



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: WL-341-2027-W01216-01

(2) Sale Name: Sit Back

(3) Contract Expiration Date: 10/01/2028

(4) Purchaser Name: _____

(6) State Representatives:

<u>Name</u>	<u>Circle One</u>	<u>Phone No.</u>	<u>Cell No.</u>	<u>Alt Phone</u>
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			

(7) Purchaser Representatives:

<u>Name</u>	<u>Circle One</u>	<u>Phone No.</u>	<u>Cell No.</u>	<u>Alt Phone</u>
	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:

<u>Project No.</u>	<u>Subcontractor Name.</u>	<u>Start Date</u>	<u>Completion Date</u>	<u>Cell No.</u>	<u>Alt Phone</u>

	<u>Subcontractor Name.</u>	<u>Start Date</u>	<u>Cell No.</u>	<u>Alt Phone</u>
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

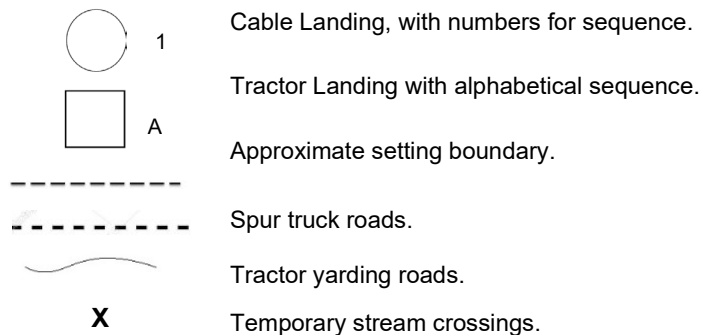
INSTRUCTION SHEET FOR OPERATIONS PLAN

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.



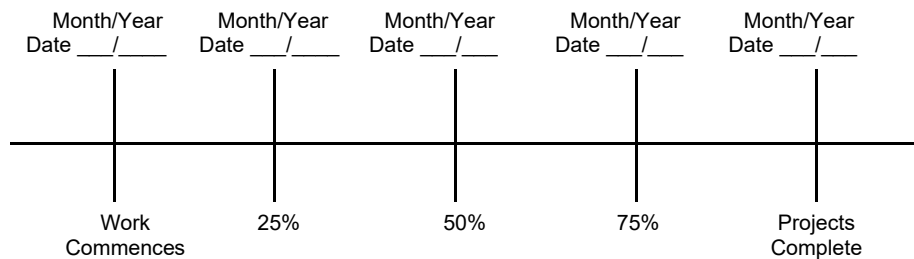


Oregon Department of Forestry
2600 State St Salem OR 97310
PART III: EXHIBITS
EXHIBIT B
OPERATIONS PLAN

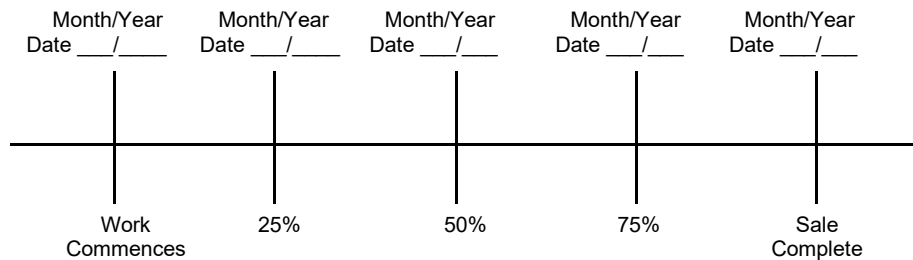
Completion Timeline

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: _____

SUBMITTED BY:
PURCHASER

STATE OF OREGON - DEPARTMENT OF
FORESTRY

Title _____

Title _____



Oregon Department of Forestry
EXHIBIT C - SAWMILL GRADE (WESTSIDE SCALE)
SCALING INSTRUCTIONS - LOCATION APPROVAL - BRAND INFORMATION
Western Lane - SOA

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

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

(3) FROM: Western Lane Phone (541) 935-2283
(State Forestry District)
Address: 87950 TERRITORIAL HWY
VENETA, OR 97487-0157

(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'.

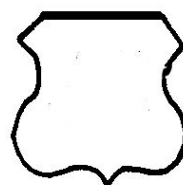
(8) APPROVED SCALING LOCATIONS (as shown on the ODF Approved Locations web-site)	YES NO		Species	Yard	Truck	Weight
	☐	☒				

(9) SALE NAME: Sit Back
COUNTY: Lane

(10) STATE CONTRACT NUMBER:
WL-341-2027-W01216-01

(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
Western Lane - SOA

- (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@mountainwestern.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 Scalpers Inc.
6137 NE 63rd St, Vancouver, WA, 98661
Phone: (360) 553-7212 ext. 4 Fax: (360) 553-7213
Email: info@nwlogscalpers.com

- (3) State District office, address and phone.
- (4) Enter Purchaser's business name, address, and phone number as it appears on the Contract.
- (5) Minimum Scaling Specifications.
- (6) Westside - Region 6 actual taper segment scale. Check Yes or No. Special Service Rules on file with TPSO. See: Segment Scaling and Grading of Long Logs - All Species - State Forestry Department Scaling Practices (Westside).
- (7) Weight Scale Sample - Check box if sale is to be a Weight Scale Sample. All specifics for handling, scaling and processing will be attached or explained in the Remarks section item (15).
- (8) Show scaling locations only applicable to TPSO. Location name should appear as it does on the ODF Approved Scaling Location web site: 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**

Western Lane, SOA

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

(9) **SALE NAME:** Sit Back

COUNTY: Lane

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

(10) **STATE CONTRACT NUMBER:**
WL-341-2027-W01216-01

(3) FROM: Western Lane Phone (541) 935-2283
(State Forestry District)
Address: 87950 TERRITORIAL HWY
VENETA, OR 97487-0157

(11) STATE BRAND REGISTRATION NUMBER: _____

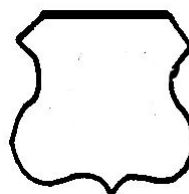
(12) STATE BRAND INFORMATION: _____

(4) PURCHASER: _____

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

Mailing Address: _____

Phone Number: _____



(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.

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

(14) SIGNATURES: _____

Purchaser or Authorized Representative _____ Date _____

State Forester Representative _____ Date _____

State Forester Representative PRINT NAME _____

(6) **STATE Definition of Approved Pulp Sort:**
• Top portion of the tree (tops).
• All logs with a diameter (Big End) greater than 8 inches marked with blue paint.

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

(8) **TPSO PROCESSING INSTRUCTIONS**
• 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**

Western Lane, SOA

- (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@mountainwestern.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	12 feet	I-1 to I-2	0+00 to 64+60	Maintain Existing
16 feet	12 feet	I-3 to I-4	0+00 to 81+40	Maintain Existing
16 feet	12 feet	I-5 to I-6	0+00 to 2+85	Outslope
16 feet	12 feet	1A to 1B	0+00 to 23+40	Ditched
14 feet	12 feet	1C to 1D	0+00 to 0+90	Outslope
14 feet	n/a	1C to 1D	0+90 to 3+80	Outslope

CLEARING. This work shall consist of clearing, removing, and disposing of all trees, snags, down timber, brush, surface objects, and protruding obstructions within the clearing limits.

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

CLEARING CLASSIFICATION.

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

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

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

All stumps shall be completely removed within the limits of required grubbing. Stumps overhanging cut slopes shall be removed. Grubbing debris shall not be placed or permitted to remain in or under any road embankment sections.

GRUBBING CLASSIFICATION.

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

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

CLEARING AND GRUBBING DISPOSAL. Clearing and grubbing debris shall not be placed or permitted to remain in or under any road embankment sections. 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 50 percent.
- On unstable areas.
- In any stream channel (Type F, N or D) or where material may enter the stream channel.

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

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

Unless road plans show otherwise, all roads shall be on a balanced cross section, except when the slope is over 50 percent, 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, 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, or as staked on the ground, plus 25-foot approaches at each end.

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

SLOPES

Solid Rock

Fractured Rock

Soil - side slopes 50% and over

Soil - side slopes less than 50%

Cut Slopes

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

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

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

1 :1

Fill Slopes

1½:1

1½:1

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

- (1) Excavated Materials. Excavated materials shall be utilized for road construction and hauled in where necessary. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. 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.
- (2) Drainage Ditches. Construct ditchlines, including ditchouts, as directed by STATE. Cut slopes of ditchlines and ditchouts shall not exceed a 1:1 slope. Construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE.
- (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. STATE may require the use of crushed rock for culvert bedding.
- (4) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic-yard, track-mounted excavator.
- (5) 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, 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:

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
1A to 1B	0+00 to 23+40	Reconstruct and improve existing road. Clear and grub vegetation growing in existing subgrade. Place woody debris in stable locations along the road. If no stable locations are available, end-haul to designated waste area. Cut, process, and deck all right of way wood in stable locations to be hauled once road construction is complete. Widening of existing subgrade may be required in some areas. Where widening is needed, end-haul excavated materials to designated waste areas shown on Exhibit A. Final subgrade shall be a minimum of 16-feet in width, with additional width on corners for off-tracking. Subgrade shall be crowned and ditched towards ditch relief culverts. Rock entire spur length with a 6-inch lift of 3"-0" crushed base rock with a 2-inch lift of 1 ½"-0" crushed cap rock.
	2+30	Clean out inlet and outlet of existing culvert.
	7+45	Install 18" x 30-ft ditch relief culvert. Utilize 10-cy of 1 ½"-0" crushed rock for culvert bedding. Utilize clean, job-excavated fill material for backfill. Excavate lead off ditch from the outlet of the culvert to drain onto the forest floor.
	8+50	Construct truck turnout. Rock turnout with 20-CY of 3"-0" base rock.
	11+35	Construct truck turnaround. Rock turnaround with 20-CY of 3"-0" base rock.
	12+00	Install 18" x 30-ft ditch relief culvert. Utilize 10-cy of 1 ½"-0" crushed rock for culvert bedding. Utilize clean, job-excavated fill material for backfill. Excavate lead off ditch from the outlet of the culvert to drain onto the forest floor.
	15+90	Install 18" x 30-ft ditch relief culvert. Utilize 10-cy of 1 ½"-0" crushed rock for culvert bedding. Utilize clean, job-excavated fill material for backfill. Excavate lead off ditch from the outlet of the culvert to drain onto the forest floor.
	16+30	Reconstruct 50-foot roadside landing. Excavate into the cutbank as needed to gain additional width for landing. Rock landing with 40-CY of pit-run.
	19+15	Clear, grub and prep waste area site on downhill side of road. Compact waste materials in 8-inch lifts. Fill waste area up with excavated material to be level with road subgrade. On compacted waste, create truck turnaround. Rock truck turnaround with 20-CY of 3"-0" crushed rock. Seed and mulch fill slopes of waste area upon completion of project.
	20+00	Clean out inlet and outlet of existing ditch relief culvert. Excavate out a lead off ditch from culvert outlet to the forest floor.
	20+60	Construct 70-foot landing. Rock landing with 40-CY of pit-run.
	22+60	Clean out inlet and outlet of existing ditch relief culvert. Excavate out a lead off ditch from culvert outlet to the forest floor.
	23+40 (1B)	Reconstruct 60-foot landing. Rock landing with 40-CY of pit-run.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS:

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
1C to 1D	0+00 to 3+80	Construct dirt spur.
		Clear and grub vegetation. Place woody debris in stable locations along the road.
		Cut, process, and deck all right of way wood in stable locations to be hauled once road construction is complete.
		Final subgrade shall be a minimum of 14 feet in width. Subgrade shall be outsloped.
	0+00 to 0+90	Rock spur approach for 90-feet with a 6-inch lift of 3"-0" crushed rock.
	3+80	Construct 60-foot landing.

EXHIBIT D
FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT, AND MAINTENANCE INSTRUCTIONS:

- (1) Grading of Existing Rock. Grade existing road surface.
- (2) Application of a Lift of Surfacing Rock.
 - (a) Cut out all potholes and/or washboard sections from the existing surfacing.
 - (b) Apply required patching and leveling rock, as directed by STATE.
 - (c) Process (grade and mix) the existing surface and added base rock. Provide for a crown, outslope, or inslope of 4 to 6 percent, and compact in accordance to the "Compaction and Processing Requirements" in this Exhibit.
 - (d) Upon completion of above required work, apply, process, and compact surfacing rock in accordance to this Exhibit.
- (3) Timber Removal. Remove all trees within posted Right-of-Way as specified in Section 2210, Designated Timber.
- (4) 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. Excess excavated material not used for embankment shall be used for fill at station 52+55 to build landing site. All excess excavated material not used for fill shall be end-hauled to waste areas as shown on Exhibit A.
- (5) 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.
- (6) 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.
- (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 I.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT, AND MAINTENANCE INSTRUCTIONS:

<u>Segment</u>	<u>Station</u>	<u>Work Description</u>
I-1 to I-2	0+00 to 64+60	<i>This segment of road was recently improved and will be maintained with the Sitka Stratus timber sale. Project Points I-1 and I-2 were re-used for consistency. If hauling for both timber sales occurs at the same time, maintenance costs will be shared proportionate to volume hauled.</i>
I-3 to I-4	0+00 to 81+40	<i>Portions of this road were recently improved with Sitka Stratus timber sale. Many project points were re-used for consistency including I-3, 21+50, 29+40 and I-4.</i>
	0+00 to 21+50	Utilize 20-CY of 1 ½”-0” crushed rock for spot rocking as directed by STATE.
	21+50 to 81+40	Grade, shape, and prepare existing subgrade for rock lift. Remove any bank slough from subgrade prior to rocking. Starting where previous rock lift ended, apply a 4” lift of 1 ½”-0” crushed cap rock.
	29+40	Utilize 20-CY of 3”-0” crushed rock to rock existing truck turnout.
	35+60	Utilize 20-CY of 3”-0” crushed rock to rock existing truck turnout.
	40+90	Improve existing truck turnaround by widening and flattening existing area. Excavate the uphill side of the road and end-haul waste material to use as landing backfill at STA 52+55. Utilize 20-CY of 3”-0” crushed rock to rock truck turnaround.
	52+55	Improve existing landing. Cut, process and deck right-of-way wood away from landing. Clear and grub vegetation and stumps. Place woody debris and stumps away from landing in stable locations. Utilize excavated materials from other project sites to fill in low spots in landing subgrade. Final landing subgrade shall be minimum 60-feet in diameter and level with the existing road subgrade. Utilize 40-CY of pit-run for landing rock.
	66+25	Improve existing landing by constructing step landing for yarder above the road. Cut, process and deck right-of-way wood away from landing. Clear and grub vegetation and stumps. Place woody debris and stumps away from landing in stable locations. Use excavated materials from yarder step landing to improve the existing roadside landing on downhill side of road. End-haul excess waste material to alternate waste area. Utilize a combined total of 60-CY of pit-run to rock both the yarder step landing and the roadside landing.
	71+50 (1C)	Construct truck turnaround at wide spot near where Spur 1C to 1D takes off. Utilize 20-CY of 3”-0” crushed base rock for truck turnaround.
	81+40 (I-4)	Rock existing landing with 40-CY of pit-run.
I-5 to I-6	0+00 to 2+85	Clear vegetation growing in and around existing surfaced road. Excavate into cutbank as needed to maintain a minimum of 16-feet in subgrade width. Remove sod, then grade, shape, and prepare existing road for timber haul. Apply a 4” lift of 3”-0” crushed base rock and a 2” lift of 1 ½”-0” crushed cap rock.
	2+85 (I-6)	Expand existing landing to a minimum of a 60-foot landing. Rock with 40-CY of pit-run

EXHIBIT D
END-HAUL REQUIREMENTS

POINT TO POINT	STA. TO STA.	CONTAINMENT – SIDECAST	WASTE AREA LOCATION	WASTE AREA TREATMENT
1A to 1B	2+30 to 7+45	2	1, 2, 4, 5	1, 2, 3
1A to 1B	16+30 to 19+15	1	1, 2, 3, 4, 5	1, 2, 3
I-3 to I-4	66+25	2	2, 3, 4, 5	1, 2, 3

End-Haul Areas General Requirements

Sidecast includes any road generated excess excavation material which is not essential as part of the road prism, is not compacted, and is below the roadway. Material shall not be sidecast unless specified above.

Clearing and grubbing debris shall be end-hauled where there is no stable location nearby to waste materials.

Containment/Sidecast

- (1) Full: No excavated material remains below the road.
- (2) Normal/Incidental: The amount of excavated material lost over the outside edge of the road shall not exceed 1 foot in depth.
- (3) Sidecast: Material shall be spread evenly below the road so that it does not build up behind trees, snags or other debris, and shall not exceed 3 feet in depth.

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

- (1) 1A to 1B, STA 19+15, as shown on Exhibit A and as marked in the field. Use up to **150-CY** of material as fill for truck turnaround site.
- (2) I-3 to I-4 STA 52+55, as shown on Exhibit A and as marked in the field. Use up to **200-CY** of material as fill for landing site.
- (3) I-3 to I-4 STA 66+25, as shown on Exhibit A and as marked in the field. Use up to **40 CY** of material as fill for landing site.
- (4) Waste Area 2: Existing waste area, as shown on Exhibit A and as marked in field. Waste up to **500-CY** of material.
- (5) Setback from slope break shall be a minimum of 20 feet horizontal measurement.

Waste Area Treatment

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

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: I-3 to I-4				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I-3 to I-4		0+00 to 81+40		
				Volume (CY) Per		Number Of		
Spot Rock	1 ½”-0”	As Directed	2”	Point	10	Points	2	20
Cap Rock	1 ½”-0”	21+50 to 81+40	4”	Station	22	Stations	59.9	1320
Turnout	3”-0”	29+40, 35+60	6”	TO	20	TO’s	2	40
Turnaround	3”-0”	40+90, 1C	6”	TTA	20	TTA’s	2	40
Landing	Pit-Run	52+55, I-4	6”	Landing	40	Landings	2	80
Landing	Pit-Run	66+25	6”	Landing	60	Landings	1	60
Total Rock for Road Segment:								1560
ROAD SEGMENT: I-5 to I-6				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I-5 to I-6		0+00 to 2+85		
				Volume (CY) Per		Number Of		
Base Rock	3”-0”	0+00 to 2+85	4”	Station	22	Stations	2.85	60
Cap Rock	1 ½”-0”	0+00 to 2+85	2”	Station	11	Stations	2.85	30
Landings	Pit-Run	2+85	6”	Landing	1	Landings	40	40
Total Rock for Road Segment:								130
ROAD SEGMENT: 1A to 1B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size And Type	Location	Depth of Rock (inches)	1A to 1B		0+00 to 23+40		
				Volume (CY) Per		Number Of		
Base Rock	3”-0”	0+00 to 23+40	6”	Station	33	Stations	23.4	770
Cap Rock	1 ½”-0”	0+00 to 23+40	2”	Station	11	Stations	23.4	260
Turnout	3”-0”	8+50	6”	TTO	20	TTOs	1	20
Turnaround	3”-0”	11+35, 19+15	6”	TTA	20	TTAs	2	40
Landings	Pit-Run	16+30, 20+60, 23+40	6”	Landing	40	Landings	3	120
Culvert Bedding	1 ½”-0”	7+45, 12+00, 15+90	-	Culvert	10	Culverts	3	30
Total Rock for Road Segment:								1240
ROAD SEGMENT: 1C to 1D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1C to 1D		0+00 to 0+90		
				Volume (CY) Per		Number of		
Approach Rock	3”-0”	0+00 to 0+90	6”	Station	33	Stations	0.9	30
Total Rock for Road Segment:								30

ROCK TOTALS (CY)	Pit Run	3"-0"	1 ½"-0"
2960 CY	300 CY	1000 CY	1660 CY

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

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.

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 must be submitted.

EXHIBIT D

SOURCE CRUSHED ROCK SPECIFICATIONS

Quality and Grading Requirements. The base material shall be rock. River gravel shall not be used. Crushed rock shall meet the grading requirements that follow:

<u>For 1½"-0"</u>	Passing	2" sieve	100%
	Passing	1½" sieve	90-100%
	Passing	¾" sieve	50-75%
	Passing	¼" sieve	25-55%
	Passing	No. 10 sieve	10-25%
	Passing	No. 40 sieve	5-15%
<u>For 3"-0"</u>	Passing	4" sieve	100%
	Passing	3" sieve	90-100%
	Passing	1½" sieve	50-80%
	Passing	¾" sieve	30-60%
	Passing	¼" sieve	10-30%
	Passing	No. 10 sieve	0-20%

SOURCE PIT-RUN ROCK SPECIFICATIONS

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

Control of gradation shall be by visual inspection 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
I-3 to I-4, I-5 to I-6, 1A to 1B, 1C to 1D	1, 3, 9

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
I-3 to I-4, 1A to 1B	1, 3, 4, 8

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 COMPACTION OPTIONS
I-3 to I-4, I-5 to I-6, 1A to 1B, 1C to 1D	1, 3, 4

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

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

ROAD SEGMENT	PIT-RUN COMPACTION OPTIONS
I-3 to I-4, I-5 to I-6 1A to 1B	1, 3, 8, 9

EXHIBIT D

COMPACTION EQUIPMENT OPTIONS

- (1) Vibratory Rollers. The drum shall have a smooth surface, a diameter not less than 48 inches, a width not less than 58 inches, and a turning radius of 15 feet or less. Vibration frequency shall be regulated in steps to 1400, 1500, and 1600 VPM, corresponding to engine speeds of 1575, 1690, and 1800 RPM. The centrifugal force developed shall be 7 tons at 1600 VPM. It shall be activated by a power unit of not less than 25 horsepower. The vibratory roller shall be self-propelled and operated at speeds ranging from 0.9 miles to 1.8 miles per hour, as directed by STATE.
- (2) Rubber-Tired Skidders. A rubber-tired skidder weighing a minimum of 20,000 pounds shall be operated over the fill layers so that the entire layered surface comes in contact with the tires. Skidders with oversized tires (high flotation) are not acceptable for compaction.
- (3) Tampingfoot Compactors. Tampingfoot compactors shall exert a minimum pressure of 250 pounds per square inch on the ground area in contact with the tamping feet. The compactor shall cover a minimum width of 60 inches per pass and weigh a minimum of 16,000 pounds.
- (4) Vibratory Hand-Operated or Backhoe-Mounted Tamper. Vibratory hand-held or hydraulic tampers shall be used for compaction of backfill materials around culverts (and/or bridge approach embankment materials around abutments). The tamper shoe dimensions shall be a minimum of 10" X 13" and capable of a centrifugal force of 2,250 pounds.
- (5) 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.
- (6) Grid Rollers. Pit-run rock shall be processed by grid roller fully equipped with 32,000 pounds or more of ballast weights. Twenty passes shall be made with a grid roller over the entire length and width of the road, unless STATE requires fewer passes. A grader weighing at least 20,000 pounds shall work the pit-run surface during grid rolling so that all pit-run rock comes in contact with the grid roller. Grid rolling shall be performed when the subgrade is dry and firm. Road surface shall be uniformly shaped and graded prior to and during grid rolling.
- (7) Loaded Dump Trucks. Dump trucks shall be routed over the entire cross section of the road surface. Loaded trucks shall cover all of the subgrade with a minimum of three passes.
- (8) Dozer. A dozer/track-type tractor weighing a minimum of 45,000 pounds as directed by STATE shall be operated over the pit-run so that the entire surface comes in contact with the tracks.
- (9) As approved by STATE.

EXHIBIT E

CULVERT SPECIFICATIONS

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

Culverts 30 inches in diameter and smaller shall be constructed of corrugated polyethylene. Culverts larger than 30 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. Aluminized (Type 2) steel culverts shall meet the requirements of AASHTO M-36-03¹.”

Polyethylene joints shall be made with split couplings, corrugated to engage the culvert corrugations, and shall engage a minimum of 4 corrugations, 2 on each side of the culvert joint.

Culverts shall be located according to the alignment and grade as shown on the Plan and Profile, and/or as staked in the field, or as specified in special instructions.

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

Cross Drain Culverts

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

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

Disconnect Culverts

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

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

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

Backfill shall consist of crushed rock on improvement segments and crushed rock, or job-excavated soil 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.

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

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

All culverts scheduled for replacement shall become property of the PURCHASER and be removed from STATE land 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 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.

<u>Dia.</u>	<u>Steel Culvert</u>	<u>Thickness</u>		<u>Band Gauges</u>	<u>Band Widths (")</u>	
	<u>Gauge</u>	<u>Uncoated</u>	<u>Coated</u>		<u>Annular</u>	<u>Helical</u>
18-36	16	(0.0598")	(0.064")	16	12	12
42-54	14	(0.0747")	(0.079")	16	12	12
60-84	12	(0.1046")	(0.109")	16	24	24
90-120	12	(0.1046")	(0.109")	16	26	26

EXHIBIT E
 CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	ROAD SEGMENT POINT TO POINT	STATION
1	18	30	CPP	1A to 1B	7+45
2	18	30	CPP	1A to 1B	12+00
3	18	30	CPP	1A to 1B	15+90

TOTAL LENGTHS BY DIAMETER
18 INCH
90

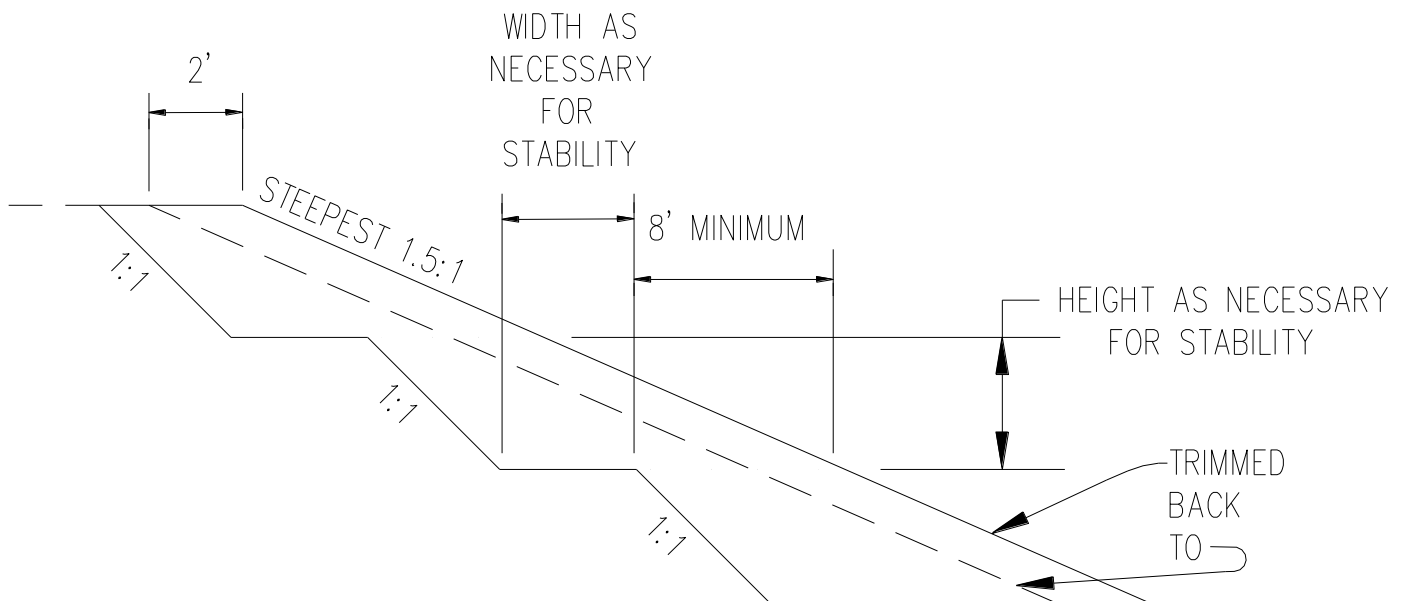
ACSP = Aluminized, CPP = Polyethylene

EXHIBIT F

SIDEHILL EMBANKMENT FILL CONSTRUCTION SPECIFICATIONS

(no scale)

All temporary earth slopes shall comply with OR-OSHA requirements. Areas to receive structural fill that have a slope greater than $2\frac{1}{2} : 1$ (40%) shall have horizontal benches and key ways cut into the fill areas prior to placing the new fills. All fill material shall be placed and compacted as fill 2 feet beyond $1.5H : 1V$ slope and then be trimmed back to a $1.5H : 1V$ slope so that compacted fill is exposed on the face of the slope (see detail below).



DETAIL: BENCHING AND SIDEHILL EMBANKMENT FILL CONSTRUCTION

STATE shall be contacted to inspect the prepared bench configuration prior to new fill material placement. STATE shall be contacted to inspect the final cut and fill slope configurations.

Once observed by STATE, erosion control measures shall be applied to the graded slopes. Variations to these specifications shall not be allowed unless approved in writing by STATE.

EXHIBIT G

WATERBAR SPECIFICATIONS

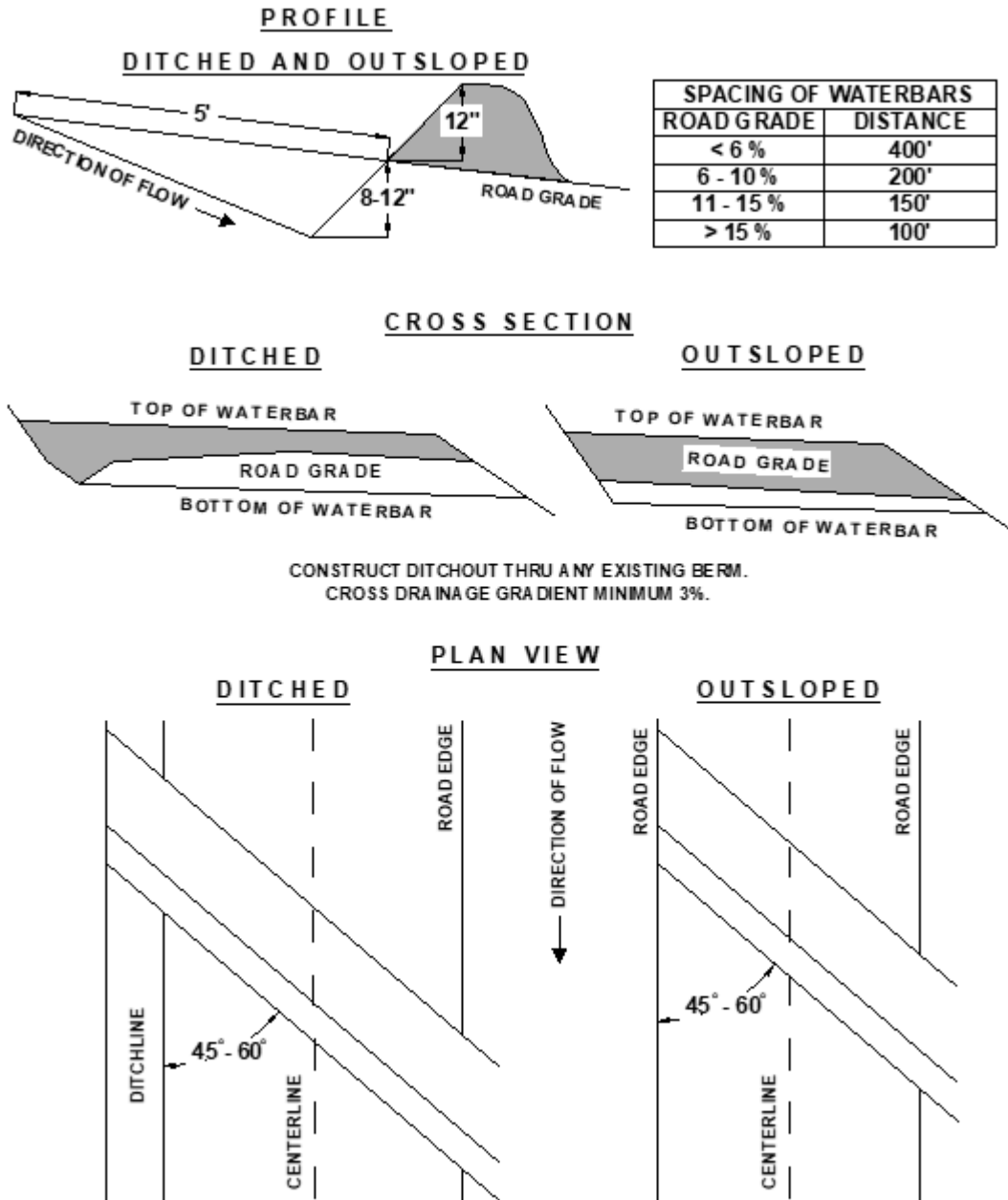


EXHIBIT H
 TANK TRAP SPECIFICATIONS

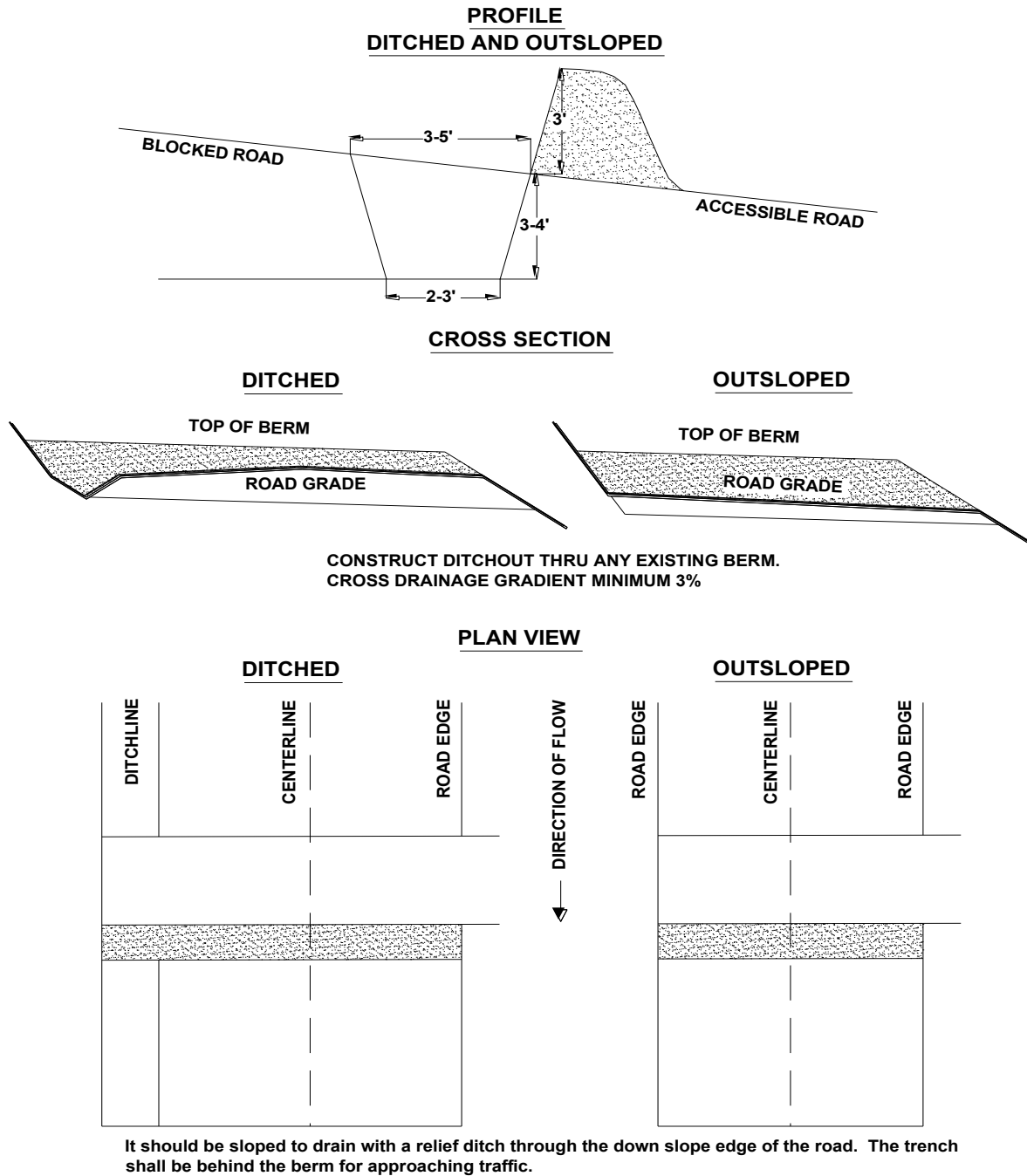


EXHIBIT I

SEEDING AND MULCHING [Native Seed]

This work shall consist of preparing seedbeds and furnishing and placing required seed and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed and straw mulch to all waste areas and bare soils resulting from Project No. 1 and 3.

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

Application Methods for Seed

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

Application Rates for Seed

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

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

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

Application Rates for Mulch

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

Application Locations:

Spur 1A to 1B STA 19+15 – Waste area fill site.

I-3 to I-4 STA 52+55 – Waste area fill site.

I-3 to I-4 STA 66+25 – Waste area fill site.

I-2 – Waste Area (if used).