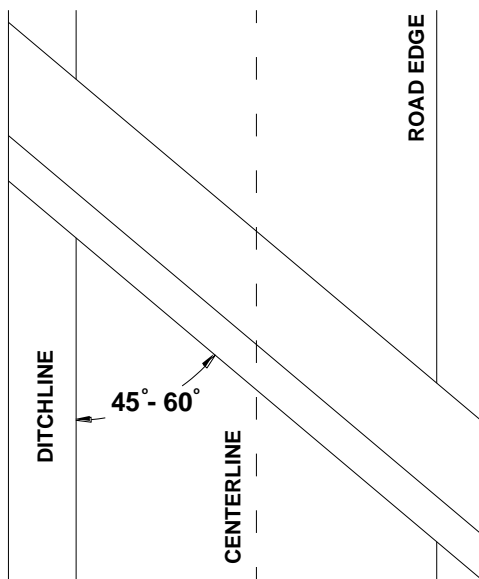
OUTSLOPED



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

PLAN VIEW

DITCHED



OUTSLOPED

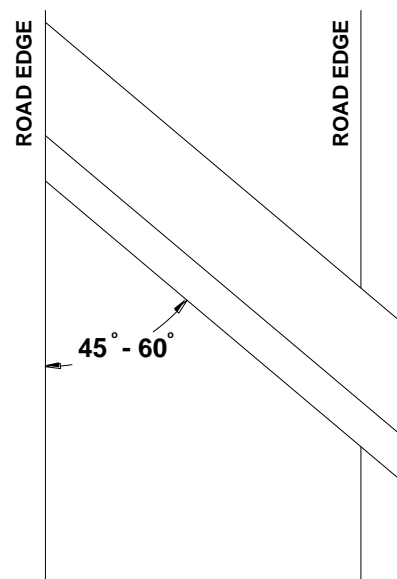
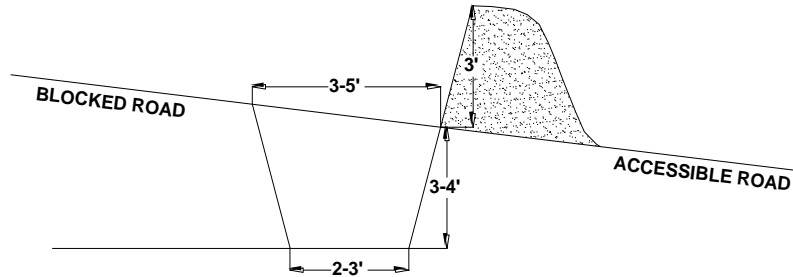


EXHIBIT G

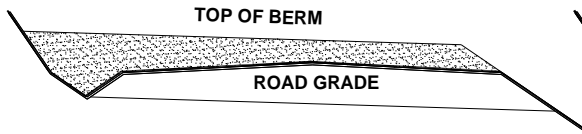
TANK TRAP SPECIFICATIONS

PROFILE
DITCHED AND OUTSLOPED

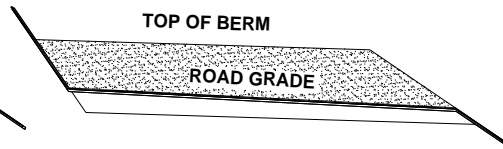


CROSS SECTION

DITCHED



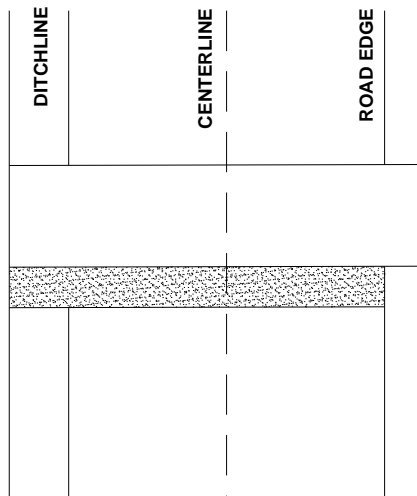
OUTSLOPED



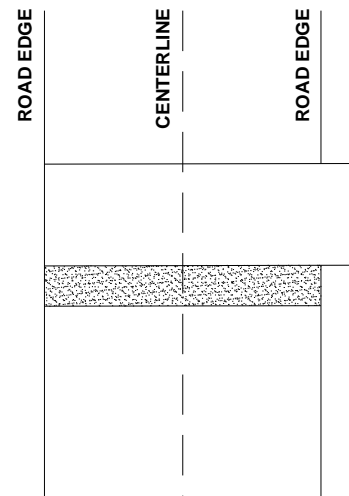
CONSTRUCT DITCHOUT THRU ANY EXISTING BERM.
CROSS DRAINAGE GRADIENT MINIMUM 3%

PLAN VIEW

DITCHED



OUTSLOPED



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 H

ROAD BLOCKING SPECIFICATIONS

PURCHASER shall block the following segments: M to N

Specific objectives for this project include:

- (a) Minimize disturbance of existing vegetation.
 - (b) Blocking access to all vehicles.
 - (c) Construction of tank traps.
 - (d) Apply grass seed, fertilizer and mulch, according to the specifications in Exhibit I.
- (1) Road Blocking. Roads shall be blocked to all vehicles by constructing tank traps and using local materials such as stumps, logs, and boulders. Construct tank traps according to the specifications in Exhibit G.
 - (2) Reestablish road surface drainage by crowning, outsloping, or insloping at 4 to 6 percent.
 - (3) Dry Conditions. All work shall be performed during dry conditions acceptable to STATE.
 - (4) 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>
M to N	0+00	Point M. Block road with local material, construct tank trap.
	18+80	Point N. Block road with local material, construct tank trap.

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, 4 & 5. Apply straw mulch to all bare soils within 100' of streams resulting from Project No. 1 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.

EXHIBIT J

SPECIFICATIONS FOR BRUSH AND SLASH DISPOSAL

Operation Area

Timber Sale Area shown on Exhibit A

Description of Work

Develop planting spots in the following manner and as directed by STATE:

Pile brush and/or Slash sufficient to create conditions suitable for economical planting of conifer species as directed by STATE.

- (a) Piles may be of any size with the following exceptions:
 - (1) Piles within 50 feet of ODF Property Boundary or Reforested Areas shown on Exhibit A shall not have horizontal dimensions that exceed 100 square feet.
 - (2) Piles within 25 feet of any Reserved Tree shall not have horizontal dimensions that exceed 100 square feet.
- (b) Piles shall be free of mineral soil nor shall they contain anything other than brush and Slash, except as otherwise required by this Exhibit.
- (c) Piles shall not contain Slash that exceeds 8" in diameter.
- (d) Piles with horizontal dimensions that exceed 100 square feet shall be covered with 100 square feet of 4 mil polyethylene plastic sheeting. Additional woody debris shall be piled on top of the plastic sheeting to complete the piling, as directed by STATE. PURCHASER shall supply the materials used for covering the piles.

Capacities

Equipment 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

The bucket shall be of a hydraulically controlled "clamshell" style equipped with rake teeth at least 14 inches in length, and capable of 360-degree continuous rotation unless otherwise approved in writing by STATE.

Operator must be experienced in operating similar equipment on land clearing operations, be able to operate the equipment proficiently, and pile the Slash 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 without cost to STATE.

Work Scheduling

Work shall not begin until PURCHASER has arranged to have the equipment operators meet with STATE to review the requirements specified in Section 2365, "Progressive Operations", Section 2560, "Slash Disposal", and this Exhibit. Slash piling may be done concurrent with yarding operations provided the work is acceptable to STATE. Any Slash piling done subsequent to yarding operations shall be continuous until the work is completed and accepted by STATE, 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. Slash piling shall be accomplished only during dry weather conditions and 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.

PART IV: OTHER INFORMATION

**WRITTEN PLAN
Bell Bottom
Timber Sale #341-19-16**

LEGAL DESCRIPTION: Portions of Sections 2, 3, & 11, T2N, R6W, W.M., Washington County, Oregon

PROTECTED RESOURCE: Tributaries to Gales Creek, two Type F streams flowing along the eastern boundary of Area 1.

DESCRIPTION OF THE AREA: Slopes adjacent to these Creeks range from 10% in the flood plane to over 80% immediately upslope. Streamside vegetation along these type F streams include mature Douglas-fir and red alder.

PROTECTION MEASURES: The Timber Sale Boundary was posted a minimum horizontal distance of 115 feet from the protected resource. However, skyline cables may hang over this stream on the opposite slope or ridge to facilitate logging. When cables pass through or over the stream buffers, all necessary precautions shall be taken to protect all stream buffer components including locating corridors at least 100 feet apart and pulling cables out of the buffer prior to rigging the next yarding road. Trees felled within the buffer for cable corridors shall not be yarded.

Prepared by: Kenton Burns 04/10/2018

Reviewed by: Erik Marcy 4-10-18
Erik Marcy; Unit Forester Date