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

EXHIBIT B
TIMBER SALE OPERATIONS PLAN

(See page 2 for instructions)

Date Received by State: _____

(5) State Brand Information (Complete)

(1) Contract Number: FG-341-2025-W01199-01

(2) Sale Name: Saddle Time

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

(4) Purchaser Name: _____

(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.

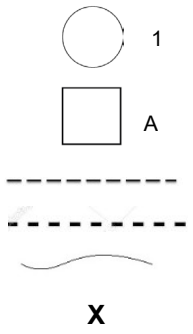
(7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.

(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.

Temporary stream crossings.

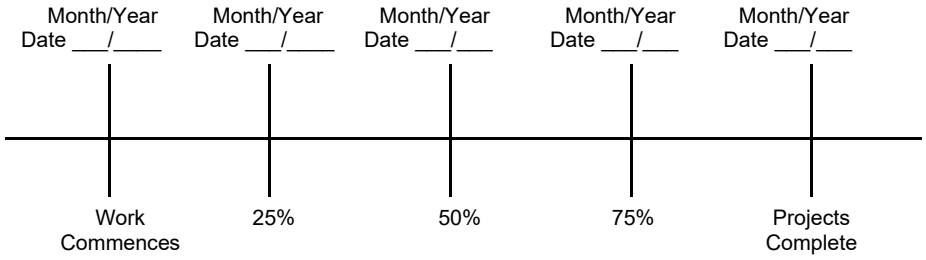
Oregon Department of Forestry
2600 State St Salem OR 97310
PART III: EXHIBITS

EXHIBIT B
OPERATIONS PLAN

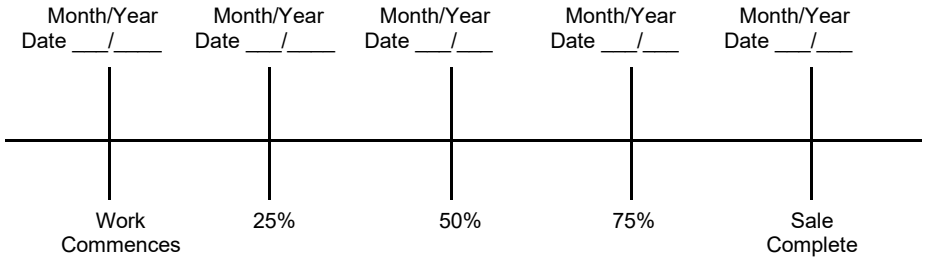
Completion Timeline

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
Forest Grove - NWOA

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

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

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

(4) PURCHASER: _____
Mailing Address: _____

Phone Number: _____

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

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

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

	YES	NO
(7) Weight Scale Sample	☐	☑

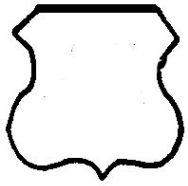
(8) APPROVED SCALING LOCATIONS (as shown on the ODF Approved Locations web-site)	Species	Yard	Truck	Weight

(9) **SALE NAME:** Saddle Time
COUNTY: Tillamook

(10) **STATE CONTRACT NUMBER:**
FG-341-2025-W01199-01

(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
Forest Grove - 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

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, 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

(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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DRAINAGE
Match Existing	Match Existing	A to B	0+00 to 340+35	Ditch
Match Existing	Match Existing	B to C	0+00 to 62+45	Ditch
16 Feet	12 Feet	C to D	0+00 to 28+30	Ditch
Match Existing	Match Existing	D to E	0+00 to 8+25	Ditch
Match Existing	Match Existing	D to F	0+00 to 17+80	Ditch
Match Existing	Match Existing	D to G	0+00 to 4+30	Ditch
Match Existing	Match Existing	E to Z	0+00 to 15+00	Ditch
Match Existing	Match Existing	H to I	0+00 to 7+00	Ditch
Match Existing	Match Existing	J to K	0+00 to 3+85	Ditch
Match Existing	Match Existing	L to M	0+00 to 3+50	Ditch
16 Feet	12 Feet	N to O	0+00 to 3+75	Ditch
Match Existing	Match Existing	P to Q	0+00 to 47+90	Ditch
Match Existing	Match Existing	Q to R	0+00 to 24+50	Ditch
Match Existing	Match Existing	Q to U	0+00 to 6+80	Ditch
Match Existing	Match Existing	V to W	0+00 to 2+50	Ditch

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

CLEARING CLASSIFICATION.

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

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

GRUBBING. This work shall consist of the removal or digging out of stumps and protruding objects. All stumps shall be completely removed within the limits of required grubbing. Stumps overhanging cutslopes shall be removed.

GRUBBING 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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

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

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

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

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

Excavated materials shall not be placed within an RCA.

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

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

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

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

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

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

DRAINAGE. Drainage features shall be in place as soon as possible during construction and prior to October 15 annually. Drainage features shall include:

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

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

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

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SLOPES. Top of cutslope shall be rounded.	Cutslopes	Fill Slopes
Solid Rock	Vertical to ¼ :1	
Fractured Rock	¼:1	
Soil - side slopes 50% and over	½:1	1½:1
Soil - side slopes less than 50%	¾:1	1½:1

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

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

SEASONAL WINTERIZATION. All unsurfaced roads or unfinished subgrades shall be blocked from vehicular traffic and waterbarred in accordance to the Waterbar and Tank Trap specifications in this contract. Areas of bare soil that have the potential to deliver sediment shall have grass seed and mulch placed in accordance to the Seeding and Mulch specification in this contract. All seasonal winterization shall be completed prior to October 15, annually and as directed by STATE.

EROSION CONTROL. Install erosion control measures in all areas which have the potential, as determined by STATE, to deliver sediment to Waters of the State. Install bio bags, silt fence, or straw bales for erosion control in project areas and ditch lines where sedimentation or erosion is possible, as directed by STATE. Each Bio-bag shall be installed with a minimum of two wooden stakes.

MATERIAL STORING AND STAGING. No materials shall be stored or staged within the boundaries of any RCA or ELZ. To include dirt, soil, aggregate and fuel stored in fuel cans, transfer tanks, vehicles or equipment. Staging areas must be constructed in a manner that to be hydrologically disconnected from the stream. Culverts, logs for stream enhancement and erosion control supplies may be stored with in the boundaries.

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

(1) Excavated Materials. Excavated materials shall be utilized for road construction and hauled in where required. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage.

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

(3) Culvert Installation. Fill construction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit.

(4) Settling Ponds. Construct settling ponds for erosion control in project areas and ditchlines where sedimentation or erosion is possible as directed by STATE. Excavated material shall be hauled to the designated waste areas designated on Exhibit A. Waste materials shall be sloped and compacted for drainage. Settling pond dimensions shall be a finished length of (3) feet, width of (3) feet, and (3) feet in depth (3) feet apart, or as directed by STATE.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

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

(6) Subgrade Preparation and Application of Surfacing Rock.

(a) Complete culvert installations, drainage ditches, fill construction, ditchouts, settling ponds, and other specified work prior to the application of surfacing rock.

(b) Subgrade shall be crowned, outsloped, or insloped at 4 to 6 percent.

(c) Upon completion of above required work, apply, process, and compact surfacing rock in accordance with specifications in the “Compaction and Processing Requirements” in this Exhibit. Final road surface shall be crowned, outsloped, or insloped at 4 to 6 percent.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS:

Segment	Station	Work Description
C to D	0+00	Point C. Begin road construction, crown road, construct ditch. Construct to facilitate flow towards point C.
	3+40	Install Culvert No.16 (18” x 30’) as cross drain.
	7+25	Construct roadside landing on right.
	8+40	Install Culvert No.17 (18” x 30’) as cross drain.
	9+50	Construct roadside landing on left.
	11+40	Construct ditch-out on left.
	13+20	Install Culvert No.18 (18” x 30’) as cross drain.
	16+70	Begin full bench construction to maintain a grade of ≤ 15%. End haul surplus material and woody debris to Waste Area No. 1.
	20+00	End full bench construction.
	21+00	Construct turnout on right.
	22+30	Install Culvert No. 19 (18” x 30’) as cross drain.
	27+50	Construct 3-way junction with Saddle Mountain Road. Maintain spur road access to Point G.
End	28+30	Point D. End road construction.

Segment	Station	Work Description
N to O	0+00	Point N. Begin road construction, crown road, construct ditch. Construct to facilitate flow towards point N. End haul surplus material to Waste Area No. 2
	1+00	Install Culvert No. 20 (18” x 30’) as cross drain.
End	3+75	Point O. End Road Construction. Construct landing.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT, ROCK REPLACEMENT AND MAINTENANCE INSTRUCTIONS:

(1) Excavated Materials. Excavated materials shall be utilized for road and fill construction and hauled in where required. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage.

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

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

(4) Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. (Ditch debris including woody debris shall be loaded and hauled to designated waste areas and shall be accomplished with the use of an excavator and dump truck.) Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock but shall be placed in nearby waste areas.

(5) Settling Ponds and Ditch Armoring. Construct settling ponds for erosion control in project areas and ditchlines where sedimentation or erosion is possible as directed by STATE. Excavated material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A. Waste materials shall be sloped and compacted for drainage. Settling pond dimensions shall be a finished length of 8 feet, width of 3 feet, and 3 feet in depth, or as directed by STATE. Backslopes shall be ¾:1. Ditch line armor and settling pond armor shall be 8 inches deep.

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

(7) 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 in Exhibit A, or other stable locations as directed by STATE.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT, ROCK REPLACEMENT AND MAINTENANCE INSTRUCTIONS:

(8) Subgrade Preparation and Application of Surfacing Rock.

(a) Complete culvert installations, drainage ditches, fill reconstruction, ditchouts, settling ponds, and other specified work prior to the application of new surfacing rock.

(b) Cut out all potholes and/or washboard sections from the existing surfacing.

(c) 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, outslope, or inslope 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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT, ROCK REPLACEMENT AND MAINTENANCE INSTRUCTIONS:

Segment	Station	Work Description
A to B	0+00	Point A. Beaverdam Road. Begin road Improvement. Crown road, clean ditch lines as directed by STATE.
	9+70	0.25 Mile marker.
	26+45	.05 Mile marker.
	37+50	Junction with University Falls Road on right.
	53+50	1 Mile marker.
	54+30	Junction with Cedar Road on left.
	80+10	1.5 Mile marker.
	93+00	Junction on left.
	98+70	Junction with Powderhouse Road on left.
	102+10	Junction on right.
	108+50	Bridge Crossing
	113+90	Junction with Scoggins Creek Road on left.
	124+80	Junction with Staging area on right.
	132+50	2.5 Mile marker.
	133+60	Junction on right.
	136+30	Browns Camp Rock Quarry on left.
	160+85	3 Mile marker.
	188+25	3.5 Mile marker.
	189+00	Junction with Saddle Mountain Road on left.
	215+40	4 Mile marker.
	234+90	Junction on left.
	240+55	Junction with University Falls Tie Road on right.
	243+15	4.5 Mile marker.
	244+40	Junction on left.
	262+90	Junction with BD-5 Road on right.
	268+90	5 Mile marker.
	270+20	Point V7. Junction with V7 to V8 on right.
	272+90	Install Culvert No.1 (24” x 30’) as cross drain.
	280+35	Point V5. Junction with V5 to V6 on right.
	288+00	Point N and Point V1. Junction with N to O on right. Junction with V1 to V2 on left.
	295+55	5.5 Mile marker.
	300+40	Junction with Chicken Road on right.
	309+00	Junction on left.
	324+35	6 Mile marker.
End	340+35	Point B. Junction with BD-6 Road on left.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT, ROCK REPLACEMENT AND MAINTENANCE INSTRUCTIONS:

Segment	Station	Work Description
B to C	0+00	Point B. Begin road improvement. Crown road, clean, or construct ditches.
	1+25	Junction on left.
	1+80	Existing culvert, clean inlet and outlet, install marker.
	4+15	Improve turnout on right.
	4+30	Junction on left.
	5+70	Existing culvert, clean inlet and outlet, install marker.
	9+35	Construct ditch out on right to flow toward Point B.
	12+40	Improve turnout on right.
	14+30	Construct three settling ponds on left. Haul excavated material to Waste Area No.1.
	14+70	Live Stream crossing.
	15+20	Construct three settling ponds on left. Haul excavated material to Waste Area No.1.
	19+00	Existing culvert, clean inlet and outlet, install marker.
	22+05	Remove existing culvert and install Culvert No. 2 (18” x 30’). Place 12cy of Riprap as Energy Dissipator at outlet.
	24+85	Improve turnout on right.
	25+70	Remove existing culvert and install Culvert No. 3 (18” x 30’).
	28+20	Remove existing culvert and install Culvert No. 4 (18” x 30’).
	29+30	Remove two stumps on left. Remove one stump on right.
	31+50	Remove existing culvert and install Culvert No. 5 (18” x 30’).
	32+20	Point L. Junction with L to M on left.
	37+00	Construct ditch out on right.
	38+00	Point J. Junction with J to K on left.
	38+55	Remove existing culvert and install Culvert No. 6 (18” x 30’).
	40+35	Junction on left.
	41+60	Live stream crossing.
	42+00	Construct two settling ponds in ditchline on left. Haul excavated material to Waste Area No.1.
	42+20	Remove existing culvert and install Culvert No. 7 (18” x 30’).
	42+40	Construct three settling ponds in ditchline on left. Haul excavated material to Waste Area No.1.
	45+40	Point H. Junction with H to I on right. Construct roadside landing on left.
	48+20	Construct ditch-out on left.
	51+00	Install Culvert No. 8 (18” x 30’).
	53+85	Construct ditch-out on left.
	54+85	Construct roadside landing on left.
	59+95	Remove existing culvert and install Culvert No. 9 (18” x 30’).
End	62+45	Point C. End road improvement. Improve landing.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT, ROCK REPLACEMENT AND MAINTENANCE INSTRUCTIONS:

Segment	Station	Work Description
D to E	0+00	Point D. Begin road improvement. Crown road, clean or construct ditches.
	0+80	Remove existing culvert and replace with Culvert No. 10 (18" x 30')
	2+70	Remove existing culvert and replace with Culvert No. 11 (18" x 30').
	3+45	Remove existing culvert and replace with Culvert No. 12 (18" x 30').
	6+70	Existing culvert. Clean inlet and outlet.
	8+00	Remove existing culvert and replace with Culvert No. 13 (18" x 30').
End	8+25	Point E. End road improvement.

Segment	Station	Work Description
D to F	0+00	Point D. Begin road improvement. Crown road, clean, or construct ditches.
	3+50	Existing culvert. Clean inlet and outlet.
	6+00	Remove existing culvert and replace with Culvert No. 14 (18" x 30').
	11+80	Remove existing culvert and replace with Culvert No. 15 (18" x 30').
End	17+80	Point F. End road improvement at OHV trail entrance. Maintain trail access.

Segment	Station	Work Description
D to G	0+00	Point D. Begin road improvement. Crown road, clean, or construct ditches.
End	4+30	Point G. End road improvement. Improve to large landing to be used as a heliport.

Segment	Station	Work Description
E to Z	0+00	Point E. Begin road improvement. Crown road, clean, or construct ditches.
	1+90	Junction on left.
	4+75	Junction on right.
	9+05	Live stream. Existing culvert.
End	15+00	Point Z. End road improvement.

Segment	Station	Work Description
H to I	0+00	Point H. Begin road improvement. Crown road, clean, or construct ditches.
	1+30	Existing culvert. Clean inlet and outlet.
	5+10	Improve turnout on right.
End	7+00	Point I. End road improvement. Improve landing.

Segment	Station	Work Description
J to K	0+00	Point J. Begin road improvement. Crown road, clean, or construct ditches.
End	3+85	Point K. End road improvement. Improve landing.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT, ROCK REPLACEMENT AND MAINTENANCE INSTRUCTIONS:

Segment	Station	Work Description
L to M	0+00	Point L. Begin road improvement. Crown road, clean, or construct ditches.
End	3+50	Point M. End road improvement. Improve landing.

Segment	Station	Work Description
P to Q	0+00	Point P. Begin road improvement. Crown road, clean, or construct ditches.
	16+60	Junction on right.
	24+55	Junction on left.
	29+05	Junction on left.
	33+25	Junction on right.
	35+50	Junction on left.
	44+05	Junction on right.
End	47+90	Point Q. End road improvement.

Segment	Station	Work Description
Q to R	0+00	Point H. Begin road improvement. Crown road, clean, or construct ditches.
	5+90	Improve turnout on left.
	10+40	Improve landing on left.
	20+75	Junction on left.
End	24+50	Point R. End road improvement. Improve landing.

Segment	Station	Work Description
Q to U	0+00	Point Q. Begin road improvement. Crown road, clean, or construct ditches.
	1+00	Point V. Junction with V to W on right.
End	6+80	Point U. End road improvement. Improve landing.

Segment	Station	Work Description
V to W	0+00	Point V. Begin road improvement. Crown road, clean, or construct ditches.
	2+00	Junction on right.
End	2+50	Point W. End road improvement. Improve landing.

EXHIBIT D

FULL BENCH AND END-HAUL REQUIREMENTS

POINT TO POINT	STA. TO STA.
B to C	14+30, 15+20, 42+00, 42+40
C to D	16+70 to 20+00
N to O	0+00 to 1+00
V1 to V2	1+85
V3 to V4	0+45

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.

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

- Full: No excavated material remains below the road.

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

- As shown on Exhibit A and as marked in the field.
- Setback from slope break shall be a minimum of 20 feet horizontal measurement.

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 J.

EXHIBIT D

ROCK TABLE

ROAD SEGMENT: A to B				Sta. to Sta. 0+00 to 340+35				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Spot Rock	1 ½"-0 Crushed	A to B	Varies	Station	Varies	Stations	340.5	500
Culvert Bedding /Backfill	1 ½"-0 Crushed	Culvert No. 1	Varies	Culvert	24	Culverts	1	24
Total Rock for Road Segment:								524

ROAD SEGMENT: B to C				Sta. to Sta. 0+00 to 62+45				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Culvert Bedding /Backfill	1 ½"-0 Crushed	Culvert Nos. 2 - 9	Varies	Culvert	24	Culverts	8	192
Energy Dissipator	Riprap	Culvert No. 2	Varies	Culvert	12	Culverts	1	12
Surfacing Rock	1 ½"-0 Crushed	0+00 to 62+45	6"	Station	31	Stations	62.5	1,936
Spot Rock	1 ½"-0 Crushed	B to C	Varies	Station	Varies	Stations	62.5	120
Junction	1 ½"-0 Crushed	Points L, J & H	6"	Junction	12	Junctions	3	36
Turnout	1 ½"-0 Crushed	4+15, 12+40, 24+85	6"	Turnout	14	Turnouts	3	42
Roadside Landing	3"-0 Crushed	45+40, 54+85	12"	Landing	90	Landings	2	180
Landing	1 ½"-0 Crushed	62+45	6"	Landing	90	Landings	1	90
Total Rock for Road Segment:								2,608

ROAD SEGMENT: C to D				Sta. to Sta. 0+00 to 28+30				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Base Rock	3"-0 Crushed	0+00 to 28+30	12"	Station	65	Stations	28.3	1,840
Traction Rock	1 ½"-0 Crushed	C to D	Varies	Station	Varies	Stations	28.3	100
Junction	3"-0 Crushed	27+50 to 28+30	12"	Junction	48	Junctions	1	48
Turnout	3"-0 Crushed	21+00	12"	Turnout	29	Turnouts	1	29
Roadside Landing	3"-0 Crushed	7+25, 9+50	12"	Landing	95	Landings	2	190
Total Rock for Road Segment:								2,207

EXHIBIT D

ROCK TABLE

ROAD SEGMENT: D to E				Sta. to Sta. 0+00 to 8+25				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Culvert Bedding /Backfill	1 ½"-0 Crushed	Culvert Nos. 10 - 12	Varies	Culvert	24	Culverts	4	96
Surfacing Rock	1 ½"-0 Crushed	0+00 to 8+25	6"	Station	31	Stations	8.25	256
Junction	1 ½"-0 Crushed	Point D	6"	Junction	12	Junctions	1	12
Total Rock for Road Segment:								364

ROAD SEGMENT: D to F				Sta. to Sta. 0+00 to 17+80				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Culvert Bedding /Backfill	1 ½"-0 Crushed	Culvert Nos. 14 & 15	Varies	Culvert	24	Culverts	2	48
Surfacing Rock	1 ½"-0 Crushed	0+00 to 17+80	6"	Station	31	Stations	17.8	552
Junction	1 ½"-0 Crushed	Point D	6"	Junction	12	Junctions	1	12
Total Rock for Road Segment:								612

ROAD SEGMENT: D to G				Sta. to Sta. 0+00 to 4+30				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Surfacing Rock	1 ½"-0 Crushed	0+00 to 4+30	6"	Station	31	Stations	4.3	133
Junction	1 ½"-0 Crushed	Point D	6"	Junction	12	Junctions	1	12
Landing	1 ½"-0 Crushed	Point G	6"	Landing	90	Landing	1	90
Total Rock for Road Segment:								235

ROAD SEGMENT: E to Z				Sta. to Sta. 0+00 to 15+00				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Spot Rock	1 ½"-0 Crushed	E to Z	Varies	Station	Varies	Stations	15	100
Total Rock for Road Segment:								100

EXHIBIT D

ROCK TABLE

ROAD SEGMENT: H to I				Sta. to Sta. 0+00 to 7+00				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Surfacing Rock	1 ½"-0 Crushed	0+00 to 7+00	6"	Station	31	Stations	7.3	226
Turnout	1 ½"-0 Crushed	5+10	6"	Turnout	14	Turnouts	1	14
Landing	1 ½"-0 Crushed	Point I	6"	Landing	90	Landing	1	90
Total Rock for Road Segment:								330

ROAD SEGMENT: J to K				Sta. to Sta. 0+00 to 3+85				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Surfacing Rock	1 ½"-0 Crushed	0+00 to 3+85	6"	Station	31	Stations	3.85	119
Landing	1 ½"-0 Crushed	Point K	6"	Landing	90	Landing	1	90
Total Rock for Road Segment:								209

ROAD SEGMENT: L to M				Sta. to Sta. 0+00 to 3+50				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Surfacing Rock	1 ½"-0 Crushed	0+00 to 3+50	6"	Station	31	Stations	3.5	109
Landing	1 ½"-0 Crushed	Point M	6"	Landing	90	Landing	1	90
Total Rock for Road Segment:								199

ROAD SEGMENT: N to O				Sta. to Sta. 0+00 to 3+75				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Base Rock	3"-0 Crushed	0+00 to 3+75	12"	Station	65	Stations	3.75	244
Junction	3"-0 Crushed	Point N	12"	Junction	24	Junction	1	24
Landing	3"-0 Crushed	Point O	12"	Landing	180	Landings	1	180
Total Rock for Road Segment:								448

EXHIBIT D

ROCK TABLE

ROAD SEGMENT: Q to R				Sta. to Sta. 0+00 to 24+50				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Surfacing Rock	1 ½"-0 Crushed	0+00 to 24+50	6"	Station	31	Stations	24.5	760
Turnout	1 ½"-0 Crushed	5+90	6"	Turnout	14	Turnouts	1	14
Landing	1 ½"-0 Crushed	10+40, Point R	6"	Landing	90	Landings	2	180
Total Rock for Road Segment:								954

ROAD SEGMENT: Q to U				Sta. to Sta. 0+00 to 6+80				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Surfacing Rock	1 ½"-0 Crushed	0+00 to 6+80	6"	Station	31	Stations	6.8	211
Landing	1 ½"-0 Crushed	Point U	6"	Landing	90	Landings	1	90
Total Rock for Road Segment:								301

ROAD SEGMENT: V to W				Sta. to Sta. 0+00 to 2+50				TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Surfacing Rock	1 ½"-0 Crushed	0+00 to 2+50	6"	Station	31	Stations	2.5	78
Landing	1 ½"-0 Crushed	Point R	6"	Landing	90	Landings	1	90
Total Rock for Road Segment:								168

TOTAL ROCK	Riprap	3"-0 Crushed	1 ½"-0 Crushed
9,259 CY	12 CY	2,735 CY	6,512 CY

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

Total rock cubic yard volumes are rounded to the whole yard.

EXHIBIT D

ROCK ACCOUNTABILITY

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

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

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

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

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

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

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

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

ROAD SEGMENT	SUBGRADE COMPACTION OPTIONS
All road segments that require rock surfacing	Vibratory Roller
All road segments that require subgrade reinforcement rock	Vibratory Grid Roller or a combination of Vibratory Roller and Dozer

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

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

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

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

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

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

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

COMPACTION EQUIPMENT OPTIONS

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

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

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

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

EXHIBIT E

CULVERT SPECIFICATIONS

All culverts and drainage structures shall be installed as soon as possible and before October 15 annually.

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

Uninstalled culverts shall become property of the STATE. PURCHASER will deliver surplus culverts to the district office as directed by STATE.

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

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

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

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

Cross Drain Culverts

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

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

Disconnect Culverts

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

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

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

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

EXHIBIT E

CULVERT SPECIFICATIONS

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

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

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

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

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

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

All culverts scheduled for replacement shall become property of the PURCHASER and be removed from STATE land in the same project period in which replacement occurred. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels.

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

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

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

EXHIBIT E

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
1	24	30	A to B	272+90
2	18	30	B to C	22+05
3	18	30	B to C	25+70
4	18	30	B to C	28+20
5	18	30	B to C	31+50
6	18	30	B to C	38+55
7	18	30	B to C	42+20
8	18	30	B to C	51+00
9	18	30	B to C	59+95
10	18	30	D to E	0+80
11	18	30	D to E	2+70
12	18	30	D to E	3+45
13	18	30	D to E	8+00
14	18	30	D to F	6+00
15	18	30	D to F	11+80
16	18	30	C to D	3+40
17	18	30	C to D	8+40
18	18	30	C to D	13+20
19	18	30	C to D	22+30
20	18	30	N to O	1+00

TOTAL LENGTHS BY DIAMETER	
18 INCH	24 INCH
570	30

EXHIBIT E

TYPICAL EMBEDDED ENERGY DISSIPATOR

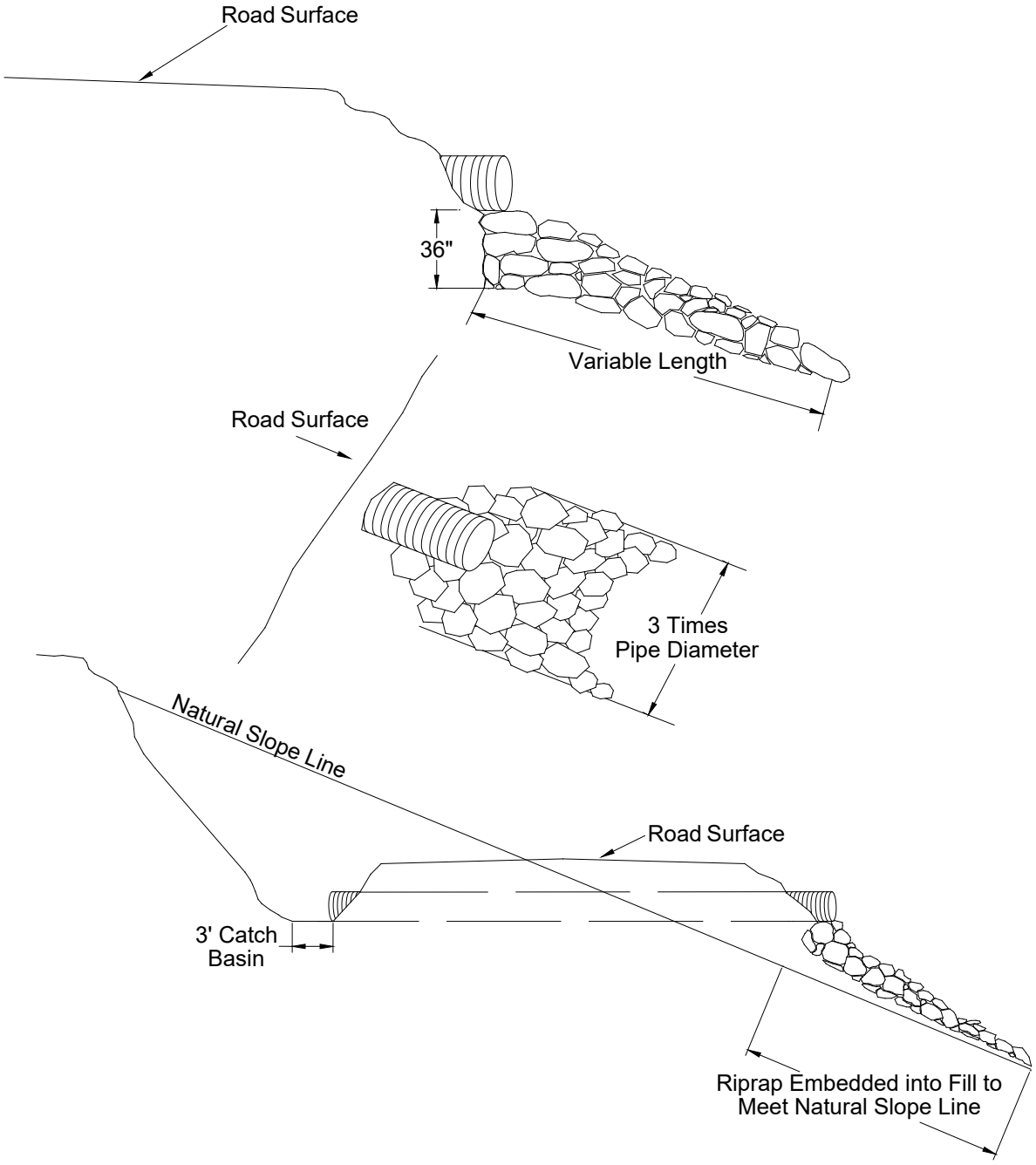
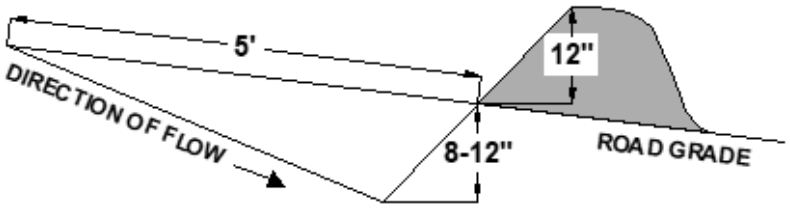


EXHIBIT F

WATERBAR SPECIFICATIONS

PROFILE

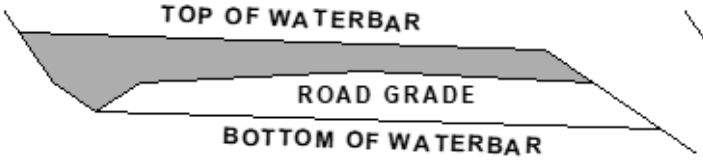
DITCHED AND OUTSLOPED



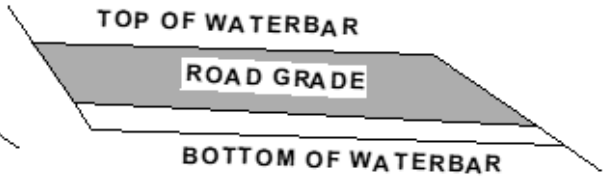
SPACING OF WATERBARS	
ROAD GRADE	DISTANCE
< 6 %	400'
6 - 10 %	200'
11 - 15 %	150'
> 15 %	100'

CROSS SECTION

DITCHED



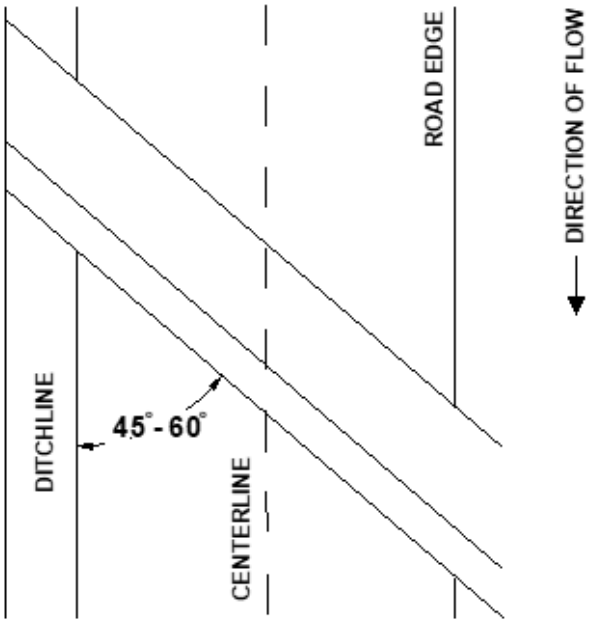
OUTSLOPED



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

PLAN VIEW

DITCHED



OUTSLOPED

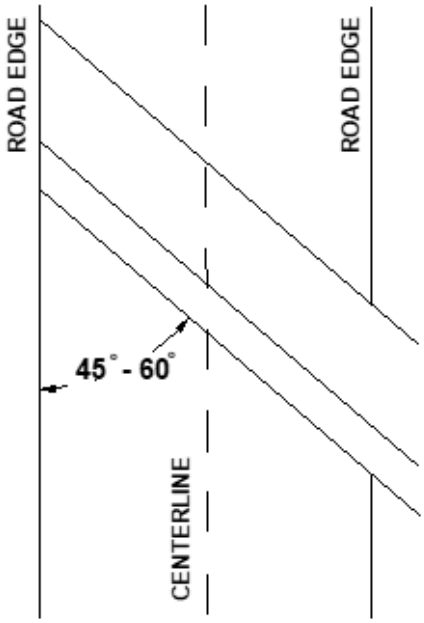
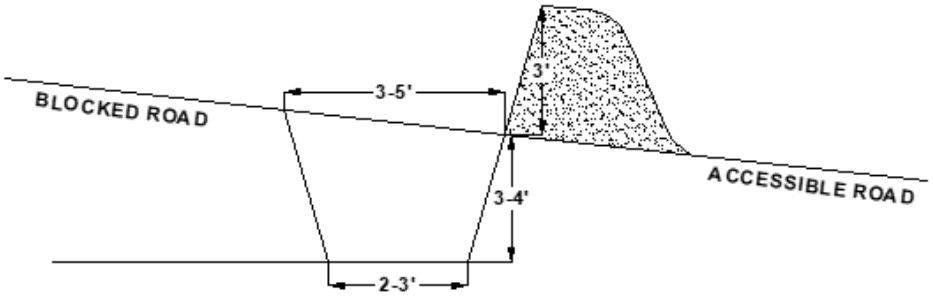


EXHIBIT G

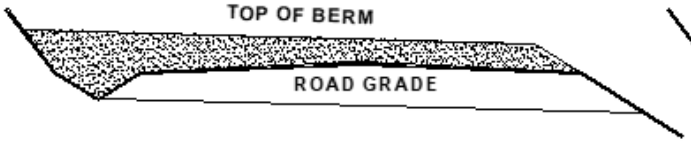
TANK TRAP SPECIFICATIONS

PROFILE
DITCHED AND OUTSLOPED

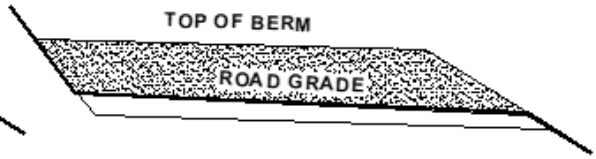


CROSS SECTION

DITCHED



OUTSLOPED

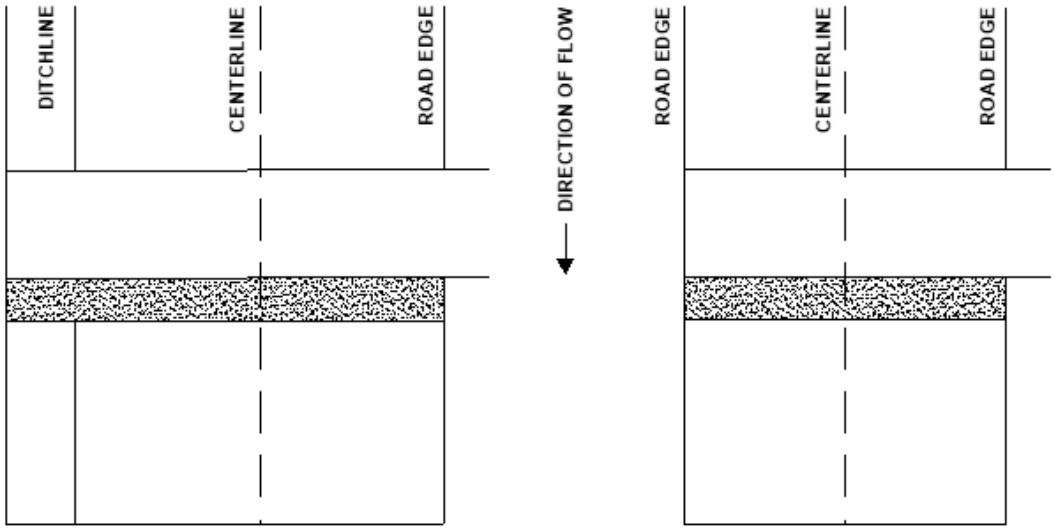


CONSTRUCT DITCHOUT THRU ANY EXISTING BERM.
CROSS DRAINAGE GRADIENT MINIMUM 3%

PLAN VIEW

DITCHED

OUTSLOPED



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

EXHIBIT H

ROAD BLOCKING AND VACATING SPECIFICATIONS

PURCHASER shall block or vacate road between the following points: V1 to V2, V3 to V4, V5 to V6, V7 to V8.

Specific objectives for this project include:

Surface removal. Rip road surface to a depth of 12”

Sidecast Pullback. Excavate/pullback previously sidecast materials below the road at designated locations. Developed slopes shall be pulled back to a 1½:1 slope or to natural ground contours. The beginning position for sidecast pullback shall be no greater than 20 feet vertical distance from the existing road surface, in accordance with this Exhibit G. Sidecast material remaining greater than 20 feet below the road shall be tapered and sloped for drainage.

Outslope Road. Outslope road to restore natural contours or establish a minimum of 10 percent slope for drainage at designated locations. If the road grade exceeds 10 percent, outslope of the road shall be 2 percent greater than the road grade.

Woody Debris. Woody debris shall be placed on the surface of pullback/fill material.

Block Roads. Use excavated material from fill removals, boulders to block roads from vehicle access, as directed by STATE.

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.

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.

Fill Removal and Stream Channel Development. Remove fills to the natural stream course level(s). Stream channel(s) shall be excavated/developed to specified widths. Developed stream banks shall be sloped at natural contours or no steeper than 2:1, as directed by STATE. Do not place excavated material within a riparian management area. If a riparian management area is not required, do not place excavated material within 75 ft. of stream channel.

Culvert Removal. Remove drainage structures and culverts. Removed culverts shall be hauled to an approved refuse site off of STATE land.

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

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:

Segment	Station	Work Description
V1 to V2	0+00	Point V1. Begin road blocking. Junction with A to B. Construct tank trap.
	1+85	Live stream. Remove existing culvert. Develop stream channel to a width of 5’. Haul excavated material to Waste Area No. 2.
	2+75	Construct tank trap.
	2+85	Point V3. Junction with V3 to V4 on left.
	3+50	Construct tank trap.
End	9+25	Point V2. End road blocking.

EXHIBIT H

ROAD BLOCKING AND VACATING SPECIFICATIONS

SPECIFIC INSTRUCTIONS/SPECIFICATIONS:

Segment	Station	Work Description
V3 to V4	0+00	Point V3. Begin road blocking. Junction with V1 to V2. Construct tank trap.
	0+45	Remove existing culvert. Haul excavated material to Waste Area No. 2.
	1+00	Construct tank trap.
End	2+90	Point V4. End road blocking.

Segment	Station	Work Description
V5 to V6	0+00	Point V5. Junction with A to B. Begin road vacating. Begin road surface ripping and sidecast pullback. Construct tank trap.
	0+05	Remove existing culvert.
	0+75	Construct tank trap.
	1+50	Construct tank trap.
End	2+20	Point V6. End road vacating. Rip landing.

Segment	Station	Work Description
V7 to V8	0+00	Point V7. Junction with A to B. Begin road vacating. Begin road surface ripping and sidecast pullback. Construct tank trap.
	0+75	Construct tank trap.
End	1+75	Point V8. Waste area No. 2. End road vacating.

EXHIBIT I

SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required native seed, fertilizer, and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed and fertilizer to all waste areas, and bare soils resulting from Project Nos. 1, 2, and 3. Apply straw mulch to all bare soils within 100' of streams resulting from Project Nos. 1 and 2 and to all waste areas.

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

APPLICATION METHODS FOR SEED AND FERTILIZER

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

APPLICATION RATES FOR SEED AND FERTILIZER

The native seed mixture listed below shall be applied at 100 lbs. per acre. The seed mixture shall be approved by STATE or comprised of the following:

SPECIES	MIXTURE	PURE LIVE SEED	GERMINATION
Blue Wildrye – Elymus glaucus	95.92%	95%	>90%
Yarrow – Achillea millefolium	2.99%	95%	>90%

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

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

APPLICATION RATES FOR MULCH

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

Application Locations:

Road Segment	Location	Road Segment	Location
A to B	Culvert No. 1	N to O	Culvert No. 20, 0+00 to 3+45.
B to C	Culvert Nos. 2, 3, 4, 5, 6, 7, 8, and 9.	V1 to V2	0+00, 1+85, 2+75, 3+50.
C to D	Culvert Nos. 16, 17, 18, and 19, 0+00 to 28+30.	V3 to V4	0+00, 0+45, 1+00.
D to E	Culvert Nos. 10, 11, 12, and 13.	V5 to V6	0+00 to 2+20 (Road and Landing).
D to F	Culvert Nos. 14, and 15.	V7 to V8	Waste Area No. 2, 0+00 to 1+75 (Road and Landing).

EXHIBIT J

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Description of Work to be Done

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

Clearing - brush, logging Slash, and other debris shall be cleared from planting sites and piled in windrows or piles, so that 80 percent or more of the soil organic layer is exposed. All woody vegetation other than trees is defined as brush in this exhibit. Stumps, however, shall be placed separately, in small clumps for wildlife.

In-Unit Piles - shall be located at least 75 feet apart and shall be no more than 75 feet long. Piles shall be located inside the sale area designated for piling and shall be more than 50 feet from any cutting edge, standing tree, or existing road. Logs that do not meet Section 2045 Log Removal requirements, chunks larger than 12 inches diameter, and stumps shall be left scattered in the Unit for wildlife habitat away from roads and landings.

Pile Construction - all landing piles, and in-unit piles greater than 9 feet by 9 feet by 9 feet, shall have no smaller than a 200 square feet of polyethylene plastic sheeting or enough to cover 50% of the pile. Start the pile with good burnable material such as conifer limbs and chunks, 6 to 8 feet high, add plastic, and complete the pile with Slash on the plastic.

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

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

EXHIBIT J

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Equipment Type, Equipment Operation, and Conduct of Work

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

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

- Log Loader – shovel: Grapple with rake attachment shall be a hydraulically controlled, with a 360-degree continuous rotation, and tooth length on rake arm shall be greater than 14 inches long, unless otherwise approved in writing by STATE.

Equipment	Rate	Acres	Appraised Value
Log Loader	$250 / acre	50	$12,500

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

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

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

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

NEEDS ASSESSMENT
Temporary Stream Crossing

Project Name: Saddle Time

Type N Stream Crossing is located in Section 14 & 23, T1N, R6W. W.M. Tillamook County, Oregon.

Landowner: Oregon Department of Forestry
801 Gales Creek Rd.
Forest Grove, OR 97116
(503) 357-2191

Protected Resources: Unnamed Type N tributary to South Fork Wilson River.

Situation:

- Approximately one of timber is locked between two streams and alternatives were assessed and a temporary stream crossing was chosen as the lowest impact.

Project Summary:

- A temporary stream crossing is being planned during logging operations to access a wedge of timber that is locked between two separate streams. The goal of the stream crossing would be to minimize the impact on the buffers and the stream channels as much as possible while still harvesting the available timber.

Alternative assessments:

- Build a road that would cross the stream
    - This would cause a more permanent impact to the stream and the stream buffer with a higher likelihood of causing more impact over a longer period of time then the short term stream crossing.
- Cable Yard the Area or include it in stand to the west
    - Stand to the west has already been harvested and is a significantly different stand age. This alternative not possible as not enough topographic relief to utilize a cable system and lift over the stream buffer components. Harvest area is all shovel ground.
- Move Leave Trees
    - Working in coordination with the biologist on this units' leave tree retention strategy, the scattered leave trees on the north end were of higher biological value and were included. The other green tree areas were viewed as equal biologically to this area and already exceeded leave tree requirements.

Justification:

- Given the other alternative assessments it was determined that the lowest impact to the buffer and the stream at this location would be a temporary stream crossing as described below in resource protection measures.
- Not enough timber value to justify building permanent road across RCA to access.

Resource Protection Measures:

Best management practices will be used to prevent damage to the RCA. These include:

- The crossing location will be approximately 100' downstream from the uppermost flow feature.
- Logs shall be placed within the stream channel to minimize impact of equipment crossing the channel itself and shall be removed and placed/left within the RCA buffer.
- Equipment will pass over temporary crossing once to access stream locked portion, hand logs across stream to another loader, and a single pass back over to minimize impact to the channel.
- Utilizing sediment traps downstream during operating period.
- Disturbed soil in stream buffer will be seeded and mulched.
- Work will be conducted during dry weather when the water is at a lower flow.
- In order to minimize disturbance to soil and non-merchantable vegetation, decking, skidding, and processing will not occur within the RCA.
- Machine activity in stream channel shall be minimized.
- Oil spill response materials shall be on site before work begins.

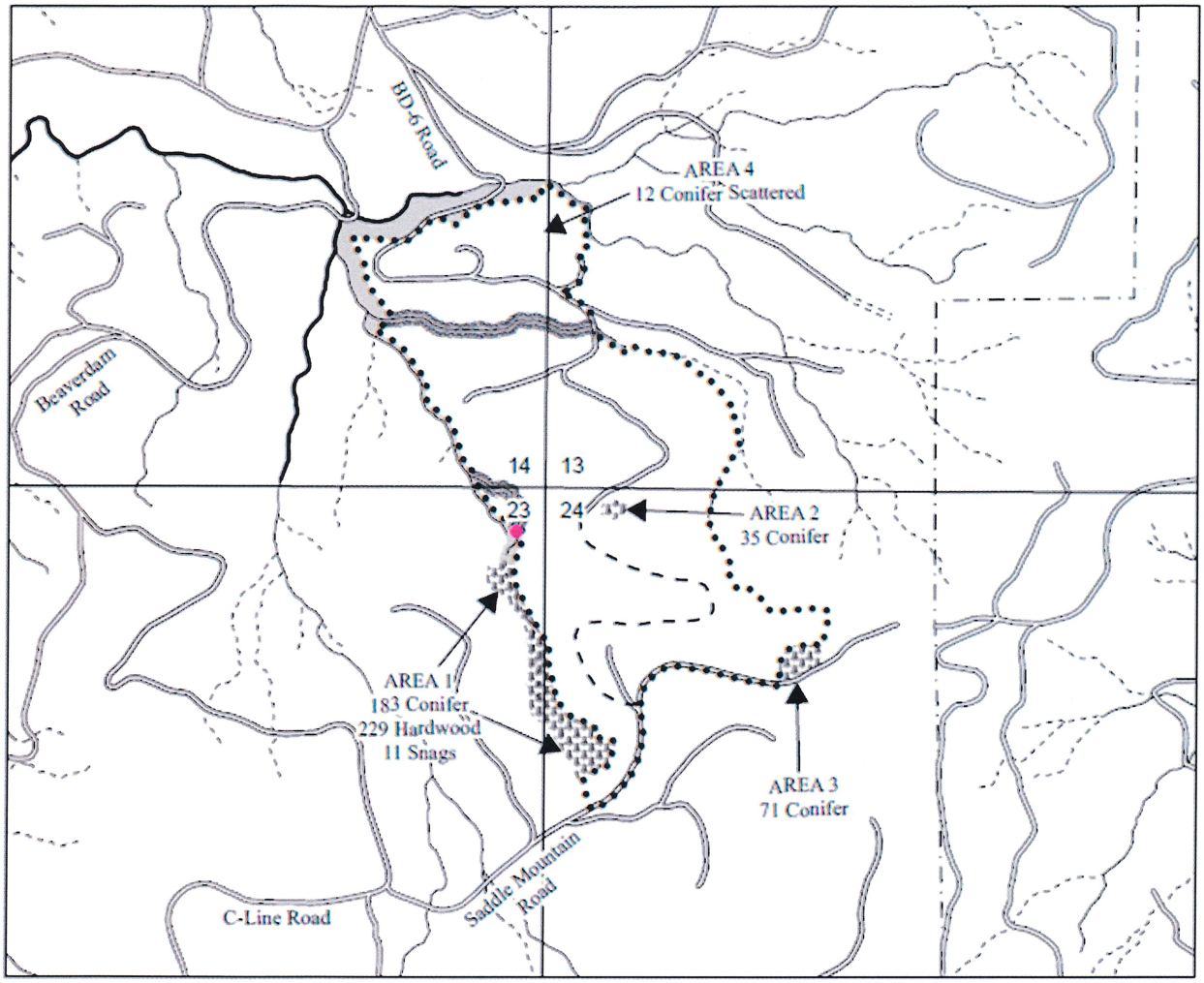
Submitted Shamus Smith 2-3-25

Marketing Representative Date

Approved [signature] 02-06-2025

Marketing Unit Manager Date

Map:



Timber Sale Boundary
Posted Stream Buffer Boundary
ODF Ownership Boundary
Surfaced Road
New Road Construction
Recreation Trail
Type F Stream
Type N Stream - Perennial
Type N Stream - Seasonal
Stream Buffer
Equipment Crossing
Green Tree Retention Area
Section Lines

NEEDS ASSESSMENT

FOR TIMBER SALE CONTRACT #FG-341-2025-W01199-01
SADDLE TIME
PORTIONS OF SECTIONS 11, 13, 14, 23, & 24, T1N, R6W, W.M.,
TILLAMOOK COUNTY, OREGON

Forest Grove District GIS
December, 2024
This product is for informational use and may not be suitable for legal, engineering, or surveying purposes.

N

1:12,000

1 inch = 1,000 feet

0 500 1,000 2,000 Feet

APROXIMATE NET ACRES	
UNIT 1	114 ACRES (CC)
UNIT 2	<1 ACRE (R/W)
TOTAL	114 ACRES

Wildlife Trees					
Acres	Conifer	Hardwood	Snags	Total	TPA
114	301	229	11	541	4.7