

PART III: EXHIBITS

State Timber Sale Contract
No. 341-16-19
Bull Nose

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.: 341-16-19

(2) Sale Name: Bull Nose

(3) Contract Expiration Date: October 31, 2018

Project Completion Dates: Project Nos. 1, 2, and 3 – October 31, 2016
Project No. 4 – Prior to August 31, 2016
Project No. 5 – Prior to October 31, 2017

(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.

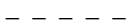
- (10) The STATE representative will furnish extra copies of Exhibit A of the contract for your use in preparing the operations map. The map shall use the following legend and show:
 1. Landing locations, approximate setting boundaries, and probable sequence of logging the settings. Number the settings 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.



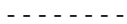
Cable Landing, with numbers for sequence.



Tractor Landing with alphabetical sequence.



Approximate setting boundary.



Spur truck roads.



Tractor yarding roads.



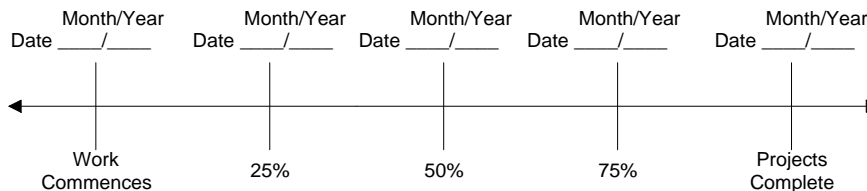
Temporary stream crossings.

EXHIBIT B
OPERATIONS PLAN

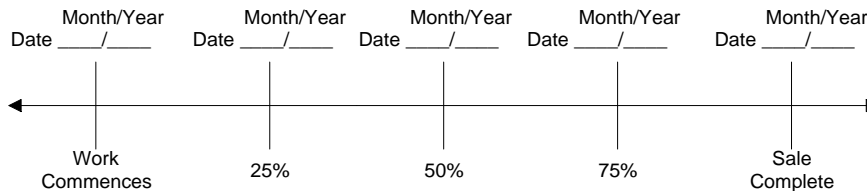
Completion Timeline

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 _____

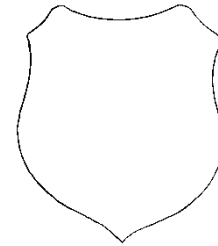
Original: Salem
cc: District File
Purchaser
(Purchaser Representative) _____

EXHIBIT C – SAWMILL GRADE (WESTSIDE SCALE)

SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

- (1) ORIGINAL REGISTRATION ☐ Date _____
REVISION NUMBER _____ ☐ Date _____
CANCELLATION ☐ Date _____
- (2) TO: _____
(Third Party Scaling Organization)
- (3) FROM: Astoria (04) Phone (503)325-5451
(State Forestry District)
Address 92219 Hwy. 202, Astoria, OR 97103
- (4) PURCHASER: _____
Mailing Address: _____
Phone Number: _____

- (9) SALE NAME: Bull Nose
COUNTY: Clatsop
- (10) STATE CONTRACT NUMBER: 341-16-19
- (11) STATE BRAND REGISTRATION NUMBER: _____
- (12) STATE BRAND INFORMATION (COMPLETE):



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

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

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

- (6) WESTSIDE SCALE: YES ☒ NO ☐
Use Region 6 actual taper rule. Logs over 40'.
- (7) Weight Scale Sample ☐ ☒

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

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

- (15) REMARKS _____

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

(16) SIGNATURES:

Purchaser or Authorized Representative Date

State Forester Representative Date

State Forester Representative PRINT NAME

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.

Distribution (See specific instructions on pg.2): ORIGINAL: Salem / COPIES: TPSO, Approved Scaling Location, Purchaser, District, Mgmt. Unit

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@crsls.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@mwlsqb.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 Scalpers, Inc.
5526 NE 122nd Ave, Portland, OR 97230
Phone: (503) 254-0600 Fax: (503) 408-0919
Email: info@nwlogscalpers.com

Pacific Log Scaling & Grading Bureau, Inc.
P.O. Box 23939, Portland, OR 97281
Phone: (503) 684-5599 Fax: (503) 639-04880
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.

Distribution (See specific instructions on pg.2): ORIGINAL: Salem / COPIES: TPSO, Approved Scaling Location, Purchaser, District, Mgmt. Unit

EXHIBIT C – PULP SORT

PROCESSING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

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

(3) FROM: Astoria (04) Phone (503)325-5451
(State Forestry District)

(4) PURCHASER: _____

(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.

(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.

(8) TPSO PROCESSING INSTRUCTIONS

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

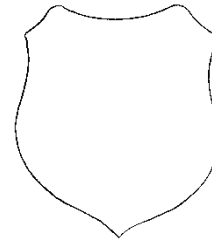
(9) SALE NAME: Bull Nose

COUNTY: Clatsop

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

(11) STATE BRAND REGISTRATION NUMBER _____

(12) STATE BRAND INFORMATION: (COMPLETE BELOW)



(13) REMARKS: _____

Operator's Name (Optional inclusion by District):

(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@mwlsqb.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 Scalpers, Inc.
5526 NE 122nd Ave, Portland, OR 97230
Phone: (503) 254-0600 Fax: (503) 408-0919
Email: info@nwlogscalpers.com

Pacific Log Scaling & Grading Bureau, Inc.
P.O. Box 23939, Portland, OR 97281
Phone: (503) 684-5599 Fax: (503) 639-04880
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 \\WPODFFILL01\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	1A to 1B	0+00 to 30+70	Crowned/Ditch
16 feet	12 feet	1C to 1D	0+00 to 7+00	Crowned/Ditch
14 feet	N/A	1E to 1F	0+00 to 6+00	Outsloped
14 feet	N/A	2A to 2B	0+00 to 15+50	Outsloped
14 feet	N/A	2C to 2D	0+00 to 3+50	Outsloped
16 feet	12 feet	I1 to I2	0+00 to 52+10	Crowned/Ditch
16 feet	12 feet	I3 to I4	0+00 to 122+30	Crowned/Ditch
16 feet	12 feet	I5 to I6	0+00 to 63+00	Crowned/Ditch
16 feet	12 feet	I7 to I8	0+00 to 34+50	Crowned/Ditch
16 feet	12 feet	I9 to I10	0+00 to 36+00	Crowned/Ditch
16 feet	12 feet	I11 to I12	0+00 to 7+00	Crowned/Ditch
16 feet	12 feet	I13 to I14	0+00 to 36+60	Crowned/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.

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. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing debris shall not be left lodged against standing trees.

All danger trees, leaners, and Snags outside the clearing limits which could fall and hit the road shall be felled.

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

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

GRUBBING 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. 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. Plans are provided between points: 1A to 1B, 1C to 1D, and 1E to 1F.

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 or where material will accumulate in areas deemed a high-risk site by STATE.

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/outsloped 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 50 feet, or as staked on the ground, plus 25-foot approaches at each end.

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

SLOPES

Solid Rock

Fractured Rock

Soil - side slopes 50% and over

Soil - side slopes less than 50%

Back Slopes

Vertical to $\frac{1}{4}$:1

$\frac{1}{2}$:1

$\frac{3}{4}$:1

1 :1

Fill Slopes

1½:1

1½:1

Top of cutslope shall be rounded.

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

EXHIBIT D
FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

1. Timber Removal. Remove all trees within posted right-of-way boundary as specified in Section 2210, "Designated Timber."
2. Excavated Materials. Excavated materials shall be utilized for road construction. 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. Fills shall be thoroughly compacted in accordance with this Exhibit.
3. Drainage Ditches. Construct ditchlines, including ditchouts, as directed by STATE. Cut slopes of ditch lines 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.
4. 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 I.
5. Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic-yard, track-mounted excavator.
6. Subgrade Preparation and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, ditchouts, fill construction, 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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
1A to 1B	0+00	Begin constructing fill over existing surfaced road. Utilize fill material generated from road construction to create fill and blend constructed fill into existing road so as to continue to allow for road access. Install culvert across existing road.
	0+20	Begin minimum one foot of fill widening left and right.
	1+00	End fill widening. Begin end-haul of approximately 700 cubic yards of material to be used for road construction at Station 5+50.
	1+60	Begin construction of a three foot wide ditch left and right.
	2+80	End three foot wide ditch construction. End end-haul.
	3+60	Begin 60 foot radius curve. Begin 15 feet of curve widening.
	4+00	Turnout left.
	4+40	End 60 foot radius curve. End curve widening.
	5+30	Install culvert. Construct an energy dissipator. Establish drainage ditch on the uphill side of the road as specified by STATE.
	6+00	Begin minimum one foot of fill widening.
	6+80	End fill widening.
	7+50	Turnout right.
	10+00	Begin minimum one foot of fill widening left and right.
	11+50	End fill widening.
	12+50	Begin 65 foot radius curve. Begin six feet of curve widening.
	12+70	Turnout left.
	12+90	End 65 foot radius curve. End curve widening.
	13+30	Begin full bench end-haul. End-haul approximately 400 cubic yards of material is to be used for road construction at Station 18+50.
	15+00	End full bench end-haul.
	15+80	Turnout right.
	18+00	Turnout/Turnaround right.
	18+20	Begin minimum one foot of fill widening.
	18+50	Install culvert.
	18+80	End fill widening.
	20+00	Construct Landing right.
	22+30	Install culvert.
	24+50	Construct Landing.
	28+00	Turnout/Turnaround left. Begin ten inch thick application of 6"-0" pit-run for base rock.
	30+00	Construct Landing.
	30+70	End road construction.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

1C to 1D	5+30	Construct Landing.
1E to 1F	2+70	Turnout right.
	5+00	Turnaround right.
	5+25	Construct rolling dip so as to allow for potential water drainage. Utilize 33 cubic yards of 6"-0" pit-run for subgrade re-enforcement.
	7+00	Turnout right.
	9+00	Construct rolling dip so as to allow for potential water drainage. Utilize 33 cubic yards of 6"-0" pit-run for subgrade re-enforcement.
	9+50	Turnout right.
	13+30	Construct Landing.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

1. Timber Removal. Remove all trees within posted Right-of-Way Boundary or individually marked with an orange "C", as specified in Section 2210, Designated Timber.
2. Sod Removal. Remove sod from the crushed rock road surface. Separate sod from crushed rock surfacing as directed by STATE. Sod may be scattered in stable locations, however, if necessary, the sod shall be loaded and hauled to a designated waste area as directed by STATE.
3. Excavated Materials. Excavated materials shall be utilized for road construction. 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. Fills shall be thoroughly compacted in accordance with this Exhibit. Excess excavated material not used for embankment shall be end hauled to waste areas as shown on Exhibit A and marked in the field.
4. Bank Slough Removal. Excavate 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. Waste materials shall be seeded and mulched in accordance with specifications in Exhibit L.
5. 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. Waste materials shall be seeded and mulched in accordance with specifications in Exhibit L. 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. Crushed rock shall be used for backfilling excavation trenches less than 3 feet deep. STATE may require the use of crushed rock for culvert bedding. Removed culverts shall be hauled to an approved refuse site off of STATE land.
6. Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Cut slopes of ditchlines and ditchouts shall not exceed a 1:1 slope. 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.
7. Rock Ditch Filter. Construct rock ditch filters 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. Construct each rock ditch filter with clean drain rock (6"-4" pit-run rock) and placed at a 2:1 slope within the specified ditch. Construct the center of the rock ditch filter at least 6 inches lower than the ends, to act as a spillway for runoff and to prevent water from flowing around the filter. Space the filters so that the bottom elevation of the upper filter is the same as the top center elevation of the next filter. Rock ditch filter dimensions shall be in accordance to the "Typical Rock Ditch Filter" in this Exhibit, or as directed by STATE. Locations of the filters shall be determined by STATE.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

8. 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 I.
9. Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic yard, track-mounted excavator.
10. Road Grading, Subgrade Preparation, and Application of Surfacing Rock.
 - (a) Complete culvert installations, drainage ditches, fill reconstruction, ditchouts, 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) Apply required patching and leveling rock, as directed by STATE.
 - (d) Process (grade and mix) the existing surface and added base rock. Provide for a crown of 4 to 6 percent, and compact in accordance to the "Compaction and Processing Requirements" in this Exhibit.
 - (e) Upon completion of above required work, apply, process, and compact surfacing rock in accordance to this Exhibit.

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
I1 to I2	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize 1 ½"-0" crushed rock for leveling.
	13+50	Install rock ditch filter. Utilize 22 cubic yards of 6"-4" pit-run rock to establish ditchline filter in accordance with Exhibit D and as directed by STATE.
	25+30	Install rock ditch filter. Utilize 22 cubic yards of 6"-4" pit-run rock to establish ditchline filter in accordance with Exhibit D and as directed by STATE.
	25+80	Culvert replacement / fill reconstruction. Utilize 99 cubic yards of 1 ½"-0" stockpile rock for culvert bedding and backfill, 44 cubic yards 24"-6" riprap rock for energy dissipator, 133 cubic yards 24"-6" riprap rock for fill armor, 33 cubic yards 4"-0" stockpile rock for road base replacement, and 22 cubic yards 1 ½"-0" stockpile rock for road surface replacement.
	26+10	Install rock ditch filter. Utilize 22 cubic yards of 6"-4" pit-run rock to establish ditchline filter in accordance with Exhibit D and as directed by STATE.
	30+00	Install two rock ditch filters. Utilize 44 cubic yards of 6"-4" pit-run rock to establish ditchline filters in accordance with Exhibit D and as directed by STATE.
	32+30	Install two rock ditch filters. Utilize 44 cubic yards of 6"-4" pit-run rock to establish ditchline filters in accordance with Exhibit D and as directed by STATE.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
I1 to I2	39+70	Install new culvert. Utilize 22 cubic yards 1 ½"-0" stockpile rock for bedding and backfill.
	48+70	Install culvert outlet energy dissipator. Utilize 22 cubic yards 24"-6" riprap rock.
	52+10	End road improvement.
I3 to I4	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize 4"-0" crushed rock for leveling. Begin four inch lift of 4"-0" crushed rock.
	26+70	Begin utilizing excavator to reestablish ditchline.
	28+70	End utilizing excavator to reestablish ditchline.
	92+70	Install culvert outlet energy dissipator. Utilize 22 cubic yards 24"-6" riprap rock.
	96+90	Utilize excavator to construct slopes of existing slide to 1½ :1. End haul waste material to approved waste area on site. Utilize 77 cubic yards 24"-6" riprap rock for fill slope improvement and armoring. Install culvert outlet energy dissipator. Utilize 44 cubic yards 24"-6" riprap rock.
	101+85	Culvert replacement / fill reconstruction. Utilize: 77 cubic yards of 1 ½"-0" stockpile rock for culvert bedding and backfill, 44 cubic yards 24"-6" riprap rock for energy dissipator, 77 cubic yards 24"-6" riprap rock for fill armor, 33 cubic yards 4"-0" stockpile rock for road base replacement, and 22 cubic yards 4"-0" stockpile rock for road surface replacement.
	112+20	Install rock ditch filter. Utilize 22 cubic yards of 6"-4" pit-run rock to establish ditchline filter in accordance with Exhibit D and as directed by STATE.
	113+60	Install rock ditch filter. Utilize 22 cubic yards of 6"-4" pit-run rock to establish ditchline filter in accordance with Exhibit D and as directed by STATE.
	114+20	Install new culvert. Utilize 22 cubic yards 1 ½"-0" stockpile rock for bedding and backfill.
	112+30	End road improvement. End four inch lift 4"-0" crushed rock.
I5 to I6	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize 1 ½"-0" crushed rock for leveling.
	1+40	Improve curve connecting road segment I3 to I4 to I5 to I6. Construct eight foot subgrade and six foot surfaced outside curve widening. Scatter waste material onsite as approved by STATE. Apply eight inch lift of 4"-0" crushed rock for new surfacing.
	25+40	Begin four inch lift of 1 ½"-0" crushed rock.
	26+80	Install new culvert. Utilize 22 cubic yards 1 ½"-0" stockpile rock for bedding and backfill.
	28+30	Utilize 33 cubic yards 4"-0" crushed rock for turnout base reinforcement.
	28+90	Utilize 11 cubic yards 4"-0" for road base reinforcement

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
I5 to I6	30+10	Install new culvert. Utilize 44 cubic yards 1 ½"-0" stockpile rock for bedding and backfill. Utilize 22 cubic yards 24"-6" riprap rock for culvert outlet energy dissipator.
	30+60	Replace existing culvert. Utilize 44 cubic yards 1 ½"-0" stockpile rock for bedding and backfill. Utilize 11 cubic yards 24"-6" riprap rock for culvert outlet energy dissipator.
	48+80	Replace existing culvert. Utilize 22 cubic yards 1 ½"-0" stockpile rock for bedding and backfill.
	53+50	Construct Landing 2F.
	58+50	Install new culvert. Utilize 22 cubic yards 1 ½"-0" stockpile rock for bedding and backfill. Utilize 11 cubic yards 24"-6" riprap rock for culvert outlet energy dissipator.
	61+00	Utilize excavator to improve truck turnaround, utilize 33 cubic yards 6"-0" pit-run rock
	63+00	End road improvement. End four inch lift of 1 ½"-0" crushed rock. Utilize excavator to improve landing, utilize 55 cubic yards 6"-0" pit-run rock.
I7 to I8	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize 4"-0" crushed rock for leveling. Begin four inch lift of 4"-0" crushed rock.
	4+20	Culvert replacement / fill reconstruction. Utilize 77 cubic yards of 1 ½"-0" stockpile rock for culvert bedding and backfill, 33 cubic yards 24"-6" riprap rock for energy dissipator, 55 cubic yards 24"-6" riprap rock for fill armor, 33 cubic yards 4"-0" stockpile rock for road base replacement, and 22 cubic yards 4"-0" stockpile rock for road surface replacement.
	7+90	Install new culvert. Utilize 22 cubic yards 1 ½"-0" stockpile rock for bedding and backfill. Utilize excavator to improve ditchout.
	12+80	Install rock ditch filter. Utilize 22 cubic yards of 6"-4" pit-run rock to establish ditchline filter in accordance with Exhibit D and as directed by STATE.
	13+20	Culvert replacement / fill reconstruction. Utilize 88 cubic yards of 1 ½"-0" stockpile rock for culvert bedding and backfill, 33 cubic yards 24"-6" riprap rock for energy dissipator, 187 cubic yards 24"-6" riprap rock for fill armor, 33 cubic yards 4"-0" stockpile rock for road base replacement, and 22 cubic yards 4"-0" stockpile rock for road surface replacement.
	13+60	Install rock ditch filter. Utilize 22 cubic yards of 6"-4" pit-run rock to establish ditchline filter in accordance with Exhibit D and as directed by STATE.
	22+30	Replace existing culvert. Utilize 22 cubic yards 1 ½"-0" stockpile rock for bedding and backfill. Utilize 11 cubic yards 24"-6" riprap rock for culvert outlet energy dissipator.
	24+20	Replace and realign existing culvert. Utilize 22 cubic yards 1 ½"-0" stockpile rock for bedding and backfill. Utilize 11 cubic yards 24"-6" riprap rock for culvert outlet energy dissipator. Utilize excavator to construct ditchout.
	31+00	Construct Landing 2E.
	34+50	End road improvement. End four inch lift of 4"-0" crushed rock.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
I9 to I10	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize 4"-0" crushed rock for leveling. Begin four inch lift of 4"-0" crushed rock. Begin two inch traction lift of 1 ½"-0" crushed rock.
	2+50	End two inch traction lift of 1 ½"-0" crushed rock.
	18+70	Replace existing culvert. Utilize 22 cubic yards 1 ½"-0" stockpile rock for bedding and backfill.
	29+10	Utilize excavator to improve truck turnaround, utilize 33 cubic yards 6"-0" pit-run rock.
	36+00	End road improvement. End four inch lift of 4"-0" crushed rock.
I11 to I12	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Begin four inch lift of 4"-0" crushed rock.
	4+80	Construct truck turnaround, utilize 33 cubic yards 6"-0" pit-run rock.
	7+00	End road improvement. End four inch lift of 4"-0" crushed rock. Utilize excavator to improve landing, utilize 77 cubic yards 6"-0" pit-run rock.
I13 to I14	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Utilize 4"-0" crushed rock for leveling. Begin four inch lift of 4"-0" crushed rock.
	17+40	Utilize excavator to improve existing ditchout.
	30+60	Improve existing culvert outlet.
	34+20	Utilize excavator to improve truck turnaround, utilize 33 cubic yards 6"-0" pit-run rock.
	36+60	End road improvement. End four inch lift of 4"-0" crushed rock. Utilize excavator to improve landing, utilize 77 cubic yards 6"-0" pit-run rock.

EXHIBIT D
FULL BENCH AND END-HAUL REQUIREMENTS

POINT TO POINT	STA. TO STA.	CONTAINMENT - SIDECAST	WASTE AREA TREATMENT
1A to 1B	1+00 to 2+80	3	1
1A to 1B	13+50 to 15+00	2	2
I3 to I4	96+90	2	3

Full Bench and End-Haul Areas General Requirements

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. Material shall not be sidecast unless specified above.

Clearing and grubbing debris shall be end-hauled.

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

Containment/Sidecast

- (1) Full: No excavated material remains below the road.
- (2) Normal/Incidental: The amount of excavated material lost over the outside edge of the road shall not exceed one foot in depth.
- (3) Sidecast: Material shall be spread evenly below the road so that it does not build up behind trees, snags or other debris, and shall not exceed three feet in depth. Sidecast shall not be placed where it will enter a stream course or where material will accumulate in areas deemed a high-risk site by STATE.

Any amount of material exceeding the containment requirements shall be removed by whatever means necessary and end-hauled to a designated waste area.

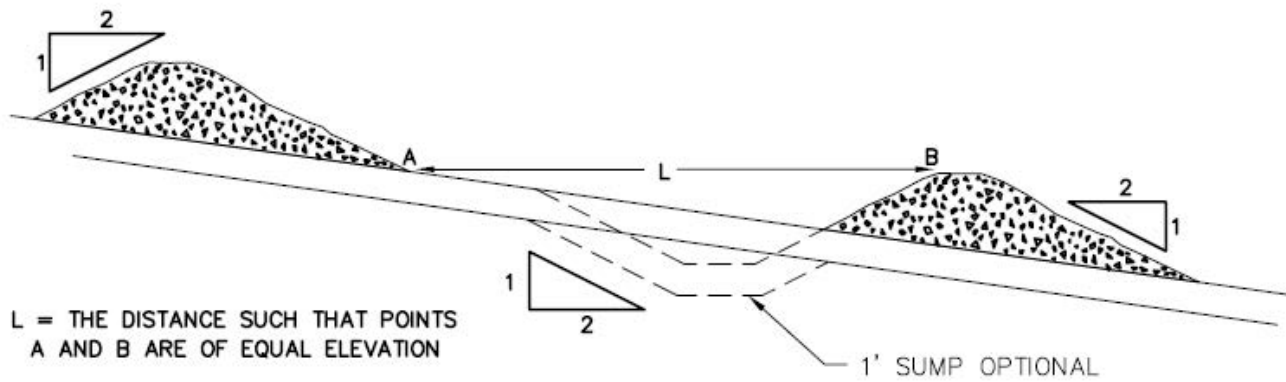
Waste Area Location

- Waste Area No. 1 as shown on Exhibit A and as marked in the field.
- Waste Area No. 2 is for fill construction on Road Segment 1A to 1B Station 5+50.
- Waste Area No. 3 is for fill construction on Road Segment 1A to 1B Station 18+50.

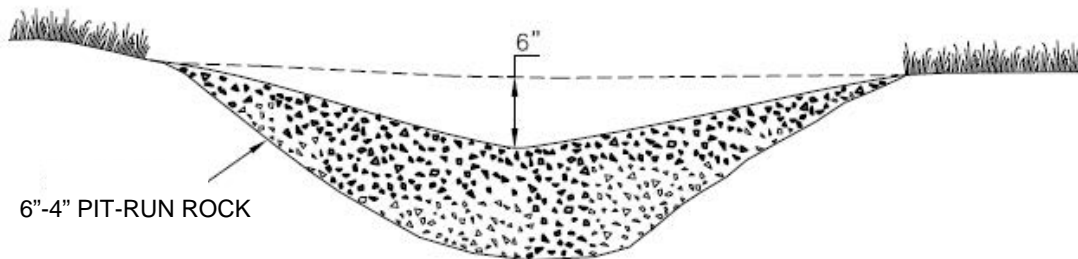
Waste Area Treatment

- Deposit at waste area, spread evenly, compact, and provide adequate drainage.
- Pile woody debris separate from other waste material.
- Mulch and seed all waste areas in accordance with Exhibit L.

EXHIBIT D
TYPICAL ROCK DITCH FILTER



SPACING BETWEEN ROCK FILTERS



ROCK DITCH FILTER

EXHIBIT D
ROAD SURFACING

ROAD SEGMENT: 1A to 1B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A to 1B		0+00 to 30+70		
				Volume (CY) per		Number of		
Base Rock	4"-0" crushed	0+00 to 28+00	8	station	50	stations	28.00	1,400
Base Rock	6"-0" pit-run	28+00 to 30+70	10	station	63	stations	2.70	170
Turnouts	4"-0" crushed	4+00, 7+50, 12+50, 16+80	8	turnout	22	turnouts	4	88
Turnout/Turnaround	4"-0" crushed	18+00, 28+00	8	TO/TA	33	TO/TA	2	66
Curve Widening	4"-0" crushed	3+60 to 4+40	8	N/A		N/A		54
Curve Widening	4"-0" crushed	12+60 to 12+90	8	N/A		N/A		11
Culvert Bedding/Backfill	1 1/2"-0" Stockpile	0+00	N/A	culvert	11	culverts	1	11
Culvert Outlet Dissipator	24"-6" riprap	0+00, 5+30	N/A	dissipator	11	dissipators	2	22
Junction establishment	4"-0" crushed	1A		junction	77	junctions	1	77
Traction Rock	1 1/2"-0" crushed	24+50 to 28+50	3	station	19	stations	4	76
Landings	6"-0" pit-run	20+00, 24+50, 1B	N/A	landing	77	landings	3	231
Total Rock for Road Segment:				1A to 1B				2,206
ROAD SEGMENT: 1C to 1D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1C to 1D		0+00 to 7+00		
				Volume (CY) per		Number of		
Base Rock	4"-0" crushed	0+00 to 7+00	8	station	50	stations	7.00	350
Junction	4"-0" crushed	1C	8	junction	22	junctions	1	22
Landings	6"-0" pit-run	5+30, 1D	N/A	landing	77	landings	2	154
Total Rock for Road Segment:				1C to 1D				526
ROAD SEGMENT: 1E to 1F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1E to 1F		0+00 to 6+00		
				Volume (CY) per		Number of		
Base Rock	6"-0" pit-run		8	station	44	stations	0.50	22
Total Rock for Road Segment:				1E to 1F				22

EXHIBIT D
ROAD SURFACING

ROAD SEGMENT : 2A to 2B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B		0+00 to 15+50		
				Volume (CY) per		Number of		
Base Rock	6"-0" pit-run	0+00 to 0+50	8	station	44	stations	0.50	22
Subgrade Reinforcement	6"-0" pit-run	4+25, 5+25, 9+00	8	station	22	stations	3.00	66
Total Rock for Road Segment:				2A to 2B				88
ROAD SEGMENT: 2C to 2D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2C to 2D		0+00 to 3+50		
				Volume (CY) per		Number of		
Base Rock	6"-0" pit-run		8	station	44	stations	0.50	22
Total Rock for Road Segment:				2C to 2D				22
ROAD SEGMENT: 2E, 2F, and 3A				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2E, 2F, and 3A		N/A		
				Volume (CY) per		Number of		
Landings	6"-0" pit-run	2E, 2F, and 3A	N/A	Landing	55	Landings	3	165
Total Rock for Road Segment:				2E, 2F, and 3A				165

EXHIBIT D
ROAD SURFACING

ROAD SEGMENT: I1 to I2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2		0+00 to 52+10		
				Volume (CY) per		Number of		
Leveling Rock	1 1/2"-0" crushed	1+30, 8+50, 11+00, 12+70, 15+00, 26+70, 36+00, 41+30, 45+10, 49+50, 52+10	N/A	load	11	loads	11	121
Culvert Bedding/Backfill	1 1/2"-0" stockpile	25+80	N/A	culvert	99	culverts	1	99
Base Rock	4"-0" stockpile	25+80	N/A	load	11	loads	3	33
Surfacing	1 1/2"-0" stockpile	25+80	N/A	load	11	loads	2	22
Fill Armor	24"-6" riprap	25+80	N/A	load	11	loads	12	133
Culvert Outlet Dissipator	24"-6" riprap	25+80	N/A	dissipator	44	dissipators	1	44
Rock Ditch Filters	6"-4" pit-run	12+00,13+50, 25+30, 26+10,	N/A	filter	22	filters	4	88
Rock Ditch Filters	6"-4" pit-run	30+00, 32+30	N/A	filter	44	filters	2	88
Culvert Bedding/Backfill	1 1/2"-0" crushed	39+70	N/A	culvert	22	culverts	1	22
Additional Leveling Rock	1 1/2"-0" crushed	41+30,	N/A	load	11	loads	1	11
Culvert Outlet Dissipator	24"-6" riprap	48+70	N/A	dissipator	22	dissipators	1	22
Total Rock for Road Segment:				I1 to I2				683

EXHIBIT D
ROAD SURFACING

ROAD SEGMENT: I3 to I4				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3 to I4		0+00 to 122+30		
				Volume (CY) per		Number of		
Surfacing	4"-0" crushed	0+00-122+30	4	station	25	stations	122.0	3,050
Leveling Rock	4"-0" crushed	6+90, 99+50, 105+30, 112+90, 117+90	N/A	load	11	loads	5	55
Junction Rock	4"-0" crushed	3+50, 29+80, 37+50, 51+90, 76+00, 76+10, 79+20, 83+90	N/A	junction	11	junctions	8	88
Additional Junction Rock	4"-0" crushed	29+80, 37+50, 51+90, 76+00, 83+90	N/A	junction	11	junctions	5	55
Turnouts	4"-0" crushed	16+60, 27+70, 60+00, 67+80, 70+00, 87+50, 92+00, 99+40, 104+70, 109+40, 116+00, 120+30	N/A	turnout	11	turnouts	12	132
Culvert Outlet Dissipator	24"-6" riprap	92+70, 96+90	N/A	load	11	loads	6	66
Fill Slope Reconstruction	24"-6" riprap	96+90	N/A	load	11	loads	7	77
Culvert Bedding/Backfill	1 1/2"-0" stockpile	101+85	N/A	load	11	loads	7	77
Base Rock	4"-0" stockpile	101+85	N/A	load	11	loads	3	33
Surfacing	4"-0" stockpile	101+85	N/A	load	11	loads	2	22
Fill Armor	24"-6" riprap	101+85	N/A	load	11	loads	7	77
Culvert Outlet Dissipator	24"-6" riprap	101+85	N/A	load	11	loads	4	44
Rock Ditch Filters	6"-4" pit-run	112+20, 113+60	N/A	filter	22	filters	2	44
Culvert Bedding/Backfill	1 1/2"-0" stockpile	104+00, 114+20	N/A	culvert	22	culverts	2	44
Total Rock for Road Segment:				I3 to I4				3,864

EXHIBIT D
ROAD SURFACING

ROAD SEGMENT: I5 to I6				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I5 to I6		0+00 to 63+00		
				Volume (CY) per		Number of		
Surfacing	1 1/2"-0" crushed	25+40-63+00	4	station	25	stations	37.6	940
Curve Widening Base	4"-0" crushed	1+40	8	station	50	stations	0.5	25
Leveling Rock	4"-0" crushed	28+90	N/A	load	11	loads	1	11
Leveling Rock	1 1/2"-0" crushed	28+90, 32+00, 47+00, 48+60, 49+80	N/A	load	11	loads	5	55
Additional Leveling Rock	1 1/2"-0" crushed	32+00	N/A	load	11	loads	1	11
Turnouts	1 1/2"-0" crushed	28+30, 34+70, 53+20	N/A	turnout	11	turnouts	3	33
Additional Turnout Rock	1 1/2"-0" crushed	28+30	N/A	turnout	11	turnouts	1	11
Turnout Subgrade	4"-0" crushed	28+30	N/A	load	11	loads	3	33
Culvert Bedding/Backfill	1 1/2"-0" stockpile	26+80, 30+10, 30+60, 48+80, 58+50	N/A	culvert	22	culverts	5	110
Additional Culvert Bedding	1 1/2"-0" stockpile	30+10, 30+60	N/A	culvert	11	culverts	2	22
Culvert Outlet Dissipator	24"-6" riprap	30+10, 30+60, 58+50	N/A	culvert	11	culverts	3	33
Additional Culvert Dissipator	24"-6" riprap	30+10	N/A	culvert	11	culverts	1	11
Turnaround	6"-0" pit-run	61+00	N/A	turnaround	33	TA's	1	33
Landing Improvement	6"-0" pit-run	63+00	N/A	landing	55	landings	1	55
Total Rock for Road Segment:				I5 to I6				1,383

EXHIBIT D
ROAD SURFACING

ROAD SEGMENT: I7 to I8				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I7 to I8		0+00 to 34+50		
				Volume (CY) per		Number of		
Surfacing	4"-0" crushed	0+00-34+50	4	station	25	stations	35.0	875
Leveling Rock	4"-0" crushed	4+20, 5+70, 13+20, 18+20	N/A	load	11	loads	4	44
Additional Leveling Rock	4"-0" crushed	13+20, 18+20	N/A	load	11	loads	2	22
Turnouts	4"-0" crushed	6+70, 15+40, 20+70	N/A	turnout	11	turnouts	3	33
Culvert Bedding/Backfill	1 1/2"-0" stockpile	4+20	N/A	load	11	loads	7	77
Base Rock	4"-0" stockpile	4+20	N/A	load	11	loads	3	33
Surfacing	4"-0" stockpile	4+20	N/A	load	11	loads	2	22
Fill Armor	24"-6" riprap	4+20	N/A	load	11	loads	5	55
Culvert Outlet Dissipator	24"-6" riprap	4+20	N/A	load	11	loads	3	33
Culvert Bedding/Backfill	1 1/2"-0" stockpile	13+20	N/A	load	11	loads	8	88
Base Rock	4"-0" stockpile	13+20	N/A	load	11	loads	3	33
Surfacing	4"-0" stockpile	13+20	N/A	load	11	loads	2	22
Fill Armor	24"-6" riprap	13+20	N/A	load	11	loads	17	187
Culvert Outlet Dissipator	24"-6" riprap	13+20	N/A	load	11	loads	3	33
Rock Ditch Filters	6"-4" pit-run	12+80, 13+60	N/A	filter	22	filters	2	44
Culvert Bedding/Backfill	1 1/2"-0" stockpile	7+90, 22+30, 24+20	N/A	culvert	22	culverts	3	66
Culvert Outlet Dissipator	24"-6" riprap	22+30, 24+20	N/A	dissipator	11	dissipators	2	22
Total Rock for Road Segment:				I7 to I8				1,689

EXHIBIT D
ROAD SURFACING

ROAD SEGMENT: I9 to I10				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I9 to I10		0+00 to 36+00		
				Volume (CY) per		Number of		
Surfacing	4"-0" crushed	0+00-36+00	4	station	25	stations	36.0	900
Traction Rock	1 1/2"-0" crushed	0+00-2+50	2	station	13	stations	2.5	33
Leveling Rock	4"-0" crushed	15+60, 28+70,	N/A	load	11	loads	2	22
Junction Rock	1 1/2"-0" crushed	0+00	N/A	load	11	loads	2	22
Junction Rock	4"-0" crushed	8+20, 14+30	N/A	load	11	loads	2	22
Turnouts	4"-0" crushed	6+10, 11+00, 16+50, 20+60, 25+30, 32+00	N/A	turnout	11	turnouts	6	66
Turnaround	6"-0" pit-run	29+10	N/A	turnaround	33	TA's	1	33
Culvert Bedding/Backfill	1 1/2"-0" stockpile	18+70	N/A	culvert	22	culverts	1	22
Total Rock for Road Segment:				I9 to I10				1,120
ROAD SEGMENT: I11 to I12				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I11 to I12		0+00 to 7+00		
				Volume (CY) per		Number of		
Surfacing	4"-0" crushed	0+00-7+00	4	station	25	stations	7.0	175
Turnaround	6"-0" pit-run	4+80	N/A	turnaround	33	TA's	1	33
Landing Improvement	6"-0" pit-run	7+00	N/A	landing	77	landings	1	77
Total Rock for Road Segment:								285

EXHIBIT D
ROAD SURFACING

ROAD SEGMENT: I13 to I14				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I13 to I14		0+00 to 36+60		
				Volume (CY) per		Number of		
Surfacing	4"-0" crushed	0+00-36+60	4	station	25	stations	36.6	915
Leveling Rock	4"-0" crushed	1+10, 3+60, 9+20, 12+90, 17+80, 20+40, 22+90, 27+80, 28+80, 33+30, 34+70	N/A	load	11	loads	11	121
Additional Leveling Rock	4"-0" crushed	34+70	N/A	load	11	loads	1	11
Turnouts	4"-0" crushed	2+90, 6+10, 15+50, 18+90, 26+30, 34+20	N/A	turnout	11	turnouts	6	66
Junction Rock	4"-0" crushed	5+40, 12+30, 21+70	N/A	junction	11	junctions	3	33
Turnaround	6"-0" pit-run	34+20	N/A	turnaround	33	turnarounds	1	33
Landing Improvement	6"-0" pit-run	36+60	N/A	landing	77	landings	1	77
Total Rock for Road Segment:				I13 to I14				1,256

ROCK TOTALS (CY)	24"-6" rr	6"-0" pr	4"-0" crushed	1½"-0" crushed	4"-0" Sp	1 ½"-0" Sp
13,309	859	1,457	8,822	1,335	198	638

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

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.

Rock Checking. All rock spreading shall be done only when a STATE representative is present. STATE shall issue a receipt for each load delivered, and rock shall be measured without allowance for shrinkage or shakedown during hauling. Total truck measure volume for each road segment shall be as shown on Exhibit D. Deliver at least 500 cubic yards per 8-hour shift, unless otherwise approved by STATE. A penalty of \$10 for each 10 cubic yards which are not delivered during a single shift shall be billed, and payment shall be required prior to final acceptance of the project by STATE.

Depth Measurement. Rock shall be spread and compacted according to the depths specified in Exhibit 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.

Load Records. Notify STATE before spreading the rock and maintain a record of all rock delivered for spreading. Make the record available for STATE inspection. A report listing the amount of rock delivered the prior month must be submitted no later than the 15th of each month.

EXHIBIT 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	1

Fills. Embankments and fills shall be placed in (approximately) horizontal layers not more than 8 inches in depth. Each layer shall be separately, and thoroughly, compacted. Compaction equipment shall be operated over the entire width of each layer until visible deformation of the layers ceases. 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	1, 2, 3, or 4

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 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.	1

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	1

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) Rubber-Tired Skidders. A rubber-tired skidder weighing a minimum of 20,000 pounds shall be operated over the fill layers so that the entire layered surface comes in contact with the tires. Skidders with oversized tires (high flotation) are not acceptable for compaction.
- (3) Tampingfoot Compactors. Tampingfoot compactors shall exert a minimum pressure of 250 pounds per square inch on the ground area in contact with the tamping feet. The compactor shall cover a minimum width of 60 inches per pass and weigh a minimum of 16,000 pounds.
- (4) 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.

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, corrugated aluminized (Type 2) steel, or corrugated galvanized steel.

Polyethylene culverts shall be double-walled and meet the requirements of AASHTO M-294-06, Type S Culvert.

Aluminized (Type 2) steel culverts shall meet the requirements of AASHTO M-36-03¹.

Galvanized steel culverts shall meet the requirements of AASHTO M-36-03¹.

Polyethylene culverts shall not be used where required culvert diameter is over 24 inches.

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 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.

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 culverts on road improvement segments.

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

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

Minimum height of cover over top of culvert to subgrade when road is to be rockered shall be as follows: 12" for culverts 18" to 36" and 18" for culverts 42" to 96". 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.

EXHIBIT E
CULVERT SPECIFICATIONS

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

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.

Culverts 24 inches in diameter or larger shall have 1:1 beveled inlets.

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

All culverts scheduled for replacement shall become property of the PURCHASER and be removed from STATE land and hauled to an approved refuse site 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 white fiberglass posts within 6 inches of the downgrade side. Posts shall be a minimum of 6 feet long and 2½ inches wide, with the spade driven 2 feet into the ground.

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>
12-15	16	(0.0598")	(0.064")	16	7	12
18-24	16	(0.0598")	(0.064")	16	12	12
30-36	16	(0.0598")	(0.064")	16	12	12
42	14	(0.0747")	(0.079")	16	12	12
48	14	(0.0747")	(0.079")	16	24	24
54	14	(0.0747")	(0.079")	16	24	24
60	12	(0.1046")	(0.109")	16	24	24
66-72	12	(0.1046")	(0.109")	16	24	24
78	12	(0.1046")	(0.109")	16	24	24
84	12	(0.1046")	(0.109")	16	24	24
90-120	12	(0.1046")	(0.109")	16	26	26

Culverts larger than 60" in diameter shall have (3" x 1") corrugations.

EXHIBIT E
CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	GAUGE	ROAD SEGMENT POINT TO POINT	STATION
1	36	60	ACSP	14	I1 to I2	25+80
2	18	30	CPP		I1 to I2	39+70
3	24	50	ACSP	14	I3 to I4	101+85
4*	18	40	CPP		I3 to I4	104+00
5*	18	30	CPP		I3 to I4	114+20
6	18	30	CPP		I5 to I6	26+80
7	18	30	CPP		I5 to I6	30+10
8	18	30	CPP		I5 to I6	30+60
9	18	30	CPP		I5 to I6	48+80
10	18	30	CPP		I5 to I6	58+50
11	24	50	ACSP	14	I7 to I8	4+20
12	18	40	CPP		I7 to I8	7+90
13	24	70	ACSP	14	I7 to I8	13+20
14	18	30	CPP		I7 to I8	22+30
15	18	40	CPP		I7 to I8	24+20
16	18	40	CPP		I9 to I10	18+70
17	18	30	CPP		1A to 1B	0+00
18	18	40	CPP		1A to 1B	5+30
19	18	40	CPP		1A to 1B	18+50
20	18	30	CPP		1A to 1B	22+30

ACSP = Aluminized, CPP = Polyethylene
* = Ditch Disconnect Culvert

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

1. PURCHASER shall prepare a written development plan for the quarry and crusher site 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 five days prior to the start of quarry development activities.
3. 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. Overburden shall be removed for a distance of 20 feet beyond the developed rock source.
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. At the Tidewater Loop No. 2 Quarry, prior to development of any rock source areas, stabilize quarry top. Remove all timber within the posted right-of-way boundary, merchantable timber (if any) shall not be considered reserved timber. All timber / woody debris shall be piled and disposed of by burning, as directed by STATE. Pull back and stabilize quarry top. Excavated material may be windrowed in a stable location above the quarry, as directed by STATE, or hauled to the designated waste area.
6. At the Tidewater Loop No. 2 Quarry, rock source Areas 1 and 2 shall be developed and removed prior to development of rock source Area 3. Prior to development of rock source Area 3, remove overburden between rock source Area 2 and rock source Area 3. Overburden shall be keyed into slope between bottom of rock source Area 2 and quarry floor.
7. Reopen existing benches as necessary prior to establishing new benches. 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 or drilling equipment.
8. PURCHASER shall obtain a FPA Burn Permit prior to debris disposal at the Tidewater Loop No. 2 Quarry.
9. Quarry face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.
10. Controlled blasting techniques shall be utilized for any blasting operations, and shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain as much material as possible within the quarry development area. PURCHASER shall maintain a comprehensive blasting log that contains all pertinent data for all blasting operations. The blasting log shall be submitted to the STATE after the completion of all blasting activity. The blasting log is intended for STATE record keeping purposes only.

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

11. Blasting shall not be allowed from April 1, through September 15, unless otherwise approved in writing by STATE.
12. Oversized material that is produced or encountered during development shall be broken down and utilized for crushing.
13. The quarry floor shall be developed to provide drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained. Quarry access roads shall be cleared and blocked upon completion of quarry use, as directed by STATE.
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.
15. Apply seed and mulch to the waste areas, as specified in Exhibit L.
16. PURCHASER may open old brushed in access roads to gain access to the top of the Rock Source, as approved and directed by STATE.

EXHIBIT F
ROCK QUARRY DEVELOPMENT AND USE

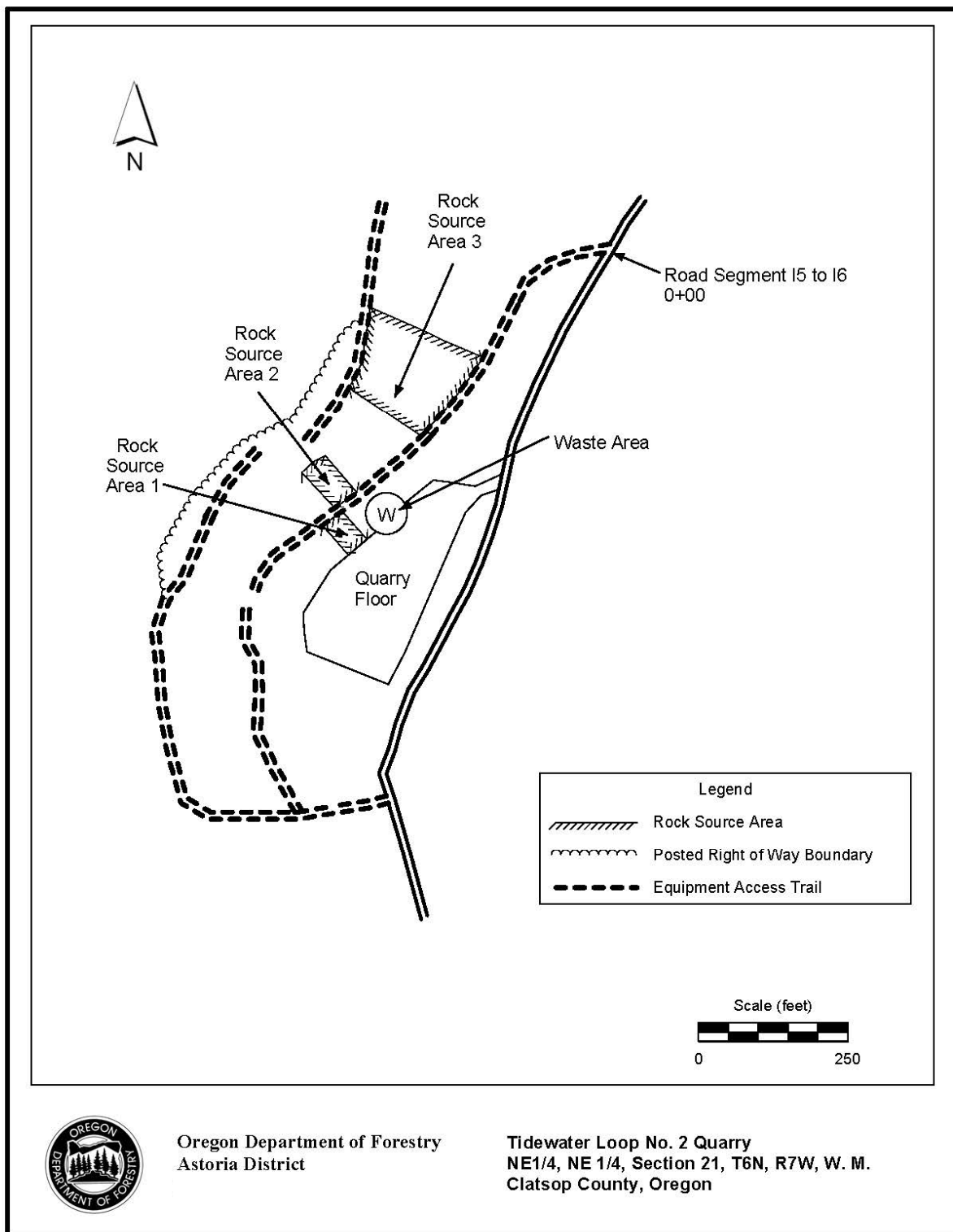


EXHIBIT G

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.

Rock strength: for rock not produced from STATE quarries, the material from which base material is produced or manufactured shall meet the following test requirement for Aggregate Hardness - Test Method AASHTO T 96, 35 percent 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 G

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%

<u>For 4"-0"</u>	Passing	5" sieve	100%
	Passing	4" sieve	90-100%
	Passing	2" sieve	60-90%
	Passing	¾" sieve	35-60%
	Passing	¼" sieve	15-35%
	Passing	No. 10 sieve	0-20%

JAW-RUN, PIT-RUN and RIPRAP ROCK SPECIFICATIONS

<u>For 6"-0" Pit-Run</u>	Passing	10" sieve	100%
	Passing	6" sieve	60-85%
	Passing	3" sieve	30-50%
	Passing	1/4" sieve	0-20%

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

Control of gradation shall be by visual inspection by STATE.

EXHIBIT H

TEST DRILLING REQUIREMENTS

- (1) PURCHASER shall notify STATE a minimum of 48 hours prior to beginning any operations. A STATE Representative shall be present during test drilling to monitor results, issue instructions, determine test hole locations and depths.
- (2) Work scheduling 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. Any exception to these instructions must be authorized in writing by STATE.
- (3) The hydraulic rock drill shall be a crawler-type in the 40,000 pound class or greater, with a minimum penetration rate of 120 feet per hour while drilling a 3½"-6" bore hole, in overburden, fractured rock and solid rock.
- (4) The operator shall be experienced in operating the required equipment and be able to operate the equipment proficiently and efficiently. If STATE determines that an operator(s) or other personnel is/are not operating in a proficient and efficient manner, STATE considers the operator(s) or personnel not approved and not acceptable and may require the PURCHASER to do one or more of the following measures:
 - Replace operator(s) and/or personnel;
 - Replace equipment.
- (5) 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.
- (6) Test holes shall be drilled to determine mass attitudes of rock strata, rates of drill advancement, depths of overburden and other pertinent information.
- (7) Each test hole shall be staked and assigned an individual number. Test holes shall be drilled for various depths, as directed by STATE.
- (8) STATE may elect to change the test drilling locations at the drilling sites. However, no more than a total of 40 hours of hydraulic rock drill time and 20 hours of large excavator time will be utilized.
- (9) Equipment trail construction will be required. Trails shall be constructed by PURCHASER using a large excavator. All routes and location of access trails shall be flagged and approved by STATE prior to construction.
- (10) Cutting of trees may be necessary for access for test drilling. Trees to be cut shall be approved by STATE. Trees cut at the test drilling sites shall be, properly accounted for prior to felling, decked as directed by STATE, and shall remain the property of the STATE.
- (11) Trails constructed shall be water barred and blocked, as directed by STATE.

EXHIBIT H

TEST DRILLING REQUIREMENTS

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

- (13) Site Priority. Test drilling priority shall be as listed and shall be completed prior to August 31, 2016.

<u>Priority</u>	<u>Site Location</u>
-----------------	----------------------

- | | |
|----|--|
| 1. | Tidewater Loop & Tidewater Loop No. 2 Quarries (Drill Site #1) |
| 2. | Sarajarvie Borrow Site (Drill Site #2) |
| 3. | Trailover Quarry (Drill Site #3) |
| 4. | Wild Goose Test Site (Drill Site #4) |

- (14) Penalty. A penalty of \$250 per day shall be assessed for any 8-hour work day that either equipment, personnel, or supplies are not operating or available due to failure to supply approved and acceptable equipment, personnel, or supplies in order to continue the project for priority sites one, two, and three in an efficient and progressive manner.

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

- | | | |
|-----|---|----------------------------|
| (a) | C330 excavator, or equivalent, and operator. | \$ 155 per operating hour |
| (b) | Hydraulic drill (3½"-6" bore hole), and operator. | \$ 307 per operating hour |
| (c) | C330 mobilization with lowboy. | \$ 1,406 per approved move |
| (d) | Hydraulic drill mobilization with lowboy. | \$ 1,406 per approved move |
| (e) | Hydraulic drill mobilization partial move. | \$ 703 per approved move |

- (16) Credit for Project Work. Final credit for Project No. 4 shall not exceed \$19,598 per Section 2630, "Credit for Project Work," in the Timber Sale Contract. STATE may adjust the credit in Section 2630 in the event that the work is completed prior to using all available credit rates.

EXHIBIT I

TYPICAL EMBEDDED ENERGY DISSIPATOR

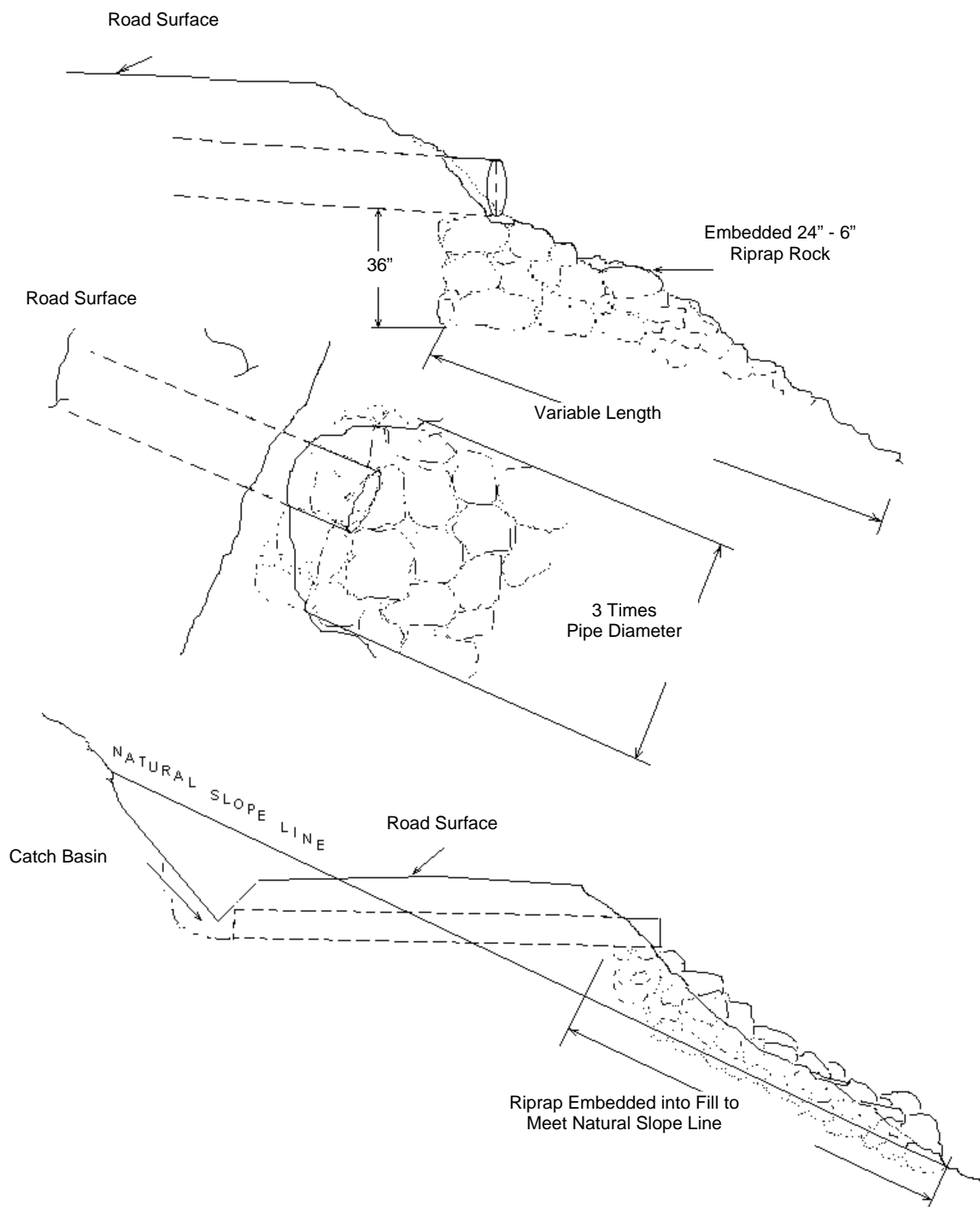
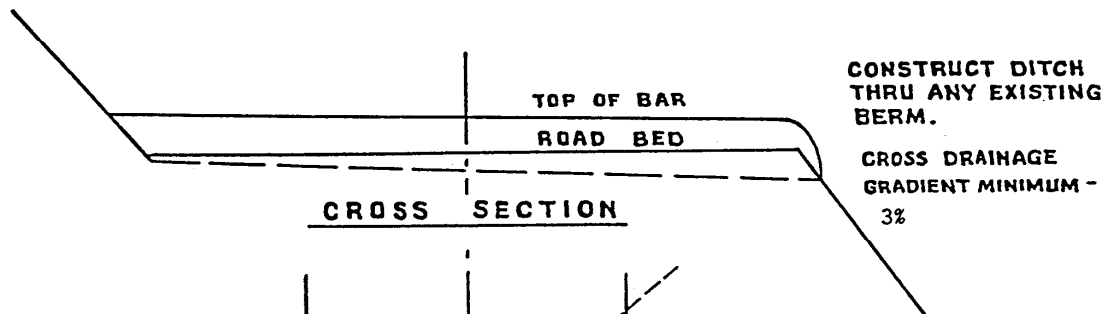
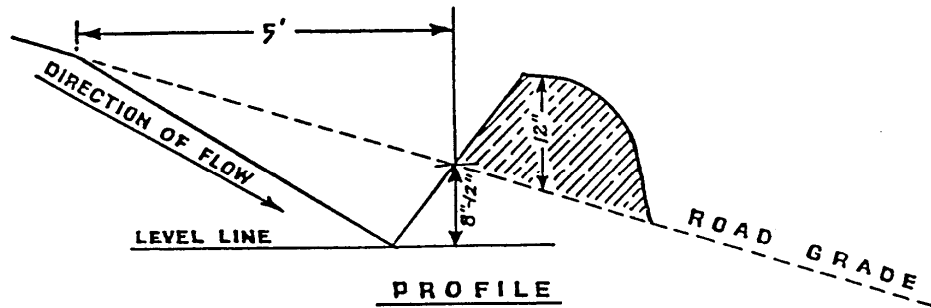


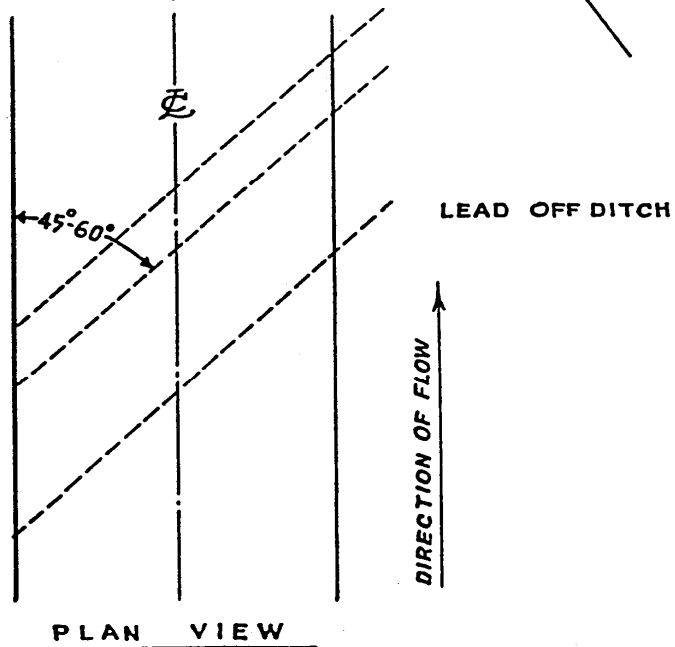
EXHIBIT J

WATERBAR SPECIFICATIONS



SPACING OF WATERBARS

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



WATERBAR SPECIFICATIONS
 FOR CROSS DITCHING #298

EXHIBIT K

ROAD VACATING SPECIFICATIONS

PURCHASER shall vacate at the following points: V1 to V2. Specific objectives for this project include:

- (a) Fill removal and stream channel development.
 - (b) Culvert removal.
 - (c) Minimize disturbance of existing vegetation.
- (1) Tree Removal. Cut or remove all trees necessary to access the project area and to facilitate vacating operations, as directed by STATE. Timber shall NOT be removed as designated timber, unless located within posted timber sale boundaries or right-of-way boundaries.
 - (2) Fill Removal and Stream Channel Development. Remove fills to the natural stream course levels. Stream channels shall be excavated/developed to specified widths. Developed stream banks shall be sloped at natural contours or no steeper than 1 ½:1, as directed by STATE.
 - (3) Culvert Removal. Remove drainage structures and culverts. Removed culverts shall be hauled to an approved refuse site off of STATE land.
 - (4) Use of Excavated Materials.
 - (A) Fill Excavation and Sidecast Pullback. Excavated materials shall be placed on the interior (cut) side of the road, and utilized to restore the cutslope to natural contours, or to a minimum 10 percent outsloped surface for drainage. Any excess material will be hauled to a designated waste area, as directed by STATE.
 - (B) Woody Debris Shall be placed on the surface of pullback/fill material.
 - (C) Block Roads. Use excavated material from fill removals to block roads from vehicle access, as directed by STATE.
 - (5) Erosion Control. Erosion control shall be completed in a progressive manner. Grass seed and straw mulch shall be applied for every 500 feet of road vacated, prior to continuing work.

All excavated material and bare soil shall utilize grass seed and straw mulch approved by STATE and in accordance with the specifications in Exhibit L. Applied mulch shall be a minimum of two inches deep and provide a uniform cover.
 - (6) Construct Waterbars as directed by STATE. Construct waterbars according to the specifications in Exhibit J.

EXHIBIT K

ROAD VACATING SPECIFICATIONS

- (7) Equipment. A minimum 1½ cubic-yard, track mounted excavator shall be used for all excavation, culvert removal, streambed preparation, road blocking, and waterbarring, unless otherwise approved in writing by STATE.
- (8) Dry Conditions. All work shall be performed during dry weather periods and low water stream flows acceptable to STATE.
- (9) Support, including transport, other equipment, replacements, supplies, maintenance, and repairs, shall be furnished as required to complete the project and shall be furnished without cost to STATE, other than as agreed under the contract terms.

SPECIFIC INSTRUCTIONS/SPECIFICATIONS :

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
V1 to V2	0+00	Begin road vacating as specified above in General Instructions and below in the Specific Instructions. Timber shall not be removed as designated timber. Construct road block / waterbar. Seed and mulch exposed soil.
	2+40	Construct waterbar.
	4+60	Construct waterbar.
	6+45	Remove existing culvert.
	7+95	Construct waterbar.
	8+15	Remove existing fill and culvert. Develop three foot stream channel. Seed and mulch exposed soils.
	8+35	Construct waterbar.
	11+15	Construct waterbar.
	11+30	Remove existing fill and culvert. Develop three foot stream channel. Seed and mulch exposed soils.
	17+75	Remove existing culvert.
	19+40	Remove existing fill and culvert. Develop ten foot stream channel. Seed and mulch exposed soils.
	20+50	Remove existing fill and culvert. Develop three foot stream channel. Seed and mulch exposed soils.
	21+45	End road vacating. Construct waterbar.

EXHIBIT L

SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required seed and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed and straw mulch to all waste areas, and bare soils resulting from Projects No. 2, 3, and 5 and any skid trails within posted stream buffers.

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.

APPLICATION METHODS FOR SEED

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

APPLICATION RATES FOR SEED

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%

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
V1 to V2	As required
I1 through I14	As required
Waste Area	As shown on Exhibit A

PART IV: OTHER INFORMATION

State Timber Sale Contract
No. 341-16-19
Bull Nose

WRITTEN PLAN

Operator: _____ **Landowner:** Oregon Department of Forestry (BOF)
Notification and Unit #: _____ **Operation Name or Vicinity:** Bull Nose

STATUTORY WRITTEN PLAN

A **Statutory Written Plan** is required for any activities that will be within 100 feet of the following resource(s):

Stream Names: Several unnamed tributaries of Bull Heifer Creek.

Stream Classification: Unnamed tributaries to Bull Heifer Creek small Type F streams

Riparian Management Area Width:

Tributaries to Bull Heifer Creek: Small Type F Streams. All Type F stream buffers are posted at 100 to 150 feet from the stream.

Area 1: A small Type F stream is adjacent to the northeast boundary for 450 feet.

Area 2: A small Type F stream is adjacent to the east boundary for 1,700 feet.

Area 2: A small Type F stream is adjacent to the northeast boundary for 480 feet.

Statutory Written Plan required by:

ORS 527.670(3)(a) and OAR 629-605-0170(2) for an operation within 100 feet of a Type F or Type D stream.

Practices:

Along the above mentioned Type F streams that are adjacent to Areas 1 and 2, as well as all other perennial Type N streams not listed, the following practices are required under the timber sale contract:

- Cable corridors will utilize natural openings to the maximum extent possible.
- No trees will be felled within stream buffers (RMA's), except in cable corridors, and felled trees will be left in the RMA where felled.
- Trees adjacent to the stream buffers (RMA's) will be felled away from or parallel to the streams to prevent trees from entering the aquatic areas.
- No ground based logging equipment will be permitted within the RMA's.

It is anticipated that the only activity conducted within 100 feet of these Type F streams will be hanging logging lines through the riparian area. Logging lines may cross, but will not be lowered into the RMA's during yarding, except during rigging. During rigging the lines must be pulled out of the RMA's when changing corridors.

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practices Act regarding the operations conducted within 100 feet of Type F streams. I agree to the protection measures listed on this plan:

Submitted: _____
Purchaser/Operator Contract Representative

Date: _____



OREGON DEPARTMENT of FISH and WILDLIFE

SMALL PUMP SCREEN SELF CERTIFICATION

The Oregon Water Resources Department in coordination and cooperation with the Oregon Department of Fish and Wildlife includes screen requirements on pumps to protect fish as a condition of many surface water and/or reservoir water right permits. This is done in accordance with ORS 537.153.

The Oregon Department of Fish and Wildlife does not usually inspect small pump screens at **pumped diversions less than 225 gpm** (gallons per minute), but furnishes the following fish screening criteria information to the water right permit holder:

Screen material open area must be at least 27% of the total wetted screen area.

Perforated plate: Openings shall not exceed 3/32 or 0.0938 inches (2.38 mm).

Mesh/Woven wire screen: Square openings shall not exceed 3/32 or 0.0938 inches (2.38 mm) in the narrow direction, e.g., 3/32 inch x 3/32 inch open mesh.

Profile bar screen/Wedge wire: Openings shall not exceed 0.0689 inches (1.75 mm) in the narrow direction.

Screen area must be large enough not to cause fish impact. Wetted screen area depends on the water flow rate and the water approach velocity. **Approach velocity** is the water velocity perpendicular to and approximately three inches in front of any part of the screen face.

An Active pump screen is a self-cleaning screen that has a proven cleaning system. The **screen approach velocity for active pump screens** shall not exceed 0.4 fps (feet per second) or 0.12 mps (meters per second). The wetted screen area in square feet is calculated by dividing the maximum water flow rate in cubic feet per second (1 cfs = 449 gpm) by 0.4 fps.

A Passive pump screen is a screen that has no cleaning system other than periodic manual cleaning. **Screen approach velocity for passive pump screens** shall not exceed 0.2 fps or 0.06 mps. The wetted screen area in square feet is calculated by dividing the maximum water flow rate by 0.2 fps.

For further information on fish screening please contact:

Oregon Department of Fish and Wildlife, Statewide Fish Screening Coordinator: 503.947.6229
Oregon Department of Fish and Wildlife, Screening Program Administrative Specialist:
503.947.6224

As evidence of having met fish screen installation requirements, please sign the certification and send to: **Oregon Water Resources Department, Water Rights Section, 725 Summer Street NE, Suite A, Salem, OR 97301-1271.**

Certification: I certify that my small pumped diversion of less than 225 gpm meets fish screening criteria, and that I will maintain it to comply with regulatory criteria. I also understand that should fish screening standards change, I may be required to modify my installation to meet applicable standards.

Applicant Signature: _____ Date: ____/____/____ WRD File #: _____

Printed Name and Address: _____

Phone: (____) _____ Fax: (____) _____