Oregon Department of Forestry
2600 State St Salem OR 97310
PART III: EXHIBITS

EXHIBIT B
TIMBER SALE OPERATIONS PLAN

(See page 2 for instructions)

Date Received by State: _____

(1) Contract Number: NC-341-2025-W01146-01

(2) Sale Name: Kaupper Top

(3) Contract Expiration Date: 10/31/2027

(4) Purchaser Name: _____

(5) State Brand Information (Complete)

(6) State Representatives:

Name	Circle One	Phone No.	Cell No.	Alt Phone
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			

(7) Purchaser Representatives:

Name	Circle One	Phone No.	Cell No.	Alt Phone
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			

(8) Name of Subcontractors and Start Dates:

Project No.	Subcontractor Name.	Start Date	Completion Date	Cell No.	Alt Phone

	Subcontractor Name.	Start Date	Cell No.	Alt Phone
FELLING				
YARDING				

(9) Comments:

_____

_____

_____

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

Oregon Department of Forestry
2600 State St Salem OR 97310

PART III: EXHIBITS

EXHIBIT B
INSTRUCTION SHEET FOR OPERATIONS PLAN

SUBMIT ONE COPY OF PLAN 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 including without limitation PURCHASER'S independent obligation to avoid take of a T&E species and PURCHASER'S obligation to comply with terms and conditions of any incidental take Permit(s) that include required minimization and mitigation measures in any applicable Habitat Conservation Plan. If STATE has prepared a required Forest Practices Act (FPA) "Written Plan" for operations, PURCHASER shall comply with all provisions of the Written Plan.

Explanation of Item No.(from Page 1)

(5) All sales require you to use a brand furnished by STATE. If the State brand has not been assigned when the plan is submitted, it will be furnished and assigned later. Complete drawing. If more than one brand is assigned to the sale, complete both drawings.

(6) The contract requires you to have a designated representative available on the sale area or work location who is authorized to receive in your behalf any notice or instruction given by STATE and to take action in regard to performance under the contract. If logging and project work is widely separated, a representative is required for each.

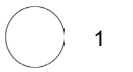
(7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.

(8) Show names of subcontractors to be used for any or all phases of the operations. If subcontractors are not Known, or are changed later, give notification to the STATE representative prior to commencement of work by subcontractor.

(9) Show projected dates for commencement of both projects and logging. If projected dates need to be changed at a later date, notification must be given to the STATE representative by supplemental plan or otherwise, prior to commencement of such operations.

(10) The STATE representative will furnish extra copies of Exhibit A of the contract for your use in preparing the operations map. The map shall use the following legend and show:

1. Landing locations, approximate setting boundaries, and probable sequence of logging the settings. Number the settings in sequence.
2. Locations of spur roads planned for construction, other than required by the timber sale contract. Provide spur road specifications
3. Locations of proposed tractor yarding roads. Show if and how marked on the ground.
4. Locations of temporary stream crossings.
5. List the sequence of performing project work.
6. Location of rock sources - attach pit development plans.



Cable Landing, with numbers for sequence.

Tractor Landing with alphabetical sequence.

Approximate setting boundary.

Spur truck roads.

Tractor yarding roads.

X

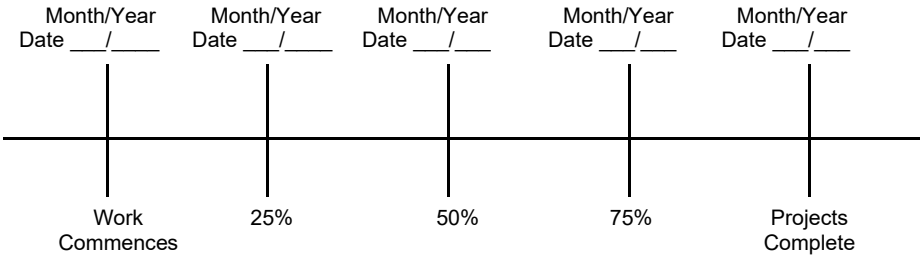
Temporary stream crossings.

Oregon Department of Forestry
2600 State St Salem OR 97310
PART III: EXHIBITS
EXHIBIT B
OPERATIONS PLAN

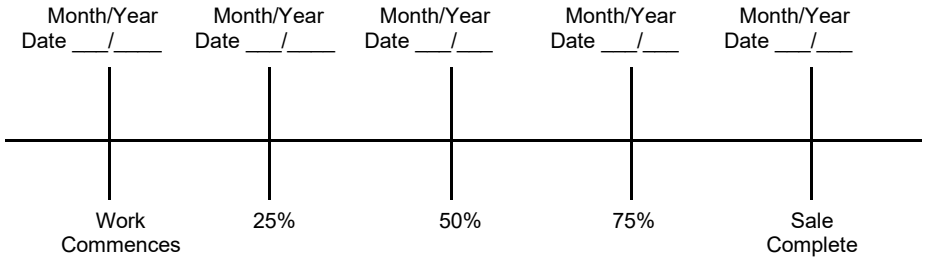
Completion Timeline

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

Projects



Harvest & Other Requirements



The Federal Endangered Species Act (ESA) prohibits a person from taking any federally listed threatened or endangered species. Taking under the federal ESA may include alteration of habitat. STATE's approval of this plan does not certify that PURCHASER's operation under the plan is lawful under the federal ESA or that the plan is consistent with the terms and conditions of any applicable incidental take Permit(s) including any required minimization and mitigation measures proposed in the applicable Habitat Conservation Plan. As provided in the timber sale contract, PURCHASER's must comply with all applicable state, federal, and local laws, including without limitation any Permit(s) issued thereunder.

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: _____

STATE OF OREGON - DEPARTMENT OF FORESTRY

_____

Title _____

SUBMITTED BY:
PURCHASER

_____

Title _____

Oregon Department of Forestry

EXHIBIT C - SAWMILL GRADE (WESTSIDE SCALE)
SCALING INSTRUCTIONS - LOCATION APPROVAL - BRAND INFORMATION
North Cascade - NWOA

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

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

(3) FROM: North Cascade Phone (503) 859-2151
(State Forestry District)
Address: 930 W WASHINGTON ST. SUITE 20
STAYTON,OR 97383

(4) PURCHASER: _____
Mailing Address: _____

Phone Number: _____

(5) **MINIMUM SCALING SPECIFICATIONS**

SPECIES	MINIMUM NET VOLUME
Conifers	10
Hardwoods	10

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

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

	YES	NO
(7) Weight Scale Sample	☐	☑

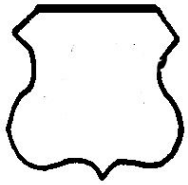
(8) **APPROVED SCALING LOCATIONS** (as shown on the ODF Approved Locations web-site)	Species	Yard	Truck	Weight

(9) **SALE NAME:** Kaupper Top
COUNTY: Linn

(10) **STATE CONTRACT NUMBER:**
NC-341-2025-W01146-01

(11) STATE BRAND REGISTRATION NUMBER:

(12) **STATE BRAND INFORMATION:**



(13) PAINT REQUIRED: YES ☑
COLOR: Orange

(14) **SPECIAL REQUESTS** (Check applicable)

PEELABLE CULL (all species)..... ☑
NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE..... ☑
ADD-BACK VOLUME - Deductions due to delay... ☑

OTHER :

(15) **REMARKS:**

"Mule Trains"
1. Loads are required to have load tickets for each set of bunks.
2. If truck and pup are to be weighed, weigh and process separately for gross and tare weights.

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.
General Distribution: TPSO, Approved Scaling Locations and Purchaser.

Oregon Department of Forestry
EXHIBIT C - SAWMILL GRADE
INSTRUCTIONS FOR EXHIBIT C
North Cascade - NWOA

(1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires logging and hauling to be complete, recall branding hammers.

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

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

Mountain Western Log Scaling & Grading Bureau
2560 NW Medical Park Drive, OR 97471
Phone: (541) 673-5571 Fax: (541) 672-6381
Email: info@mwlsgb.com

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

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

(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 specifies 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: https://apps.odf.oregon.gov/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 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. Signatures not required on revisions.

Oregon Department of Forestry
EXHIBIT C - PULP SORT
PROCESSING INSTRUCTIONS - LOCATION APPROVAL
BRAND INFORMATION

North Cascade, NWOA

(1) ORIGINAL REGISTRATION ☐ Date _____

REVISION NUMBER 000 ☐ Date _____

CANCELLATION ☐ Date _____

(2) TO: _____

(Approved Pulp Processing Facility)

(3) FROM: North Cascade Phone (503) 859-2151
(State Forestry District)

Address: 930 W WASHINGTON ST. SUITE 20

STAYTON,OR 97383

(4) PURCHASER: _____

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

Mailing Address: _____

_____

Phone Number: _____

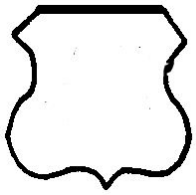
(9) **SALE NAME:** Kaupper Top

COUNTY: Linn

(10) **STATE CONTRACT NUMBER:**
NC-341-2025-W01146-01

(11) STATE BRAND REGISTRATION NUMBER: _____

(12) STATE BRAND INFORMATION:



(13) **REMARKS:**

"Mule Trains"

1. Loads are required to have load tickets for each set of bunks.
2. Truck and pup are to be weighed and processed separately for gross and tare weights.

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

- Top portion of the tree (tops).
- All logs with a diameter (Big End) greater than 7 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

- Submit data files daily (or each day of activity).
- Mail or deliver scale tickets weekly to ODF Headquarters in Salem.

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.

General Distribution: TPSO, Approved Scaling Locations and Purchaser.

Oregon Department of Forestry
EXHIBIT C - PULP SORT
INSTRUCTIONS FOR EXHIBIT C

North Cascade, NWOA

(1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires logging and hauling to be complete, recall branding hammers.

(2) Approved Pulp Processing Facility. Write in as written in the Approved Log Delivery Location
https://apps.odf.oregon.gov/Divisions/management/asset_management/scalinglocation.asp

(3) State District office, address and phone.

(4) Enter Purchaser's business name, address, and phone number as it appears on the Contract.

(5) 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
2560 NW Medical Park Drive, Roseburg, OR 97471
Phone: (541) 673-5571 Fax: (541) 672-6381
Email: info@mwlsgb.com

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

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

(6) 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) 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 (13).

(13) Use this section to list any special instructions or the reason for any revisions in section item (1).

(14) Require purchaser to sign and date completed form in addition to State Forester Representative, sign and print name on the form. Signatures not required on revisions.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

POINT TO POINT	STATION TO STATION	SUBGRADE WIDTH	BASE ROCK WIDTH	TOP ROCK WIDTH	DRAINAGE
A to A1	0+00 to 31+50	Existing	13 feet	12 feet	Outsloped
A to A1	31+50 to 37+85	Existing	13 feet	12 feet	Crowned
A to A1	37+85 to 38+45	60 feet	30 feet	12 feet	Crowned
B to B1	0+00 to 7+33	Existing	13 feet	12 feet	Crowned
B to B1	7+33 to 7+93	60 feet	30 feet	12 feet	Crowned
C to C1 Reconstruct	0+00 to 1+96	Existing	13 feet	12 feet	Crowned
C to C1 Reconstruct	1+96 to 4+98	Existing	13 feet	12 feet	Outsloped
C to C1 New Construct	4+98 to 6+28	16 feet	13 feet	12 feet	Crowned
C to C1 New Construct	6+28 to 6+88	60 feet	30 feet	24 feet	Crowned
D, Landing Construct	65+48 MC Rd	50 feet	40 feet	n/a	Crowned

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

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

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

GRUBBING. This work shall consist of the removal or digging out of stumps and protruding objects. All stumps shall be completely removed within the limits of required grubbing. Stumps overhanging cut slopes shall be removed. Grubbing debris shall not be placed or permitted to remain in or under any road embankment sections.

GRUBBING CLASSIFICATION.

New construction - from the top of the cut slope to the toe of the fill.

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

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

- Where end-haul is required
- On side slopes exceeding 50 percent
- On unstable areas
- In any stream channel (Type F, N or D) or where material may enter the stream channel.

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

EXCAVATION. Excavation and grading shall not be done when weather and/or ground conditions are such that damage will result to existing subgrade or cause excessive erosion. Excavation shall conform to STATE-specified lines, grades, dimensions, and plans when provided. Unless road plans show otherwise, all roads shall be on a balanced cross section, except when the slope is over 50 percent, then road shall be on full bench as specified.

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

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

All fills shall be machine compacted according to the "Compaction and Processing Requirements".

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 unless the right-of-way boundary is marked in the field.

DRAINAGE

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

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

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

TURNOUTS. Increase roadbed width for an additional (12) feet for both subgrade and surfacing. The length shall be at least (50) feet plus 25-foot approaches at each end. Intervisible but not greater than 750 feet apart and as marked in the field.

SLOPES	Cut Slopes	Fill Slopes
Solid Rock	Vertical to ¼ :1	
Fractured Rock	½ :1	
Soil - side slopes 50% and over	¾ :1	1½ :1
Soil - side slopes less than 50%	1 :1	1½ :1

(Top of cut slope 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 outsloped or 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 30 feet at locations marked in the field.

SEASONAL WINTERIZATION. All unsurfaced roads or unfinished subgrades shall be waterbarred in accordance with the specifications in Exhibit G, and blocked from vehicular traffic prior to October 1, as directed by STATE.

GENERAL NEW 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 and end hauled where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with this Exhibit. Excess excavated material not used for embankment shall be sidecast on slopes up to 50 percent end hauled or pushed to waste areas as shown on Exhibit A and marked in the field.

(3) Drainage Ditches. Construct ditchlines, including ditchouts, as directed by STATE. Cut slopes of ditchlines and ditchouts shall not exceed a 1:1 slope. Construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE.

(4) Culvert Installation. Fill construction backfill shall consist of select materials and may be obtained from borrow pits as approved and directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit. STATE may require the use of crushed rock for culvert bedding according to the Specific Road Construction Instructions.

(5) Fill Armor and Energy Dissipator Construction. Where rock is specified for fill armor, rock shall be machine placed and tamped at a 1½:1 slope, beginning at the toe of the fill. Where rock is used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with this Exhibit.

(6) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic-yard, track-mounted excavator.

(7) Controlled Blasting. 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 material within the road prism.

(8) Subgrade Preparation and Application of Surfacing Rock. Complete culvert installations, drainage ditches, ditchouts, fill construction, and other specified work prior to the application of surfacing rock. Subgrade shall be crowned, outsloped, or insloped at 4 to 6 percent as described in project narrative. Upon completion of above required work, apply, process, and compact surfacing rock in accordance with specifications in the “Compaction and Processing Requirements” in this Exhibit. Final road surface shall be crowned, outsloped, or insloped at 4 to 6 percent as described in project narrative.

SPECIFIC NEW ROAD CONSTRUCTION INSTRUCTIONS

Segment	Station	Work Description
C to C1	4+98	Junction left at station 4+98 and begin new construct for a 16’ wide crowned subgrade road. Spread 6”- 0” jaw-run rock 13’ wide with an 8” compacted depth, then top with 1 ½”- 0” crushed rock 12’ wide with a 4” compacted depth.
	6+28	Begin to widen the subgrade to 60’ for a length of 60’ to center of the landing. Begin to spread 6”– 0” jaw-run 30’ wide x 60’ long with an 8” compacted depth and top with 1 ½”- 0” crushed rock 24’ x 60’ long with a 4” compacted depth.
	6+88	Construct a 60’ x 60’ landing labeled C1. End new construction and rocking at center of landing.
D Landing	65+48	Construct a 50’ x 50 landing labeled D on the right side of the road. Spread 6”- 0” jaw run rock 40’ x40’ with an 8” compacted depth. If needed borrow fill material from the left side of the road to help level up the landing area.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT, AND MAINTENANCE 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) Excavated Materials. Excavated materials shall be utilized for road and fill construction and hauled in where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with Exhibit D. Excess excavated material not used for embankment shall be sidecast on slopes up to 50 percent. Side slopes over 50 percent shall be end hauled or pushed to waste areas as shown on Exhibit A.

(3) Bank Slough Removal. Excavate all bank-slough. Bank slough material shall not be pulled across existing surface rock. Excavated material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A.

(4) Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include skewing the culvert and/or installing the culvert at gradients equal to or exceeding the drainage or ditch gradient. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. All woody debris encountered during fill excavation shall be removed. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Unsuitable backfill material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A. Backfill materials shall be end hauled in where necessary and thoroughly compacted in accordance with this Exhibit.

(5) Culvert Cleaning and Repairs. Remove all debris from inside all existing culverts on the road improvement segment, 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.

(6) Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surface rock but shall be placed in nearby waste areas.

(7) Fill Armor and Energy Dissipator Construction. Where rock is specified for fill armor, rock shall be machine placed and tamped at a 1½:1 slope, beginning at the toe of the fill. Where rock is used for an energy dissipator, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, in accordance with Exhibit F.

(8) Sod Removal. Remove/separate sod from crushed rock surfacing as directed by STATE. Sod material shall be scattered in stable locations through openings in the timber outside of the cleared right-of-way. In areas where sod cannot be scattered in a stable location, material shall be end hauled to designated waste areas as shown on Exhibit A, or other stable locations as directed by STATE.

(9) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic yard, track-mounted excavator.

(10) Waste areas shall be uniformly sloped and compacted for drainage. Designated Waste materials shall be seeded and mulched in accordance with specifications in Exhibit K.

(11) 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 surface rock.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT, AND MAINTENANCE INSTRUCTIONS (continued):

(b) Cut out all potholes and/or washboard sections from the existing road surface. Apply required patching and leveling rock, as directed by STATE.

(c) Process (grade and mix) the existing surface and added base rock. Provide for a crown, outslope, or inslope of 4 to 6 percent, and compact in accordance to the "Compaction and Processing Requirements" in this Exhibit.

SPECIFIC ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT, AND MAINTENANCE INSTRUCTIONS

Segment	Station	Work Description
Mad Creek Rd	0+00	Begin stationing off Green Mountain Road just before the 2 ½ - mile marker.
	38+02	Junction right for Spur A station 0+00.
	52+00	Install a 24" x 30' culvert #6 with an outlet dissipator.
	60+05	Install an 18" x 30' culvert #7 with an outlet dissipator.
	75+66	Junction Spur B station 0+00. The junction should be rebuilt so the log trucks can haul to the west toward Potato Hill Road.
A to A1	0+00	Junction right off Mad Creek Road station 38+02 and begin road improvement by reopening the road and grading the existing base rock for a 13' wide outsloped road. Compact the existing base rock and top with 1 ½"- 0" crushed rock 12' wide with a 4" compacted depth.
	11+24	Construct a truck turnaround on the right side of the road. Spread 6"- 0" jaw run rock 20' wide x 30' long with an 8" compacted depth and top with 1 ½"- 0" crushed rock 18' wide x 28' long with a 4" compacted depth.
	21+81	Construct a truck turnaround on the right side of the road. Spread 6"- 0" jaw run rock 20' wide x 30' long with an 8" compacted depth and top with 1 ½"- 0" crushed rock 18' wide x 28' long with a 4" compacted depth.
	28+26	Install a 36" x 30' culvert #1 with outlet dissipator.
	29+45	Install a 24" x 30' culvert #2 with outlet dissipator.
	30+95	Install a 30" x 30' culvert #3 with outlet dissipator.
	31+50	End outsloped road and begin to crown the road ahead.
	34+18	Install a 24" x 30' culvert #4 with outlet dissipator.
	36+87	Install a 24" x 30' culvert #5 with outlet dissipator.
	37+85	Begin to widen the subgrade to 60' for a length of 60' to center of the landing. Begin to spread 6"– 0" jaw run 30' wide x 60' long with an 8" compacted depth and top with 1 ½"- 0" crushed rock 24' x 60' long with a 4" compacted depth.
	38+45	Center of a landing to be reconstructed 60' x 60' labeled A1.
B to B1	0+00	Junction right off Mad Creek Road station 75+66 and begin road improvement by brushing the road, cleaning culverts inlets and grading existing rock for a 13' wide outsloped road. Place 1 ½"- 0" crushed rock 12' wide with a 4" compacted depth.
	4+39	Junction to the right for Spur C to C1 station 0+00.
	7+33	Begin to widen the subgrade to 60' for a length of 60' to center of the landing. Begin to spread 6"– 0" jaw run 30' wide x 60' long with an 8" compacted depth and top with 1 ½"- 0" crushed rock 12' x 48' long with a 4" compacted depth.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT, AND MAINTENANCE INSTRUCTIONS (continued):

	7+93	Center of a landing to be reconstructed 60' x 60' labeled B1.
C to C1	0+00	Junction right off Spur B to B1 station 4+39 and begin road improvement by brushing and grading the existing road for a 16' crowned subgrade road. Spread 6"- 0" jaw run rock 13' wide with an 8" compacted depth and top with 1 ½" – 0" crushed rock 12' wide with a 4" compacted depth.
	1+96	End crowned subgrade and begin outsloped subgrade ahead. Construct a lead-out ditch on the right side of the road.
	4+98	Reconstruct a truck turnaround on the right side of the road. Spread 6"- 0" jaw run rock 20' wide x 30' long with an 8" compacted depth and top with 1 ½"- 0" crushed rock 18' wide x 28' long with a 4" compacted depth. End road improvement and begin new road constructing ahead.

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 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. Subgrade shall be crowned, outsloped, or insloped at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

ROAD SEGMENT	SUBGRADE COMPACTION OPTIONS
A to A1, B to B1, C to C1, D	(1) (4) (5)

Fills. Embankments and fills shall be placed in (approximately) horizontal layers not more than 12 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 layer's 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 the approved equipment options listed below:

ROAD SEGMENT	FILLS COMPACTION OPTIONS
A to A1, B to B1, C to C1, D	(1) (3) (4) (5)

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

deformation ceases. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

Rock shall be compacted and processed during the same project period it is spread, unless otherwise approved in writing by STATE. Rock shall be crowned, outsloped, or insloped at 4 to 6 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	CRUSHED COMPACTION OPTIONS
A to A1, B to B1, C to C1, D	(1)

6"-0 Jaw-Run or Pit Run The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of road 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 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:

ROAD SEGMENT	6"- 0" JAW RUN or PIT RUN COMPACTION OPTIONS
A to A1, B to B1, C to C1, D	(1) (4) (5) (6)

COMPACTION EQUIPMENT OPTIONS

(1) Vibratory Rollers. The drum shall have a smooth surface, a diameter not less than 48 inches, a width not less than 58 inches, and a turning radius of 15 feet or less. Vibration frequency shall be regulated in steps to 1400, 1500, and 1600 VPM, corresponding to engine speeds of 1575, 1690, and 1800 RPM. The centrifugal force developed shall be 7 tons at 1600 VPM. It shall be activated by a power unit of not less than 25 horsepower. The vibratory roller shall be self-propelled and operated at speeds ranging from 0.9 miles to 1.8 miles per hour, as directed by STATE.

(2) Tampingfoot Compactors. Tampingfoot compactors shall exert a minimum pressure of 250 pounds per square inch on the ground area in contact with the tamping feet. The compactor shall cover a minimum width of 60 inches per pass and weigh a minimum of 16,000 pounds.

(3) 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.

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

(5) Grid Rollers. Pit-run rock shall be processed by grid roller fully equipped with 32,000 pounds or more of ballast weights. Twenty passes shall be made with a grid roller over the entire length and width of the road. A grader weighing at least 20,000 pounds shall work the pit-run surface. Grid rolling shall be performed when the subgrade is dry and firm. Road surface shall be uniformly shaped and graded prior to and during grid rolling.

(6) Dozer. A dozer/track-type tractor weighing a minimum of 45,000 pounds shall be operated over the pit-run or jaw-run rock so that the entire surface comes in contact with the tracks.

EXHIBIT D

ROCK ACCOUNTABILITY

PURCHASER shall obtain subgrade approval from STATE prior to road rocking. Rocking shall be limited to periods when weather conditions are acceptable to STATE and when sediment will not enter streams. Additional placement of road rock could be required because excessive wet weather or unacceptable construction practice and is not included in the preceding ROAD SURFACING table and shall be furnished at PURCHASER expense.

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

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

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

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.

Wet Weather Haul. When there is at least 1.5" inches of rain in a 24-hour period, all hauling will stop until STATE approves the haul route and check that there is no sediment delivery to live water.

EXHIBIT E

ROCKING TABLE

Rock Summary Table								
Road Segment: **A to A1**				**Point to Point**			**Sta. to Sta.**			**Total Volume (CY)**
Application	**Rock Size and Type**	**Location**	**Rock Depth (in)**	A	to	A1	0+00	to	38+45	
				Volume (CY)			**Number of**			
Road Top Rock	1.5"- 0" Crushed Rock	0+00 to 38+45	4	Station		22	Stations		38.45	846
Road Base Rock	6"- 0" Jaw Run	0+00 to 38+45	8	Station		48	Stations		38.45	1,846
Turn arounds	6"- 0" Jaw Run	11+24 and 21+81	8	Site		15	Sites		2	30
Turn arounds	1.5"- 0" Crushed Rock	11+24 and 21+81	4	Site		6	Sites		2	12
Landing A1	6"- 0" Jaw Run	37+85 to 38+45	8	Station		48	Stations		0.53	25
Culvert bedding	1.5"- 0" Crushed Rock	Pipe #'s 1,2,3,4,5	varies	Site		24	Sites		6	144
Culvert outlet dissipator	Pit Run	Pipe #'s 1,2,3,4,5	Varies	Site		3	Sites		6	18
								Total Rock for Road Segment: A to A1		**2,921**

Road Segment: **B to B1**				**Point to Point**			**Sta. to Sta.**			**Total Volume (CY)**
Application	**Rock Size and Type**	**Location**	**Rock Depth (in)**	B	to	B1	0+00	to	7+93	
				Volume (CY)			**Number of**			
Road Top Rock	1.5"- 0" Crushed Rock	0+00 to 7+93	4	Station		22	Stations		7.93	174
Road Base Rock	6"- 0" Jaw Run	0+00 to 7+93	8	Station		48	Stations		7.93	381
Landing B1	6"- 0" Jaw Run	7+33 to 7+93	8	Station		48	Stations		0.53	25
								Total Rock for Road Segment: B to B1		**581**

Road Segment: **C to C1 (Road Improvement)** Start at Station 0+00 to station 4+98				**Point to Point**			**Sta. to Sta.**			**Total Volume (CY)**
Application	**Rock Size and Type**	**Location**	**Rock Depth (in)**	C	to	C1	0+00	to	4+98	
				Volume (CY)			**Number of**			
Road Top Rock	1.5"- 0" Crushed Rock	0+00 to 4+98	4	Station		22	Stations		4.98	110
Road Base Rock	6"- 0" Jaw Run	0+00 to 4+98	8	Station		48	Stations		4.98	239
Turn arounds	6"- 0" Jaw Run	4+98	8	Site		15	Sites		1	15
Turn arounds	1.5"- 0" Crushed Rock	4+98	4	Site		6	Sites		1	6
								Total Rock for Road Segment: C to C1		**370**

Road Segment: **C to C1 (New Construction)** start at Station 4+98 same as Station 0+00 to 1+90				**Point to Point**			**Sta. to Sta.**			**Total Volume (CY)**
Application	**Rock Size and Type**	**Location**	**Rock Depth (in)**	C	to	C1	0+00	to	1+90	
				Volume (CY)			**Number of**			
Road Base Rock	6"- 0" Jaw Run	4+98 to 6+88	8	Station		48	Stations		1.9	91
Landing C1	6"- 0" Jaw Run	628 to 6+88	8	Station		48	Stations		0.53	25
Road Top Rock	1.5"- 0" Crushed Rock	4+98 to 6+88	4	Station		22	Stations		1.9	42
								Total Rock for Road Segment: C to C1		**158**

Road Segment: **D Landing (New Construction)** Located on Mad Creek Road				**Point**			**Station**			**Total Volume (CY)**
Application	**Rock Size and Type**	**Location**	**Rock Depth (in)**	D			65+48			
				Volume (CY)			**Number of**			
Road Base Rock	6"- 0" Jaw Run	65+48	8	Station		48	Stations		1	48
								Total Rock for Landingt: D		**48**

Road Segment: **Mad Creek Road**				**Point to Point**			**Sta. to Sta.**			**Total Volume (CY)**
Application	**Rock Size and Type**	**Location**	**Rock Depth (in)**	Mad Creek Road			52+00 and 60+05			
				Volume (CY)			**Number of**			
Culvert outlet dissipator	Pit Run	52+00 and 60+05	varies	Station		3	Stations		2	6
Culvert bedding	1.5"- 0" Crushed Rock	52+00 and 60+05	varies	Station		24	Stations		2	48
								Total Rock for Road Segment: Mad Creek Road		**54**

Rock Summary Table

Location	Size of Rock	Needed	Stockpile
Potato Hill Stockpile	1.5"- 0" Crushed	1,383 cy	1,383 cy
MC500 Pit	6"- 0"Jaw Run	2,724 cy	Stockpiled in pit
MC500 Pit	Pit Run Dissipators	24 cy	Dig in pit

EXHIBIT F

CULVERT SPECIFICATIONS

All culvert materials shall be furnished and installed by PURCHASER, unless otherwise specified in the Contract. Culverts 36 inches in diameter and smaller shall be constructed of corrugated polyethylene, unless otherwise specified in the Contract. Culverts larger than 36 inches in diameter shall be constructed of corrugated aluminized Type 2 steel, unless otherwise specified in the Contract. Polyethylene culverts shall be double-walled and meet the requirements of AASHTO M-294-11, Type S, or ASTM F2648. Aluminized (Type 2) steel culverts shall meet the requirements of AASHTO M-36-03[1]."

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.

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

Cross Drain Culverts

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

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

Disconnect Culverts

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

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

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

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

Place seed and mulch on the inlet and outlet sides of the pipe.

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 rocked shall be as follows: 12" for culverts 18" to 36" and 18" for culverts 42" to 96" add 6" for roads which will not be rocked. Minimum vertical cover for other designs shall be as specified by STATE.

EXHIBIT F

CULVERT SPECIFICATIONS

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

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

The intake end of cross drain and disconnect culverts shall be provided with a sediment catching basin 3 feet in diameter at the bottom. The outlet ends of any culvert which would allow water to erode embankment soil shall be provided with an energy dissipator 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 (30) inches in diameter or larger shall have 1:1 beveled inlet.

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

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. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack or cutting off the culvert end to allow for free passage of water at peak flow levels.

The intake ends of culverts in fills less than 3 feet to the top of the culvert shall be marked by driving 6’ long steel “T” posts 6 inches of the downgrade side. Posts shall be driven 2 feet into the ground. Install a culvert marker at each existing culvert that is missing a marker that could be reached by a grader blade.

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

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

The 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.

	Steel Culvert	Thickness			Band Widths (")	
Dia.	Gauge	Uncoated	Coated	Band Gauges	Annular	Helical
18-36	16	(0.0598")	(0.064”)	16	12	12
42-54	14	(0.0747")	(0.079”)	16	12	12
60-84	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 F

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	GAUGE	ROAD SEGMENT POINT TO POINT	STATION
1	36”	30’	ACSP	16	A to A1	28+26
2	24”	30’	ACSP	16	A to A1	29+45
3	30”	30’	ACSP	16	A to A1	30+95
4	24”	30’	ACSP	16	A to A1	34+18
5	24”	30’	ACSP	16	A to A1	36+87
6	24”	30’	ACSP	16	Mad Creek Road	52+00
7	18”	30’	ACSP	16	Mad Creek Road	60+05

TOTAL LENGTHS BY DIAMETER			
18 INCH	24 INCH	30 INCH	36 INCH
30’	120’	30’	30’

ACSP = Aluminized

EXHIBIT F

TYPICAL EMBEDDED ENERGY DISSIPATOR

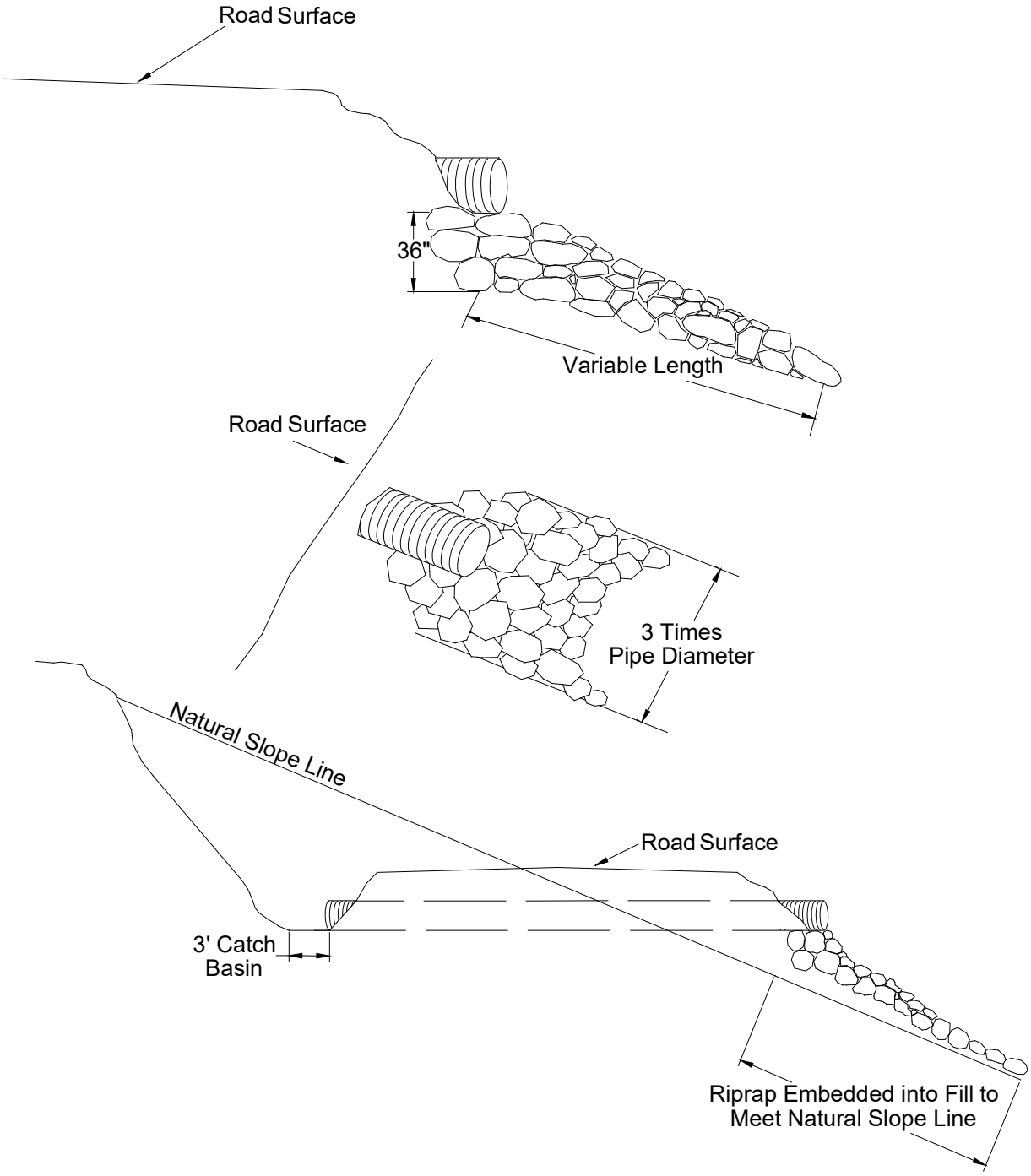
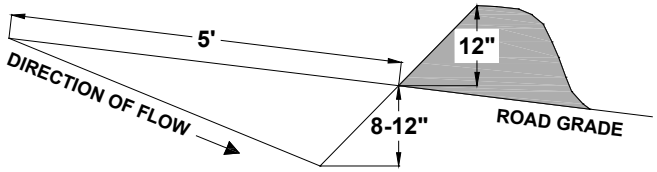


EXHIBIT G

WATERBAR SPECIFICATIONS

PROFILE

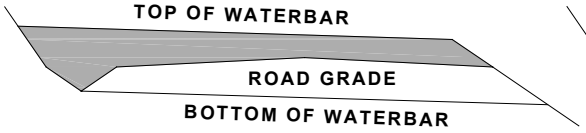
DITCHED AND OUTSLOPED



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

CROSS SECTION

DITCHED



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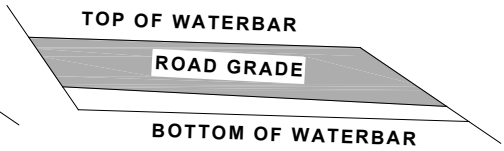
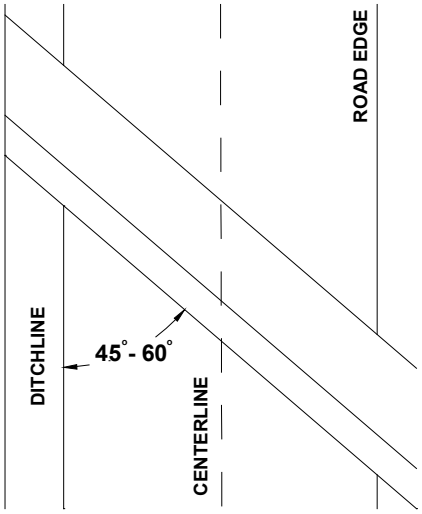


CONSTRUCT DITCHOUT THRU ANY EXISTING BERM.
CROSS DRAINAGE GRADIENT MINIMUM 3%.

PLAN VIEW

DITCHED



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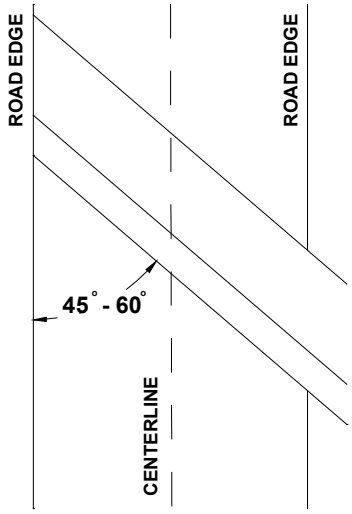
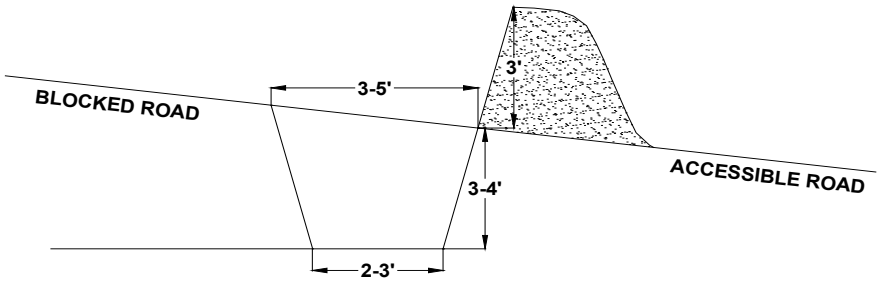


EXHIBIT H

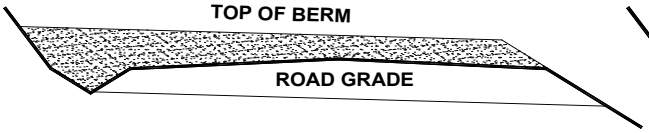
TANK TRAP SPECIFICATIONS

PROFILE
DITCHED AND OUTSLOPED



CROSS SECTION

DITCHED



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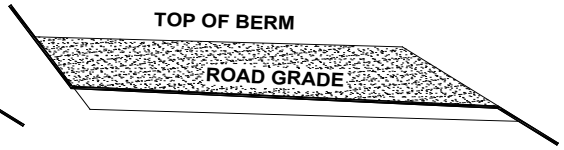
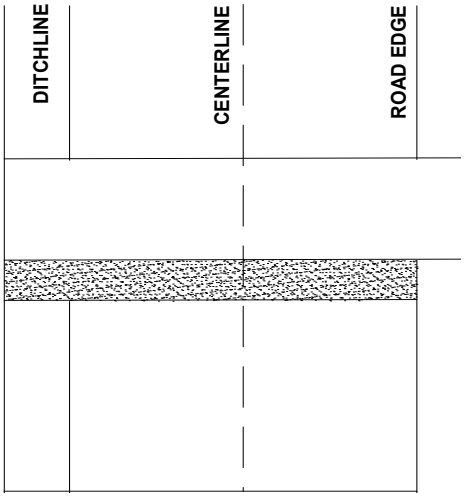


CONSTRUCT DITCHOUT THRU ANY EXISTING BERM.
CROSS DRAINAGE GRADIENT MINIMUM 3%

PLAN VIEW

DITCHED



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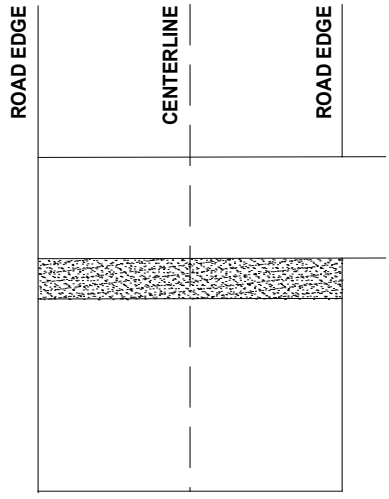

It should be sloped to drain with a relief ditch through the down slope edge of the road. The trench shall be behind the berm for approaching traffic.

EXHIBIT I

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Description of Work to be Done

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

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

Piles

- Piles shall be located inside the project area designated for piling and shall be more than 50 feet from any edge or standing conifer tree.
- Piles shall be made as large as possible.
- Piles shall be covered to prevent water from reaching the Slash. PURCHASER shall supply the materials used for covering the Slash.
- Plastic shall be placed on **TOP** of pile and additional woody debris shall be piled on top of the covered piles to complete the piling, as directed by STATE.
- Logs and chunks which are suitable for firewood shall be piled separately from Slash, near roads and Landings and alongside the road in locations designated by STATE.

Pile Covering Material- Piles shall be covered with a sheet of **4-6 mil Black** plastic measuring at least 10'x20'.

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

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

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

EXHIBIT I

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Equipment Type, Equipment Operation, and Conduct of Work

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

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

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

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

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

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

Work Scheduling - work shall be accomplished only during dry weather conditions and started within 14 calendar days after completion of yarding activities on the Timber Sale Area. Operations shall provide for continual operation until contract work is completed, unless interrupted by poor weather, fire closures, or other uncontrollable circumstances. Equipment breakdowns shall be repaired without undue delay, and provision shall be made for replacement of equipment to prevent prolonged delays. Piling operation shall not be allowed when operations might damage sites or affect stream flows. Any exception to these instructions must be authorized in writing by STATE.

STATE Representative - shall provide directions for the conduct of work according to specifications.

EXHIBIT J

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 Project No.1.

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. CONTRACTOR shall notify STATE within 24 hours of seeding application.

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

APPLICATION RATES FOR SEED

Any mixture of the native seed species listed below shall be applied at the recommended rates shown in the table. At least 50% of the mixture shall include species recommended for Erosion control.

NATIVE SPECIES	Coverage ft^2/lb	Broadcast Rate lbs/acre	Recommended for Erosion Control
Barley – Meadow	1,740	50-62.5	Yes
Bentgrass – Spike	43,560	2-2.5	
Brome – California	1,740	50-62.5	Yes
Fescue – Native Red	2,200	20-25	
Fescue – Sand	3,110	28-35	Yes
Hairgrass – Slender	7,260	12-15	Yes
Hairgrass – Tufted	10,890	8-10	
Junegrass – Prairie	43,560	2-2.5	Yes
Wheatgrass – Slender	2,180	20	Yes
Wildrye Blue	2,175	40-50	

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

APPLICATION RATES FOR MULCH

Place weed free 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:

All new culvert installations and waste areas generated by this road project.