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: WO-341-2025-W01088-01

(2) Sale Name: All Terrain

(3) Contract Expiration Date: 12/31/2026

(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 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.

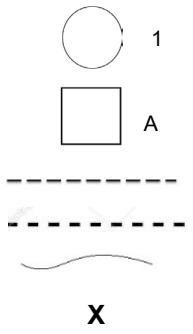
(7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.

(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.

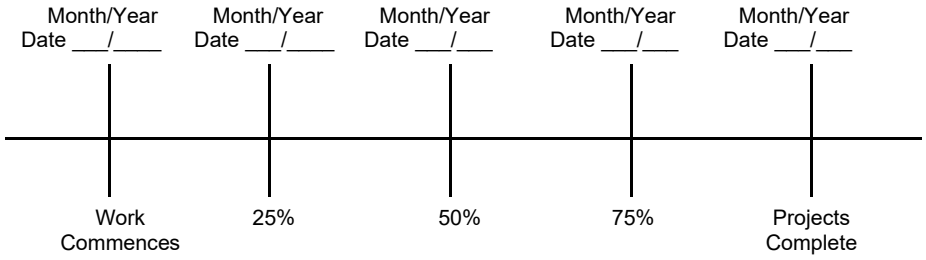
Oregon Department of Forestry
2600 State St Salem OR 97310
PART III: EXHIBITS

EXHIBIT B
OPERATIONS PLAN

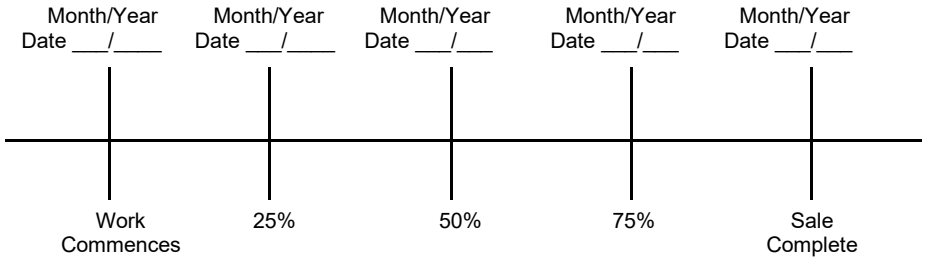
Completion Timeline

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
West Oregon - NWOA

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

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

(3) FROM: West Oregon Phone (541) 929-3266
(State Forestry District)
Address: 24533 ALSEA HWY
PHILOMATH,OR 97370

(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	☐	☑

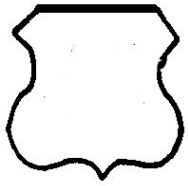
(8) **APPROVED SCALING LOCATIONS** (as shown on the ODF Approved Locations web-site)	**Species**	**Yard**	**Truck**	**Weight**

(9) **SALE NAME:** All Terrain
COUNTY: Lincoln

(10) **STATE CONTRACT NUMBER:**
WO-341-2025-W01088-01

(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
West Oregon - 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.

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

West Oregon, NWOA

(1) ORIGINAL REGISTRATION ☐ Date _____

REVISION NUMBER 000 ☐ Date _____

CANCELLATION ☐ Date _____

(2) TO: _____

(Approved Pulp Processing Facility)

(3) FROM: West Oregon Phone (541) 929-3266
(State Forestry District)

Address: 24533 ALSEA HWY

PHILOMATH,OR 97370

(4) PURCHASER: _____

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

Mailing Address: _____

, _____

Phone Number: _____

(9) **SALE NAME:** All Terrain

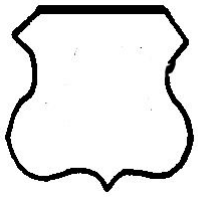
COUNTY: Lincoln

(10) **STATE CONTRACT NUMBER:**

WO-341-2025-W01088-01

(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 8 inches marked with blue paint.

Operator's Name (Optional inclusion by District):

(14) SIGNATURES:

Purchaser or Authorized Representative Date

State Forester Representative Date

State Forester Representative PRINT NAME

(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.

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

West Oregon, 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

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DRAINAGE
16 feet	n/a	A to B	0+00 to 2+40	Outsloped
16 feet	n/a	C to D	0+00 to 1+10	Outsloped
16 feet	14 feet	1 to 2	0+00 to 190+80	Crowned/Outsloped
16 feet	14 feet	3 to 4	0+00 to 112+90	Crowned/Outsloped
16 feet	14 feet	5 to 6	0+00 to 49+60	Crowned/Outsloped
16 feet	14 feet	7 to A	0+00 to 13+60	Outsloped
16 feet	14 feet	8 to 9	0+00 to 17+70	Outsloped
16 feet	14 feet	10 to 11	0+00 to 53+20	Crowned/Outsloped
16 feet	12 feet	12 to 13	0+00 to 10+00	Outsloped
16 feet	n/a	14 to 15	0+00 to 6+20	Outsloped
16 feet	n/a	16 to 17	0+00 to 6+20	Outsloped

CLEARING. This work shall consist of clearing, removing, and disposing of all trees, Snags, Down Timber, brush, surface objects, and protruding obstructions within the clearing limits.

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

CLEARING CLASSIFICATION.

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

Improvement - The “Road Brushing Specifications" in Exhibit E shall apply. 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.

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

All stumps shall be completely removed within the limits of required grubbing. Stumps overhanging cut slopes shall be removed.

GRUBBING CLASSIFICATION.

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

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

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

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

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

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

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

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

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

All fills shall be machine compacted according to the “Compaction and Processing Requirements” in this Exhibit.

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

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

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

DRAINAGE

Subgrade. Subgrade shall be crowned at 4 to 6 percent or outsloped at 3 to 4 percent as shown on the “Forest Road Specifications” table in this Exhibit.

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

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

TURNOUTS. Increase roadbed width an additional 8 feet for both subgrade and surfacing. Length shall be at least 50 feet, or as staked on the ground, plus 25-foot approaches at each end.

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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 crowned for drainage with general grade no more than 3 percent. Surface as shown in the “Road Surfacing” table in this Exhibit.

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

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS (Project No. 1):

(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 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 this Exhibit. Excess excavated material not used for embankment shall be end hauled to waste areas as shown on Exhibit A and marked in the field.

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

(4) Subgrade Preparation and Application of Surfacing Rock.

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

(b) Subgrade shall be crowned at 4 to 6 percent, or outsloped at 3 to 4 percent.

(c) Upon completion of the above required work, apply, process, and compact surfacing rock in accordance with specifications in the “Compaction and Processing Requirements” in this Exhibit. Final road surface shall be crowned at 4 to 6 percent or outsloped at 3 to 4 percent.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS (Project No. 1)

Segment	Station	Work Description
A to B	0+00 to 2+40	Construct unsurfaced, outsloped road with dozer and excavator. Shape surface with grader and compact with vibratory roller.
	0+00 to 0+50	Apply 10 CY of jaw-run rock as transition rock. Process and compact rock with dozer and vibratory roller.
	2+40 (Pt. B)	Construct a 40’x40’ unsurfaced, crowned landing. Shape and compact surface with dozer and vibratory roller.
C to D	0+00 to 1+10	Construct unsurfaced, outsloped road with dozer and excavator. Shape surface with grader and compact with vibratory roller.
	0+00 to 0+50	Apply 10 CY of jaw-run rock as transition rock. Process and compact rock with dozer and vibratory roller.
	1+10	Construct 40’x40’ unsurfaced, crowned landing. Shape and compact surface with grader and vibratory roller.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT & 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) Roadside Brushing. Conduct roadside brushing as specified in the Exhibits.

(3) 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 this Exhibit.

(4) 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.

(5) Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include, skewing the culvert and/or installing the culvert at gradients equal to or exceeding the drainage (or ditch) gradient. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. All woody debris encountered during fill excavation shall be removed. 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 and thoroughly compacted in accordance with this Exhibit.

(6) 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.

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

(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 F.

GENERAL ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT, & MAINTENANCE INSTRUCTIONS

(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 surfacing rock.

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

(c) Apply required patching and leveling rock, as directed by STATE.

(d) Process (grade and mix) the existing surface and added base rock. Provide for a crown of 4 to 6 percent or outslope of 3 to 4 percent, and compact in accordance to the “Compaction and Processing Requirements” in this Exhibit.

EXHIBIT D

FOREST ROAD SPECIFICAITONS

SPECIFIC ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT, & MAINTENANCE INSTRUCTIONS (Project No. 2)

Segment	Station	Work Description
1 to 2	0+00 (Pt. 1) to 162+70	Apply 100 CY of 1½"-0" spot rock as directed by STATE. Process and compact rock with grader and vibratory roller. Clean out culvert inlets and outlets (approx. 4).
	139+50 (Pt. 3) to 190+80 (Pt. 2)	Brush road to specifications in Exhibit E. Remove sod and brushing debris from road surface with grader. Shape road surface with grader and compact with vibratory roller.
	152+05	Reopen culvert inlet with hydraulic jack. Cleanout culvert inlet and outlet.
	162+70 to 169+65	Widen road with excavator by excavating 2-feet of material from cutslope. End-haul waste material to Waste Area 1 (approx. 700 CY). Round cutslope with excavator and end-haul waste material to Waste Area 1 (approx. 110 CY). Shape road subgrade with grader and compact with vibratory roller. Apply 100 CY of jaw-run rock as base rock to exposed road subgrade. Process and compact rock with dozer and vibratory roller. Apply 30 CY of 3"-0" rock as surfacing rock. Spread and compact rock with grader and vibratory roller.
	162+70 to 190+80 (Pt. 2)	Apply a 2-inch lift of 1½"-0" rock to road surface (310 CY). Process and compact rock with grader and vibratory roller.
	173+20 to 174+20	Apply 20 CY of jaw-run rock as patch rock to road surface. Process and compact rock with dozer and vibratory roller.
	173+20	Apply 20 CY of 3"-0" rock to road junction to be used as a truck turnaround. Process and compact rock with grader and vibratory roller.
	173+20 to 190+80 (Pt. 2)	Apply a 2-inch lift of 3"-0" rock to road surface (190 CY). Process and compact rock with grader and vibratory roller.
	176+50	Install an 18"x30' CPP in existing ditchline with excavator at intersection with OHV trail. Utilize 10 CY of 1½"-0" rock as culvert bedding and backfill. Ensure a minimum fill depth on top of culvert of 18 inches.
	183+55	Construct 60'x40' outsloped landing. Remove trees and stumps with excavator and deck in stable location. Excavate material on east side of road and utilize approximately 80 CY of clean waste material to construct fill on west side of road. Compact fill in 8-inch lifts. End haul excess waste to Waste Area 2 (approx. 190 CY). Shape and compact surface with grader and vibratory roller, slope for drainage. Apply 60 CY of jaw-run rock to landing, process and compact rock with dozer and vibratory roller.
	188+45	Construct 50'x50' crowned landing at road intersection. Remove trees and stumps with excavator and deck in stable location. Excavate material on east side of road and utilize approximately 110 CY of clean waste material to construct fill on west side of road, compacting fill in 8-inch lifts. End-haul excess material to Waste Area 2 (approx. 250 CY). Shape landing subgrade with grader, and compact with vibratory roller. Apply 60 CY of jaw-run rock to landing. Process and compact rock with dozer and vibratory roller.

EXHIBIT D

FOREST ROAD SPECIFICAITONS

SPECIFIC ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT, & MAINTENANCE INSTRUCTIONS (Project No. 2)

3 to 4	0+00 to 112+90 (Pt. 4)	Spot grade road as directed by STATE.
	112+90 (Pt. 4)	Construct Waste Area 2 to accommodate approximately 440 CY of material. Shape and compact surface for drainage, and grass seed and mulch in accordance with Exhibit F.
5 to 6	0+00 to 45+00	Apply 30 CY of 1½”-0” spot rock to road surface as directed by STATE. Process and compact rock with grader and vibratory roller.
	45+00 to 49+60 (Pt. 6)	Brush road to specifications in Exhibit E. Remove sod and brushing debris from road surface with grader.
	45+50	Remove tank trap with excavator.
	45+50 to 49+60 (Pt. 6)	Construct Waste Area 1 to accommodate approximately 810 CY of material. Remove sod and brush with excavator on road to the southeast of the road at Sta. 49+60. Shape waste into a 50’x50’ landing to a depth of 2 feet. Shape and compact landing with grader and vibratory roller. Utilize remaining clean waste to fill in existing roadbed to a depth of 2 feet back to Sta. 45+50. Shape and compact surface for drainage. Scatter unclean waste material on the West side of the road in openings in timber. Grass seed and mulch Waste Area in accordance with Exhibit F. Construct a tank trap to specifications in this Exhibit upon final use of Waste Area 1.
7 to A	0+00	Apply 20 CY of 3”-0” rock as curve widening rock to inside of corner. Process and compact rock with grader and vibratory roller.
	0+00 to 13+60 (Pt. A)	Brush road to specifications in Exhibit E. Remove sod and brushing debris from road surface with grader. Shape road surface with grader and compact with vibratory roller. Apply 30 CY of 1½”-0” spot rock to road as directed by STATE. Process and compact rock with grader and vibratory roller.
	2+70	Remove garbage and tires with excavator and end-haul to commercial landfill.
8 to 9	0+00 to 17+70 (Pt. 9)	Shape and compact surface with grader and vibratory roller.
	5+50	Install an 18”x30’ culvert as directed by STATE. Utilize 10cy of 1 ½”-0” rock for bedding and backfill.
	6+95	Construct ditchout as directed by STATE.
	10+10	Install an 18”x30’ culvert as directed by STATE. Utilize 10cy of 1 ½”-0” rock for bedding and backfill.
	12+10	Install an 18”x30’ culvert as directed by STATE. Utilize 10cy of 1 ½”-0” rock for bedding and backfill.
	14+00	Construct ditchout as directed by STATE.

EXHIBIT D

FOREST ROAD SPECIFICAITONS

SPECIFIC ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT, & MAINTENANCE INSTRUCTIONS (Project No. 2)

	15+70	Install an 18”x30’ culvert as directed by STATE. Utilize 10cy of 1 ½”-0” rock for bedding and backfill.
	16+60	Construct 40’x40’ outsloped landing. Remove trees and stumps with excavator and deck in stable location. Shape subgrade with grader and compact with vibratory roller, slope for drainage.
10 to 11	0+00 to 53+20 (Pt. 11)	Brush road to specifications in Exhibit E. Remove sod and brushing debris from road surface with grader. Shape surface with grader. Apply 120 CY of 1½”-0” spot rock to road surface as directed by STATE. Process and compact rock with grader and vibratory roller.
	24+00	Apply 20 CY of 3”-0” rock to inside and outside of corner as curve widening rock. Process and compact rock with grader and vibratory roller.
10 to 11 (cont’d)	26+30	Move old equipment with excavator to allow passage of traffic.
	46+80	Apply 20 CY of 3”-0” rock to outside of corner for curve widening. Process and compact rock with grader and vibratory roller.
12 to 13	0+00 to 10+00 (Pt. 13)	Brush road to specifications in Exhibit E. Remove sod and brushing debris from road surface with grader. Shape road surface with grader and compact with vibratory roller. Apply 50 CY of 1½”-0” spot rock to road as directed by STATE. Process and compact rock with grader and vibratory roller.
	10+60 (Pt. 13)	Apply 10 CY of 3”-0” rock to landing to be used for a truck turnaround.
14 to 15	0+00 to 0+50	Apply 10 CY of jaw-run rock as transition rock. Process and compact rock with dozer and vibratory roller.
	0+50	Remove tank trap with excavator.
	0+00 to 6+20 (Pt. 15)	Reopen road with grader. Brush road to specifications in Exhibit E. Remove sod and brushing debris from road surface with grader. Shape road subgrade with grader and compact with vibratory roller.
16 to 17	0+00 to 0+50	Apply 10 CY of jaw-run rock as transition rock. Process and compact rock with grader and vibratory roller.
	0+50	Remove tank trap with excavator.
	0+00 to 6+20 (Pt. 17)	Reopen road with dozer. Brush road to specifications in Exhibit E. Remove sod and brushing debris from road surface with grader. Shape road subgrade with grader and compact with vibratory roller.

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	A to B			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	A to B		0+00 to 2+40			
				Volume (CY) per		Number of			
Transition rock	Jaw-Run	0+00 to 0+50	n/a	10	Load	1	Load	10	14
Total Rock for Road Segment: A to B								10	14

ROAD SEGMENT	C to D			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	C to D		0+00 to 1+10			
				Volume (CY) per		Number of			
Transition rock	Jaw-Run	0+00 to 0+50	n/a	10	Load	1	Load	10	14
Total Rock for Road Segment: C to D								10	14

ROAD SEGMENT	1 to 2			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1 to 2		0+00 to 190+80			
				Volume (CY) per		Number of			
Spot rock	1½”-0"	0+00 to 162+70	n/a	10	Load	10	Loads	100	135
Surface rock	1½”-0"	162+70 to 190+80	2	11	Station	28.1	Stations	310	419
Patch rock	Jaw-Run	162+70 to 169+65	n/a	10	Load	10	Loads	100	135
Patch rock	3”-0”	162+70 to 169+65	n/a	10	Load	3	Loads	30	41
Turnaround rock	3”-0”	173+20	n/a	10	Load	2	Loads	20	27
Patch rock	Jaw-Run	173+20 to 174+20	n/a	10	Load	2	Loads	20	27
Surface lift	3”-0”	173+20 to 190+80	2	11	Station	17.6	Stations	190	257
Culvert bedding rock	1½”-0”	176+50	n/a	10	Load	1	Load	10	14
Landing rock	Jaw-Run	183+55 and 188+45	n/a	60	Landing	2	Landings	120	162
Total Rock for Road Segment: 1 to 2								900	1217

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	5 to 6			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	5 to 6		0+00 to 49+60			
				Volume (CY) per		Number of			
Spot rock	1½"-0"	0+00 to 49+60	n/a	10	Load	3	Loads	30	41
Total Rock for Road Segment: 5 to 6								30	41

ROAD SEGMENT	7 to A			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	7 to A		0+00 to 13+60			
				Volume (CY) per		Number of			
Spot rock	1½"-0"	0+00 to 13+60	n/a	10	Load	3	Loads	30	41
Curve Widening rock	3"-0"	0+00	n/a	10	Load	2	Loads	20	27
Total Rock for Road Segment: 7 to A								50	68

ROAD SEGMENT	8 to 9			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	8 to 9		0+00 to 17+70			
				Volume (CY) per		Number of			
Culvert bedding rock	1½"-0"	5+50,10 +10,12+ 10,15+7 0	n/a	10	Load	4	Loads	40	54
Total Rock for Road Segment: 8 to 9								40	54

ROAD SEGMENT	10 to 11			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	10 to 11		0+00 to 53+20			
				Volume (CY) per		Number of			
Spot rock	1½"-0"	0+00 to 53+20	n/a	10	Load	12	Loads	120	162
Curve widening rock	3"-0"	24+00 and 46+80	n/a	10	Load	4	Loads	40	54
Total Rock for Road Segment: 10 to 11								160	216

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT	12 to 13			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	12 to 13		0+00 to 10+00			
				Volume (CY) per		Number of			
Spot rock	1½”-0"	0+00 to 10+00	n/a	10	Load	5	Loads	50	68
Landing rock	3”-0”	10+00	n/a	10	Load	1	Load	10	14
Total Rock for Road Segment: 12 to 13								60	82

ROAD SEGMENT	14 to 15			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	14 to 15		0+00 to 6+20			
				Volume (CY) per		Number of			
Transition rock	Jaw-Run	0+00 to 0+50	n/a	10	Load	1	Load	10	14
Total Rock for Road Segment: 14 to 15								10	14

ROAD SEGMENT	16 to 17			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
Application	Rock Size and Type	Location	Depth of Rock (inches)	16 to 17		0+00 to 6+20			
				Volume (CY) per		Number of			
Transition rock	Jaw-Run	0+00 to 0+50	n/a	10	Load	1	Load	10	14
Total Rock for Road Segment: 16 to 17								10	14

ROCK CONVERSION FACTORS

Size	1 1/2"-0"	3"-0"	Jaw-Run
Tons/CY	1.35	1.35	1.35

	Total Rock Volumes For Projects		
Rock Size	1 1/2"-0"	3"-0"	Jaw-Run
Rock Totals CY	690	310	280
Rock Totals TONS	932	419	378

	Maintenance Rock Volumes		
Rock Size	1 1/2"-0"	3"-0"	Jaw-Run
Rock Totals CY	250	-	-

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

EXHIBIT D

ROCK ACCOUTANBILITY

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.

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

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

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

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

Subgrade shall be crowned at 4 to 6 percent or outsloped at 3 to 4 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

ROAD SEGMENT	SUBGRADE COMPACTION OPTIONS
All road segments.	1

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

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

ROAD SEGMENT	FILLS COMPACTION OPTIONS
All road segments.	1 and 2

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 at 4 to 6 percent, or outsloped at 3 to 4 percent as specified in the "Forest Roads Specifications" table in Exhibit D.

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

ROAD SEGMENT	CRUSHED COMPACTION OPTIONS
All road segments requiring crushed rock.	1

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

Rock shall be crowned at 4 to 6 percent, or outsloped at 3 to 4 percent as specified in the “Forest Roads Specifications” table in Exhibit D.

ROAD SEGMENT	PIT-RUN COMPACTION OPTIONS
Segments requiring jaw-run rock	1 and 3

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

(2) Vibratory Hand-Operated or Backhoe-Mounted Tamper. Vibratory hand-held or hydraulic tampers shall be used for compaction of backfill materials around culverts and 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.

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

EXHIBIT D

CRUSHED ROCK SPECIFICATIONS

Grading Requirements

For 1½"-0”	Passing	2" sieve	100%
	Passing	1½" sieve	90-100%
	Passing	3/4" sieve	60-90%
	Passing	1/4" sieve	30-50%
	Passing	No. 10 sieve	15-30%
	Passing	No. 40 sieve	7-15%
For 3”-0”	Passing	4" sieve	100%
	Passing	3" sieve	90-100%
	Passing	1½" sieve	60-90%
	Passing	3/4" sieve	40-60%
	Passing	1/4" sieve	20-40%
	Passing	No. 10 sieve	5-20%
For 6”-0 Jaw-Run	Passing	6" sieve	100%
	Passing	3" sieve	45-65%
	Passing	¼" sieve	0-10%

Control of gradation shall be by visual inspection by STATE.

EXHIBIT D

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 culverts.

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.

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.

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.

EXHIBIT D

CULVERT SPECIFICATIONS

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

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 white fiberglass posts within 6 inches of the downgrade side. Posts shall be a minimum of 6 feet long and 2½ inches wide, with the spade driven 2 feet into the ground. Install a culvert marker at each existing culvert that is missing a marker that could be reached by a grader blade.

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

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

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

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
1	18	30	CPP	1 to 2	176+50
2	18	30	CPP	8 to 9	5+50
3	18	30	CPP	8 to 9	10+10
4	18	30	CPP	8 to 9	12+10
5	18	30	CPP	8 to 9	15+70

CPP = Polyethylene

EXHIBIT D

WATERBAR SPECIFICATIONS

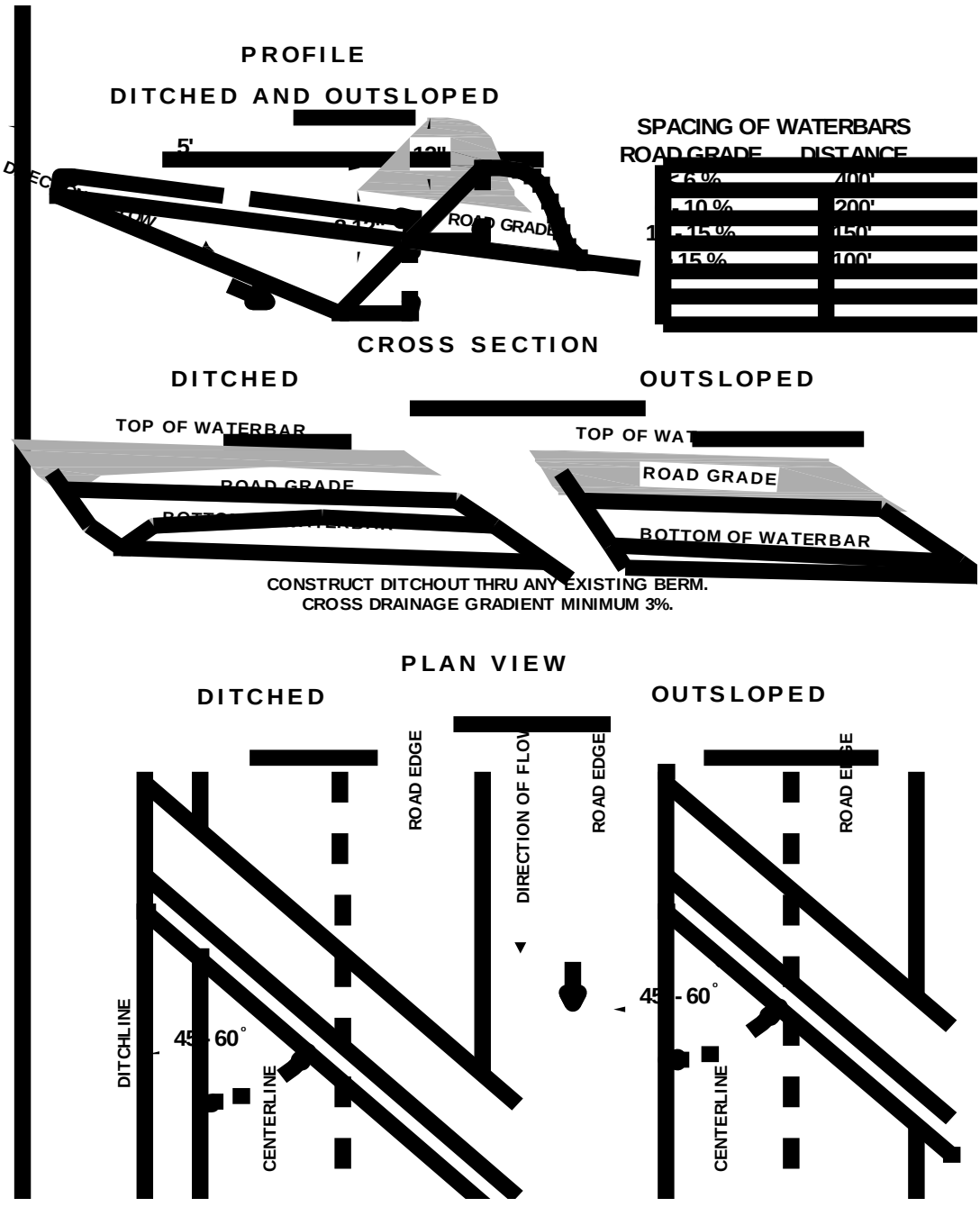
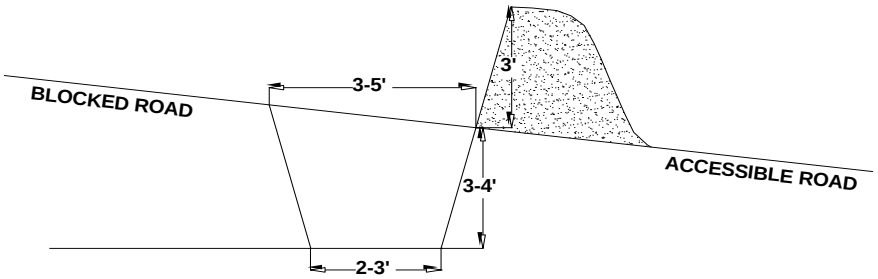


EXHIBIT D

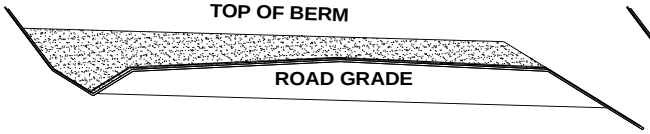
TANKTRAP SPECIFICAITONS

PROFILE
DITCHED AND OUTSLOPED

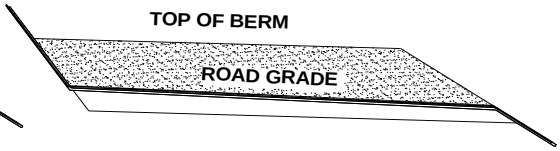


CROSS SECTION

DITCHED



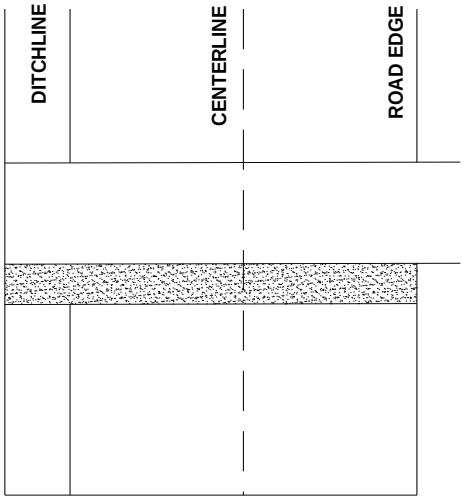
OUTSLOPED



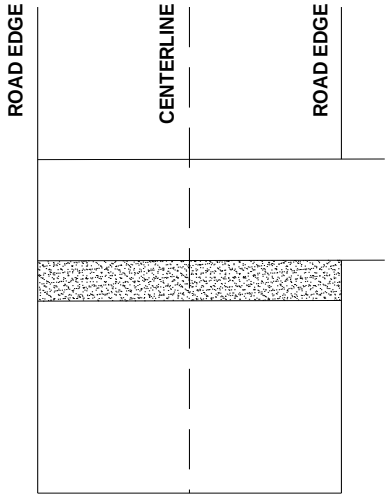
CONSTRUCT DITCHOUT THRU ANY EXISTING BERM.
CROSS DRAINAGE GRADIENT MINIMUM 3%

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 E

ROAD BRUSHING SPECIFICATIONS

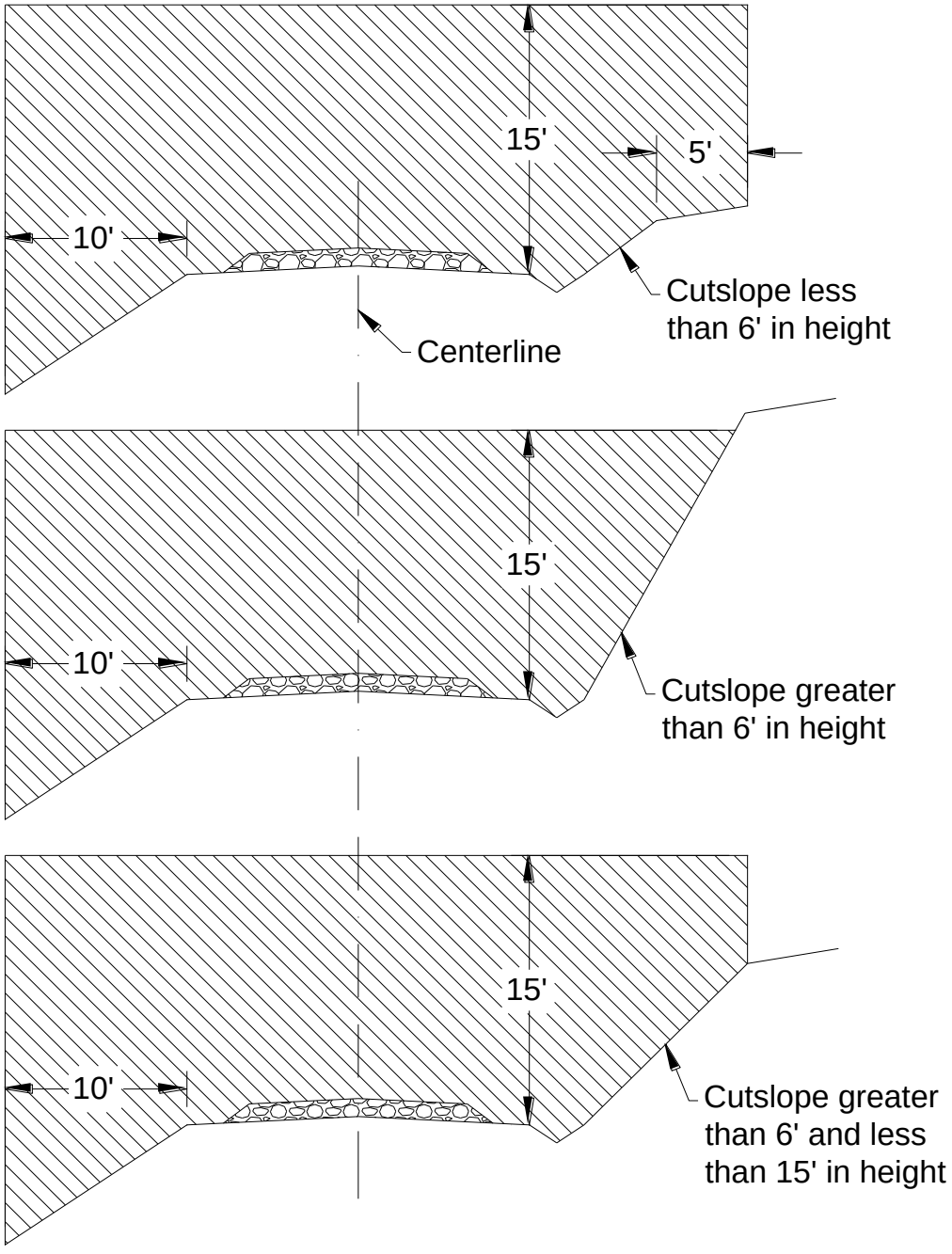


EXHIBIT E

ROAD BRUSHING SPECIFICATIONS

CUTTING REQUIREMENTS:
The minimum height of brushing shall be for all situations 15 feet from the road surface, and the minimum width of brushing on the down slope side of the road shall be 10 feet horizontal distance. The minimum width of brushing on the cutslope side of the road shall be dictated by the height of the cutslope as indicated in the three drawings above. In situations where site distance is an issue, brushing heights on the cutslope may vary from the above drawings, as directed by STATE. All turnouts and turnarounds encountered shall be brushed.

Brush and trees shall be cut to a maximum height of 6 inches above the ground surface or obstructions such as rocks or existing stumps. All vegetation on the road surface shall be cut flush to the road surface.

CLEAN-UP and DEBRIS REMOVAL:
Debris resulting from the brushing operation shall be removed from the roadway, cutslope, ditches, water courses, culvert inlets/outlets, and sediment catch basins. Debris shall be mulched or scattered downslope from the road or placed in other stable locations. Large debris, 6 inches or larger in diameter, shall be mulched or cut into lengths 6 feet or less to facilitate rapid decay, unless otherwise approved by STATE.

Trees larger than 6 inches in diameter at stump height, located within brushing limits but outside of the ditchline or shoulder, shall not be cut down, but shall be limbed for road visibility.

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

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

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

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

EXHIBIT F
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.

Soil Preparation. All areas to be seeded shall be finished and then cultivated to provide a reasonably firm, but friable seedbed. A minimum of 1/2 inch of surface soil shall be in a loose condition.

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.

APPLICATION METHODS FOR SEED

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

APPLICATION RATES FOR SEED

The seed mixture listed below shall be applied at 100 lbs. per acre. The seed mixture shall be comprised of the ODFW forage mix.

SPECIES	MIXTURE	PURE LIVE SEED	GERMINATION
Annual Rye	33%	95%	>90%
Orchard Grass	33%	95%	>90%
Perennial Rye	17%	95%	>90%
White Clover	17%	95%	>70%

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

APPLICATION RATES FOR MULCH

Place straw mulch to a reasonably uniform thickness of ¾ to 1¼ inches. This rate requires between 1 and 1½ tons of dry mulch per acre.

Application Locations:
Waste Areas after completion of compaction.