PART III: EXHIBITS

OREGON DEPARTMENT OF FORESTRY

TIMBER SALE OPERATIONS PLAN

(See Page 2 for instructions)

Date Received by STATE: _____

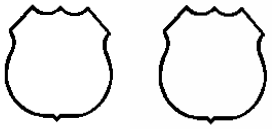
(1) Contract No.: 341-16-42

(2) Sale Name: Meier Mainline Combo

(3) Contract Expiration Date: October 31, 2018

(4) Purchaser: _____

(5) State Brand Information (complete):



Project Completion Dates: Projects Nos. 1 and 2 – October 31, 2017
Project No 3 – August 31, 2018

(6) Purchaser Representatives:

			Cell/Other Phone:	
Projects: _____	Phone: _____			Home: _____
Projects: _____	Phone: _____			Home: _____
Projects: _____	Phone: _____			Home: _____
Projects: _____	Phone: _____			Home: _____
Logging: _____	Phone: _____			Home: _____
Logging: _____	Phone: _____			Home: _____
Logging: _____	Phone: _____			Home: _____
Logging: _____	Phone: _____			Home: _____

(7) State Representatives:

			Cell/Other Phone:	
Projects: _____	Phone: _____			Home: _____
Logging: _____	Phone: _____			Home: _____

(8) Name of Subcontractors & Starting Dates:

Projects: No(s) _____-_____	Date: _____	Phone: _____	
No(s) _____-_____	Date: _____	Phone: _____	
No(s) _____-_____	Date: _____	Phone: _____	
No(s) _____-_____	Date: _____	Phone: _____	
Logging: Felling _____	Date: _____	Phone: _____	
Yarding: _____	Date: _____	Phone: _____	

(9) Comments: _____

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

EXHIBIT B

INSTRUCTION SHEET FOR OPERATIONS PLAN

SUBMIT ONE COPY OF PLAN TO STATE

Operations shall be limited to the work shown in the plan until a revised plan or supplemental plan is submitted covering additional work. Compliance with this plan is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act. If STATE has prepared a required Forest Practices Act (FPA) "Written Plan" for operations, PURCHASER shall comply with all provisions of the Written Plan.

Explanation of Item No. (from Page 1)

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

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

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

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

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

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

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

Cable Landing, with numbers for sequence.

Tractor Landing with alphabetical sequence.

_ _ _ _ _ Approximate setting boundary.

- - - - - - - - Spur truck roads.

Tractor yarding roads.

X Temporary stream crossings.

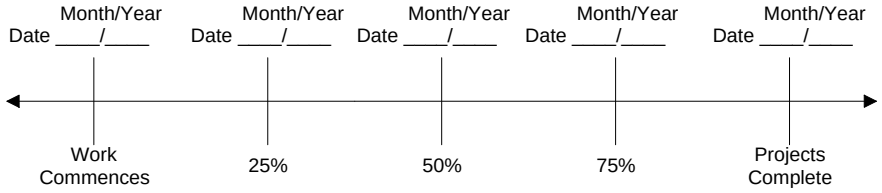
EXHIBIT B

OPERATIONS PLAN

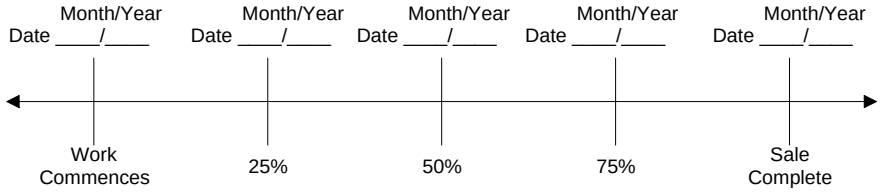
Completion Timeline

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

Projects



Harvest & Other Requirements



The Federal Endangered Species Act (ESA) prohibits a person from taking any federally listed threatened or endangered species. Taking under the federal ESA may include alteration of habitat. STATE's approval of this plan does not certify that PURCHASER's operation under the plan is lawful under the federal ESA. As provided in the timber sale contract, PURCHASERS must comply with all applicable state, federal, and local laws.

PURCHASER's compliance with this plan is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act.

APPROVED: Date: _____

STATE OF OREGON - DEPARTMENT OF FORESTRY

_____

Title _____

SUBMITTED BY:
PURCHASER

_____

Title _____

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

EXHIBIT C – SAWMILL GRADE (WESTSIDE SCALE)

SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

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

(3) FROM: Astoria (04) Phone (503) 325-5451
(State Forestry District)
Address 92219 Hwy. 202, Astoria, OR 97103

(4) PURCHASER: _____
Mailing Address: _____
Phone Number: _____

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

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

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

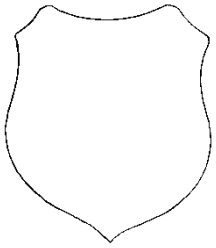
(8) **APPROVED SCALING LOCATIONS** (as shown on the ODF Approved Locations web-site)	**Species**	**Yard**	**Truck**	**Weight**

(9) SALE NAME: Meier Mainline Combo
COUNTY: Clatsop

(10) STATE CONTRACT NUMBER: 341-16-42

(11) STATE BRAND REGISTRATION NUMBER:
_____

(12) STATE BRAND INFORMATION (COMPLETE):



(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**_____
_____
_____
_____
_____

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

(16) SIGNATURES:

_____
Purchaser or Authorized Representative Date

_____
State Forester Representative Date

_____
State Forester Representative PRINT NAME

Notify the District within one hour when branding or painting is inadequate for quick identification, the receipts are missing, not correctly or completely filled out, and/or when logs presented for scaling are impossible to scale accurately.

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

EXHIBIT C – SAWMILL GRADE
INSTRUCTIONS FOR FORM 343-307a (rev. 11/11)

(1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires logging and hauling to be complete, recall branding hammers, date and sign where indicated, write diagonally across page "CANCEL", and send to TPSO.

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

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

Pacific Rim Log Scaling Bureau, Inc.
8288 28th Court North East, Lacey, WA 98516
Phone: (360) 528-8710 Fax: (360) 528-8718
Email: office@prlsb.com

Mountain Western Log Scaling & Grading Bureau
P.O. Box 580, Roseburg, OR 97470
Phone: (541) 673-5571 Fax: (541) 672-6381
Email: info@mwlsgb.com

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

Northwest Log Scalers, Inc.
5526 NE 122nd Ave, Portland, OR 97230
Phone: (503) 254-0600 Fax: (503) 408-0919
Email: info@nwlogscalers.com

Pacific Log Scaling & Grading Bureau, Inc.
P.O. Box 23939, Portland, OR 97281
Phone: (503) 684-5599 Fax: (503) 639-4880
Email: PacLogScale@aol.com

(3) State District office, address and phone.

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

(5) Minimum Scaling Specifications.

(6) Westside – Region 6 actual taper segment scale. Check Yes or No. Special Service Rules on file with TPSO. See: Segment Scaling and Grading of Long Logs -- All Species -- State Forestry Department Scaling Practices (Westside).

(7) Weight Scale Sample – Check box if sale is to be a Weight Scale Sample. All specifics for handling, scaling and processing will be attached or explained in the Remarks section Item (15).

(8) Show scaling locations only applicable to TPSO. Location name should appear as it does on the ODF Approved Scaling Location web site: http://www.odf.state.or.us/DIVISIONS/management/asset_management/ScalingLocation.asp Locations with scaling and processing directions specific to their location should be on a separate form. Species should be identified if not capable of receiving "all" species. Check appropriate box for either: yard, truck scale, or weight. Refer to the web site listed above for the locations approval status.

(9) Enter sale name and county.

(10) Enter sale Contract number.

(11) Enter Oregon's State Brand Registry Number **(REQUIRED)**.

(12) Show brand assigned to timber sale. One brand only. If more than one brand is assigned to the sale: (1) make a separate form for each brand and (2) on each form, explain and show other brand(s) in the Remarks section Item (15).

(13) Check yes for Paint Required and designate "Orange" for color. Non required removal volumes may sometimes require blue paint.

(14) Special Requests. These are requests that will be applied to ODF timber sales. All boxes applicable to the timber sales designated in the Exhibit C form must be "marked". If "Other" is indicated, it must contain a description and any necessary comments.

(15) Use this space to designate any weight conversion factors, per load volumes, weight scale sample instructions or any other explanations to clarify scaling, processing and/or mailing requirements. If additional scaling locations are approved, revise original or current form showing all (old and new) locations. Check REVISION box at top of form and explain under remarks. Route as indicated.

(16) Require purchaser to sign and date completed form in addition to State Forester Representative, sign and print name on the form.

Salem Distribution Instructions: Original will be mailed to Salem after it is electronically scanned and placed in the Salem transfer drive \\WPODFFILL01\Transfer\ScalingInstructions or e-mailed directly to scaling@odf.state.or.us. Scaling instructions for each brand should be scanned separately, for each approved TPSO.

EXHIBIT C – PULP SORT

PROCESSING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

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

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

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

(4) PURCHASER: _____

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

_____
Mailing Address: _____
Phone Number: _____

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

- Top portion of the tree (tops).
- All logs with a diameter (Big End) greater than 8 inches marked with blue paint.

(7) PULP FACILITY PROCESSING INSTRUCTIONS:

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

(8) TPSO PROCESSING INSTRUCTIONS

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

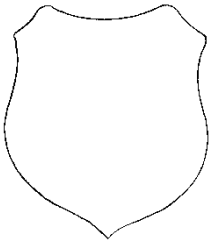
(9) SALE NAME: Meier Mainline Combo
COUNTY: Clatsop

(10) STATE CONTRACT NUMBER: 341-16-42

(11) STATE BRAND REGISTRATION NUMBER:

_____

(12) STATE BRAND INFORMATION: (COMPLETE BELOW)



(13) REMARKS: _____

Operator's Name (Optional inclusion by District):

_____

(14) SIGNATURES:

_____
Purchaser or Authorized Representative Date

_____
State Forester Representative Date

_____
State Forester Representative PRINT NAME

Notify the District within one hour when branding is inadequate for quick identification, the logs are marked with orange paint, the receipts are missing, not correctly or completely filled out, and/or logs do not meet the specifications of the STATE definition of Approved Pulp Sort.

Distribution: ORIGINAL: Salem / COPIES: TPSO, Approved Pulp Processing Location, Purchaser, District, Mgmt. Unit

EXHIBIT C – PULP SORT

INSTRUCTIONS FOR FORM 343-307b (rev. 11/11)

(1) **Must Complete.** Check appropriate box. REVISION NUMBER requires comments in the Remarks Section (13). CANCELLATION requires logging and hauling to be complete, recall branding hammers, date and sign where indicated, write diagonally across page "CANCEL", and send to TPSO.

(2) **Must Complete**. Approved Pulp Processing Facility. Write in as written in the Approved Log Delivery Location http://www.odf.state.or.us/DIVISIONS/management/asset_management/ScalingLocation.asp

(3) **Must Complete.** State Forestry District and District Phone Number.

(4) **Must Complete**. Purchaser's business name as it appears on the Contract.

(5) **Must Complete.** Third Party Scaling Organization that will be processing the weight tickets, mailing address, and phone number.

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

Pacific Rim Log Scaling Bureau, Inc.
8288 28th Court North East, Lacey, WA 98516
Phone: (360) 528-8710 Fax: (360) 528-8718
Email: office@prlsb.com

Mountain Western Log Scaling & Grading Bureau
P.O. Box 580, Roseburg, OR 97470
Phone: (541) 673-5571 Fax: (541) 672-6381
Email 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: yamhill@attglobal.net

Northwest Log Scalers, Inc .
5526 NE 122nd Ave, Portland, OR 97230
Phone: (503) 254-0600 Fax: (503) 408-0919
Email: info@nwlogscalers.com

Pacific Log Scaling & Grading Bureau, Inc.
P.O. Box 23939, Portland, OR 97281
Phone: (503) 684-5599 Fax: (503) 639-4880
Email: PacLogScale@aol.com

(6) **Must Complete.** Big end log not to exceed_____ inches. Big end of log is not to exceed 2 inches greater than the minimum removal specifications in the contract. Example: Minimum removal specifications 6 inches and 20 board feet, then the Big end of log not to exceed 8 inches. When conifer and hardwood removal specifications are different, use the smaller removal diameter to determine this specification.

(9) **Must Complete**. Enter sale name and county. If more than one county write in all the counties that the sale is located in.

(10) **Must Complete**. Enter sale Contract number.

(11) **Must Complete**. Enter Oregon's State Brand Registry Number **(REQUIRED)**.

(12) **Must Complete**. Show brand assigned to timber sale. One brand only. If more than one brand is assigned to the sale: (1) make a separate form for each brand and (2) on each form, explain and show other brand(s) in the Remarks section Item (13).

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

(14) **Must Complete.** Purchaser required to sign and date completed form in addition to State Forester Representative, sign and print name on the form.

Salem Distribution Instructions: Original will be mailed to Salem after it is electronically scanned and placed in the Salem transfer drive \\WPODFFILL01\Transfer\ScalingInstructions or e-mailed directly to scaling@odf.state.or.us . Scaling instructions for each brand should be scanned separately, for each approved TPSO.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STATION TO STATION	DRAINAGE
16 feet	12 feet	A to B	0+00 to 14+30	Crowned/Ditch
16 feet	12 feet	2A to 2B	0+00 to 8+00	Crowned/Ditch
16 feet	12 feet	3A to 3B	0+00 to 3+20	Crowned/Ditch
16 feet	12 feet	4A to 4B	0+00 to 3+00	Crowned/Ditch
16 feet	12 feet	4C to 4D	0+00 to 1+00	Crowned/Ditch
16 feet	12 feet	I1 to I2	0+00 to 241+80	Crowned/Ditch
16 feet	12 feet	I3 to I4	0+00 to 87+60	Crowned/Ditch
16 feet	12 feet	I5 to I6	0+00 to 11+80	Crowned/Ditch
16 feet	12 feet	I7 to I8	0+00 to 8+40	Crowned/Ditch
16 feet	12 feet	I9 to I10	0+00 to 10+00	Crowned/Ditch

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

Where clearing limits have not been marked, the clearing limits shall extend 5 feet back of the top of the cutslope and 5 feet out from the toe of the fill slope, or as directed by STATE. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing debris shall not be left lodged against standing trees.

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

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

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

GRUBBING CLASSIFICATION.

New construction - from the top of the cutslope to the toe of the fill.

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

CLEARING AND GRUBBING DISPOSAL. Scatter in stable locations through openings in the timber outside of the cleared right-of-way, except areas where end-haul is required. In areas where end-haul is required, clearing and grubbing debris shall be fully contained and hauled to a designated waste area. Clearing and grubbing debris shall be left in a stable location, and not left lodged against standing trees.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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

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

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

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

Sidecast includes any road generated excess excavation material which is not essential as part of the road prism, is not compacted, and is below the roadway. Sidecast shall not be placed where it will enter a stream course or where material will accumulate in areas deemed a high-risk site by STATE.

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

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

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

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

DRAINAGE

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

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

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

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

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

SLOPES	Back 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 cutslope shall be rounded.

LANDINGS. Landings shall be constructed as posted in the field, no less than 50 feet wide and no more than 70 feet wide unless otherwise approved by STATE. Surface is to be crowned for drainage with general grade no more than 3 percent. Surface as shown in the “Road Surfacing” table in this Exhibit.

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

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

1. Timber Removal. Remove all trees within posted right-of-way boundary 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. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with this Exhibit.

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

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

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

6. Subgrade Preparation and Application of Surfacing Rock.

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

(b) Subgrade shall be crowned at 4 to 6 percent.

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

Segment	Station	Work Description
A to B	0+00	Begin geotextile fabric.
	1+15	Begin 100 foot radius curve. Begin 6 feet of curve widening.
	2+40	End 100 foot radius and curve widening. Begin 120 foot radius curve. Begin 4 feet of curve widening.
	3+40	Install culvert.
	3+60	End 120 foot radius curve and curve widening.
	3+70	Turnout right.
	4+15	Begin 120 foot radius curve. Begin 4 feet of curve widening and 2 feet of fill widening.
	4+60	Install culvert. Excavate bed of culvert at least 5 feet below existing ground. Construct a free draining fill base at least 5 feet in height and utilize crushed rock around culvert in accordance with specifications in accordance to this Exhibit.
	5+25	End 120 foot radius curve and curve widening. End fill widening.
	5+85	Begin 120 foot radius curve. Begin 4 feet of curve widening.
	6+40	Turnout right.
	7+00	End 120 foot radius curve and curve widening. Install culvert.
	7+60	Begin 80 foot radius curve. Begin 9 feet of curve widening.
	9+20	Turnout left.
	9+70	End 80 foot radius curve and curve widening.
	10+00	Install culvert.
	10+30	Begin 70 foot radius curve. Begin 11 feet of curve widening.
	11+00	Begin road junction construction. Construct junction in both directions within the posted right of way. Realign existing road within right of way to blend in with new road construction. This junction may be used as a waste area for excess excavation.
	12+30	End 70 foot radius curve and curve widening.
	14+30	End geotextile fabric.
2A to 2B	0+00	Begin reconstruction of existing vacated road. Remove trees within the Road Prism as well as any trees with an Orange “C”. Install culvert.
	3+00	Install culvert.
	8+00	End reconstruction of existing vacated road and timber removal.
3A to 3B	0+00	Begin reconstruction of existing vacated road. Remove trees within the Road Prism as well as any trees with an Orange “C”. Install culvert.
	3+20	End reconstruction of existing vacated road and timber removal.
4A to 4B	0+00	Remove existing cross drain culvert across West Sager Creek Road. Utilize approximately 33 cubic yards of 1 ½”-0” for subgrade reconstruction at pipe location. Install a new cross drain across West Sager Creek Road so as to allow for drainage from 4A to 4B as specified by STATE.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

4E	N/A	Utilize approximately 50 cubic yards of 6”-0” pit run rock for the newly constructed landing on the west side of existing road. Utilize approximately 20 cubic yards of 6”-0” pit run rock for the existing turnout/landing on the east side of the existing road.

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

1. Timber Removal. Remove all trees within posted Right-of-Way Boundary or individually marked with an orange “C”, as specified in Section 2210, Designated Timber. Non-merchantable timber and pulp logs shall be processed and decked in stable locations, as directed by STATE. All slash generated shall be removed from the road prism and scattered, or end-hauled to stable locations. Any slash to be piled shall be approved by STATE.

2. Excavated Materials. Excavated materials shall be utilized for road construction. Surplus excavation materials shall be hauled to the waste areas as marked in the field and/or designated on Exhibit A. Surplus excavated materials and waste materials shall be sloped and compacted for drainage. Fills shall be thoroughly compacted in accordance with this Exhibit. 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. Bank Slough Removal. Excavate all bank slough. Bank slough material shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Waste materials shall be seeded and mulched in accordance with specifications in Exhibit M.

4. Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include, skewing the culvert and/or installing the culvert at gradients equal to or exceeding the drainage (or ditch) gradient. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. Culverts in live streams shall be installed with the inlet and outlet on grade with the stream bottom, unless otherwise specified in writing. All woody debris encountered during fill excavation shall be removed. All waste materials shall be hauled to nearby waste areas and shall be uniformly sloped and compacted for drainage. Waste materials shall be seeded and mulched in accordance with specifications in Exhibit M. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit. Crushed rock shall be used for backfilling excavation trenches less than 3 feet deep. STATE may require the use of crushed rock for culvert bedding. Removed culverts shall be hauled to an approved refuse site off of STATE land.

5. Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Cut slopes of ditchlines and ditchouts shall not exceed a 1:1 slope. Clean out all culvert inlets and outlets for a 10-foot radius. Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels. Install a culvert marker at each newly installed culvert and at each existing culvert that is missing a marker that could be reached by a grader blade.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

6. Rock Ditch Filter. Construct rock ditch filters as directed by STATE. Excavated material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A. Waste materials shall be sloped and compacted for drainage. Construct each rock ditch filter with clean drain rock (6"-4" pit-run rock) and placed at a 2:1 slope within the specified ditch. Construct the center of the rock ditch filter at least 6 inches lower than the ends, to act as a spillway for runoff and to prevent water from flowing around the filter. Space the filters so that the bottom elevation of the upper filter is the same as the top center elevation of the next filter. Rock ditch filter dimensions shall be as shown on the "Typical Rock Ditch Filter" exhibit or as directed by STATE. Locations of the filters shall be determined by STATE.

7. Ditch Drain and Buttress Construction. Construct ditch drain and buttress in accordance with the plans on file at the Astoria District Office, as shown on Exhibit H, and as directed by STATE. Geotextile fabric to be installed shall meet the specifications in Exhibit I. Excavated materials shall be hauled to a designated waste area, as directed by STATE. All work shall be performed during dry conditions acceptable to STATE. STATE shall be notified a minimum of 48 hours prior to beginning work.

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

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

10. Road Grading, Subgrade Preparation, and Application of Surfacing Rock.

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

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

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

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

(e) Upon completion of above required work, apply, process, and compact surfacing rock in accordance to this Exhibit.

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I1 to I2	0+00	Begin road improvement as specified above in the General Instructions and below in the Specific Instructions. Begin application of surface leveling rock, utilize 3/4"-0" crushed rock.
	241+80	End road improvement. End application of surface leveling rock.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I3 to I4	0+00	Begin road improvement as specified above in the General Instructions and below in the Specific Instructions. Begin sod removal. Begin road daylighting, timber removal shall be a specified in Timber Removal Instructions above. Begin application of surface leveling rock, utilize 4”-0” crushed rock. Construct truck turnaround.
	3+50	Install new 18” x 30’ CPP culvert for ditch cross drain. Utilize 1½”-0” crushed rock for bedding and backfill. Install new culvert marker.
	9+60	Install three Rock Ditch Filters in accordance to this Exhibit and as directed by STATE, utilize 6”-4” pit-run.
	11+10	Install new 18” x 30’ CPP culvert for ditch disconnect. Utilize 1½”-0” crushed rock for bedding and backfill. Utilize 24”-6” riprap for energy dissipator. Install new culvert marker.
	13+70	Remove existing bank slough and reestablish ditchline. Excavate and repair existing sinkholes. End haul waste to approved waste area as directed by STATE. Apply subgrade reinforcement, utilize 4”-0” crushed rock.
	17+00	Construct temporary access route to culvert outlet. Timber removal shall be as specified in Timber Removal Instructions above. Place energy dissipator as directed by STATE, utilize 24”-6” riprap. Re-contour access route to natural slope. Seed and mulch disturbed soil in accordance to Exhibit M.
	17+20	Begin 4 inch lift of 4”-0” crushed rock.
	33+05	Install three Rock Ditch Filters in accordance to this Exhibit and as directed by STATE, utilize 6”-4” pit-run.
	34+60	Begin three inch lift of traction rock, utilize 3/4”-0 crushed rock.
	36+90	Install three Rock Ditch Filters in accordance to this Exhibit and as directed by STATE, utilize 6”-4” pit-run.
	37+30	Install energy dissipator at existing culvert outlet, utilize 24”-6” riprap.
	37+70	End traction rock.
	40+75	Clear outlet of existing culvert.
	42+35	Install energy dissipator at existing culvert outlet, utilize 24”-6” riprap.
	44+70	Begin ditch drain and buttress construction as specified above in the General Instructions and in accordance with Exhibit H.
	45+30	End ditch drain and buttress construction.
	45+60	Install new 18” x 30’ CPP culvert for ditch disconnect. Utilize 1½”-0” crushed rock for bedding and backfill. Utilize 24”-6” riprap for energy dissipator. Install new culvert marker.
	46+10	Excavate and repair existing sinkhole. End haul waste to approved waste area as directed by STATE. Apply subgrade reinforcement, utilize 4”-0” crushed rock.
	46+70	Install three Rock Ditch Filters in accordance to this Exhibit and as directed by STATE, utilize 6”-4” pit-run.
	49+70	Begin three inch lift of traction rock, utilize 3/4”-0 crushed rock.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I3 to I4	49+85	Install new 18” x 30’ CPP culvert for ditch cross drain. Utilize 1½”-0” crushed rock for bedding and backfill. Utilize 24”-6” riprap for energy dissipator. Install new culvert marker.
	52+60	Clear and repair outlet of existing culvert, utilize saw to shorten outlet as directed by STATE. End traction rock.
	54+10	Begin three inch lift of traction rock, utilize 3/4”-0 crushed rock.
	54+30	Install energy dissipator at existing culvert outlet, utilize 24”-6” riprap.
	57+50	Clear outlet of existing culvert.
	58+30	Install three Rock Ditch Filters in accordance to this Exhibit and as directed by STATE, utilize 6”-4” pit-run.
	60+10	Install three Rock Ditch Filters in accordance to this Exhibit and as directed by STATE, utilize 6”-4” pit-run.
	60+70	End traction rock.
	62+80	Install three Rock Ditch Filters in accordance to this Exhibit and as directed by STATE, utilize 6”-4” pit-run.
	64+60	Begin three inch lift of traction rock, utilize 3/4”-0 crushed rock.
	66+45	End traction rock.
	68+80	Install new 18” x 40’ CPP culvert for ditch cross drain. Utilize 1½”-0” crushed rock for bedding and backfill. Install new culvert marker. Begin three inch lift of traction rock, utilize 3/4”-0 crushed rock.
	71+60	Install new 18” x 30’ CPP culvert for ditch disconnect. Utilize 1½”-0” crushed rock for bedding and backfill. Utilize 24”-6” riprap for energy dissipator. Install new culvert marker.
	72+20	Install three Rock Ditch Filters in accordance to this Exhibit and as directed by STATE, utilize 6”-4” pit-run.
	73+80	Install three Rock Ditch Filters in accordance to this Exhibit and as directed by STATE, utilize 6”-4” pit-run.
	74+40	End traction rock.
	75+70	Install energy dissipator at existing culvert outlet, utilize 24”-6” riprap. Install additional dissipator as directed by STATE.
	76+80	Install three Rock Ditch Filters in accordance to this Exhibit and as directed by STATE, utilize 6”-4” pit-run. Begin three inch lift of traction rock, utilize 3/4”-0 crushed rock.
	79+55	Install new 18” x 30’ CPP culvert for ditch disconnect. Utilize 1½”-0” crushed rock for bedding and backfill. Utilize 24”-6” riprap for energy dissipator. Install new culvert marker.
	82+40	End traction rock.
	84+30	Begin three inch lift of traction rock, utilize 3/4”-0 crushed rock.
	87+00	End traction rock.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I3 to I4	87+60	End road improvement. End application of subgrade leveling rock. End 4 inch lift of 4”-0” crushed rock. End sod removal. End road daylighting.
I5 to I6	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Begin sod removal. Begin application of subgrade leveling rock, utilize 4”-0” crushed rock. Begin four inch lift of 4”-0” crushed rock. Begin three inch lift of traction rock, utilize 3/4”-0 crushed rock.
	2+20	Construct ditchout as directed by STATE.
	6+20	Construct ditchout as directed by STATE. End traction rock.
	9+00	Construct ditchout as directed by STATE.
	11+80	End road improvement. End sod removal. End application of subgrade leveling rock. End four inch lift of 4”-0” crushed rock. Construct ditchout as directed by STATE.
I7 to I8	0+00	Begin road improvement as specified above in the General Instructions and below in the Specific Instructions. Begin sod removal. Begin three inch lift of 1 1/2”-0” crushed rock.
	8+40	End road improvement. End sod removal. End three inch lift of 1 1/2”-0” crushed rock.
I9 to I10	0+00	Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Begin sod removal. Begin four inch lift of 4”-0” crushed rock. Begin four inch lift of traction rock, utilize 3/4”-0 crushed rock.
	3+90	Begin road realignment. Widen road a minimum of four feet to the right. End haul excavated material to an approved waste area.
	5+10	End road realignment. Install new 18”x30’ CPP culvert for ditch cross drain. Utilize ¾”-0” crushed rock for bedding and backfill. Install new culvert marker. Utilize 24”-6” riprap for energy dissipator.
	10+00	End road improvement. End sod removal. End four inch lift of 4”-0” crushed rock.

EXHIBIT D

FULL BENCH AND END-HAUL REQUIREMENTS

POINT TO POINT	STA. TO STA.	CONTAINMENT - SIDECAST
I3 to I4	Stations 13+70, 46+10	2
I9 to I10	3+90 to 5+10	2

Full Bench and End-Haul Areas General Requirements

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

Clearing and grubbing debris shall be end-hauled.

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

Containment/Sidecast

(1) Full: No excavated material remains below the road

(2) Normal/Incidental: The amount of excavated material lost over the outside edge of the road shall not exceed 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. Sidecast shall not be placed where it will enter a stream course or where material will accumulate in areas deemed a high-risk site by STATE.

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

Waste Area Location

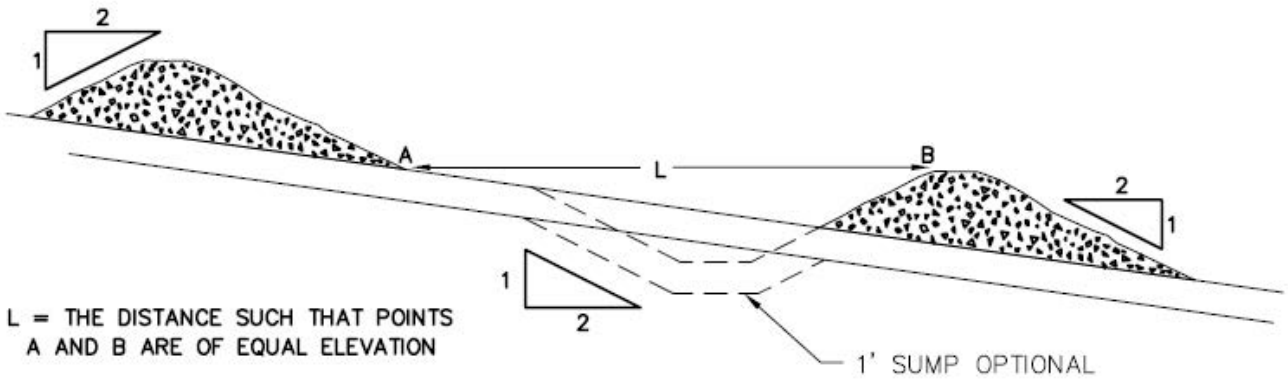
- As shown on Exhibit A and as marked in the field.

Waste Area Treatment

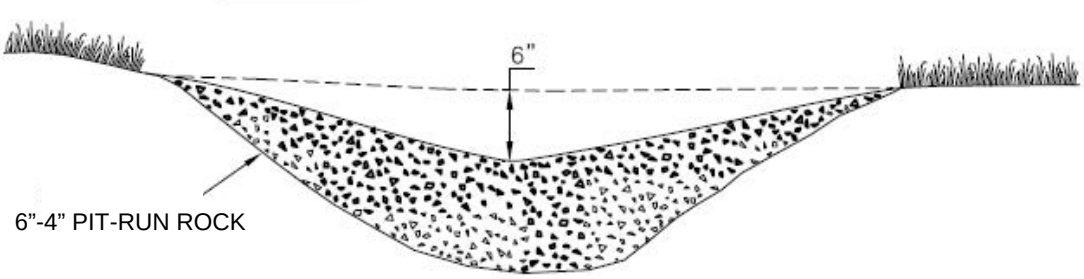
- Deposit at waste area, spread evenly, compact, and provide adequate drainage.
- Pile woody debris separate from other waste material.
- Mulch and seed all waste areas in accordance with Exhibit M.

EXHIBIT D

TYPICAL ROCK DITCH FILTER



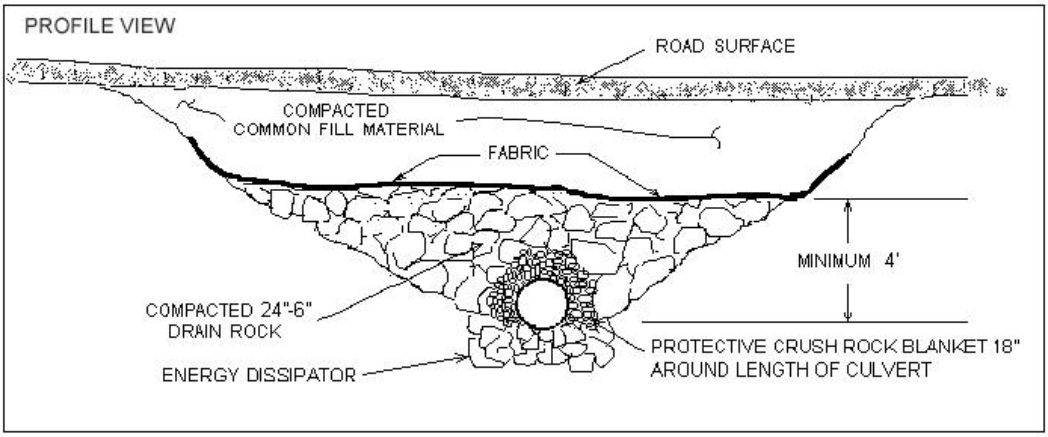
SPACING BETWEEN ROCK FILTERS

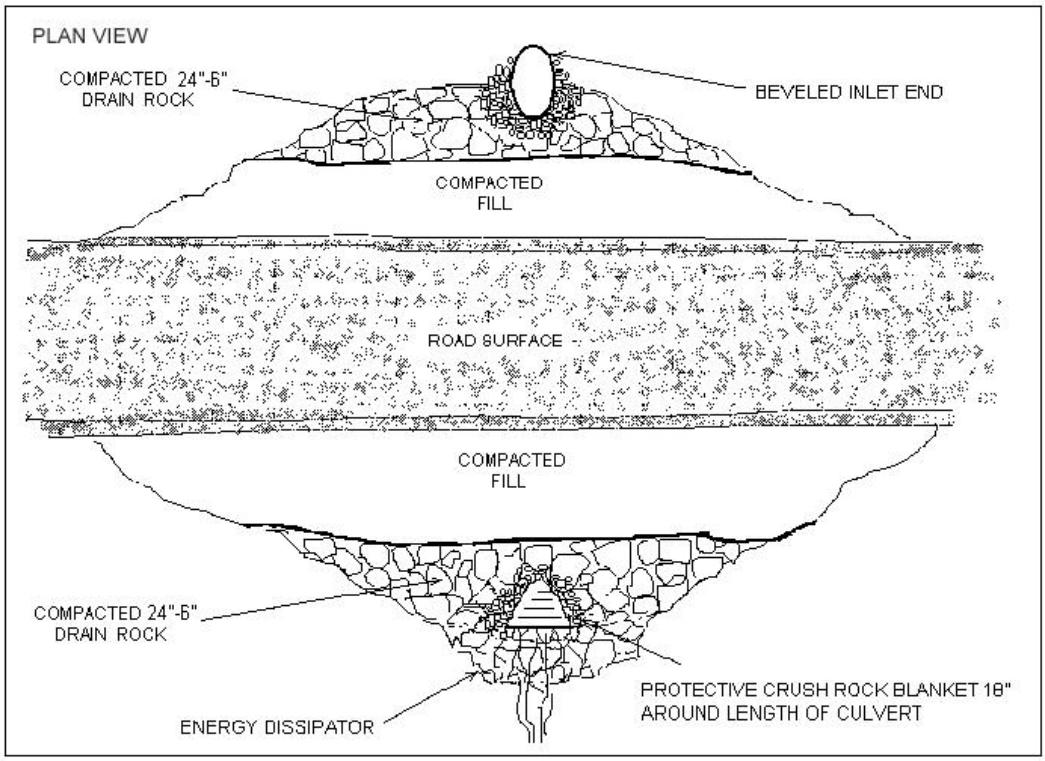


ROCK DITCH FILTER

EXHIBIT D

GEOTEXTILE AND FREE DRAIN FILL SPECIFICATIONS





Drainage Geotextile Specifications:
Nonwoven drainage geotextile fabric designed for subsurface drain purposes which meets or exceeds the following requirements:

		Test Method	Properties
(a)	Water Flow Rate	ASTM D 4491	(*85) gal/min/ft^2
(b)	Water Permeability	ASTM D 4491	(*0.30) cm/sec
(c)	Grab Tensile Strength	ASTM D 4632	250 lb
(d)	Mullen Burst Test	ASTM D 3766	460 lb
(e)	Mass	ASTM D 4533	10 oz/yd^2
(f)	Thickness	ASTM D 5199	100 mills
(g)	UV Resistance	ASTM D 4355 Xenon Arc	70% retained

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: 2A to 2B				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	2A to 2B		0+00 to 8+00		
				Volume (CY) Per		**Number of**		
Base Rock	4"-0" crushed	0+00 to 8+00	8	station	50	stations	8.00	400
Turnarounds	4"-0" crushed		8	TA	11	TA's	1	11
Turnouts	4"-0" crushed		8	TO	22	TO's	4	88
Total Rock for Road Segment:			2A to 2B					499
ROAD SEGMENT: 3A to 3B				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	3A to 3B		0+00 to 3+20		
				Volume (CY) Per		**Number Of**		
Base Rock	4"-0" crushed	0+00 to 3+20	8	station	50	stations	3.20	160
Landings	6"-0" Pit Run	3B	N/A	Landing	50	Landings	1	50
Total Rock for Road Segment:			3A to 3B					210
ROAD SEGMENT: 4A to 4B				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	4A to 4B		0+00 to 3+00		
				Volume (CY) Per		**Number of**		
Base Rock	4"-0" crushed	0+00 to 3+00	8	station	50	stations	3.00	150
Junction Rock	1 1/2"-0" crushed	0+00	8	Junctions	22	Junctions	1.00	22
Subgrade Reconstruction	1 1/2"-0" crushed	0+00	N/A	load	11	loads	3	33
Culvert Bedding/Backfill	1 1/2"-0" crushed	0+00	N/A	load	11	loads	3	33
Landings	6"-0" Pit Run	4B	N/A	Landing	70	Landings	1	70
Total Rock for Road Segment:			4A to 4B					308
ROAD SEGMENT: 4C to 4D				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size And Type**	**Location**	**Depth of Rock (inches)**	4C to 4D		0+00 to 1+00		
				Volume (CY) Per		**Number Of**		
Base Rock	4"-0" crushed	0+00 to 1+00	8	station	50	stations	1.00	50
Junction Rock	1 1/2"-0" crushed	0+00	8	Junctions	22	Junctions	1.00	22
Landings	6"-0" Pit Run	4D	N/A	Landing	70	Landings	1	70
Total Rock for Road Segment:			4C to 4D					142
ROAD SEGMENT: 4E and 4F				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size And Type**	**Location**	**Depth of Rock (inches)**	4E and 4F		N/A		
				Volume (CY) Per		**Number Of**		
Landings	6"-0" Pit Run	4E	N/A	Landing	70	Landings	1	70
Landings	6"-0" Pit Run	4F	N/A	Landing	50	Landings	1	50
Total Rock for Road Segment:			4E and 4F					120

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: A to B				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	A to B **Volume (CY) Per**		0+00 to 14+30 **Number of**		
Base Rock	4"-0" crushed	0+00 to 14+30	10	station	63	stations	14.30	901
Junctions	4"-0" crushed	0+00, 14+30	10	junction	88	junctions	2	176
Turnouts	4"-0" crushed	3+70, 6+40, 9+20	10	TO	28	TO's	3	84
Curve Widening	4"-0" crushed	1+15 to 3+60, 4+15 to 5+25, 5+85 to 7+00, 7+60 to 9+70, 10+30 to 12+30	10	N/A	n/a	N/A		420
Surfacing Rock	3/4"-0" crushed	0+00 to 14+30	4	station	25	stations	14	358
Junctions	3/4"-0" crushed	0+00, 14+30	4	junction	22	junctions	2	44
Turnouts	3/4"-0" crushed	3+70, 6+40, 9+20	4	TO	11	TO's	3	33
Curve Widening	3/4"-0" crushed	1+15 to 3+60, 4+15 to 5+25, 5+85 to 7+00, 7+60 to 9+70, 10+30 to 12+30	4	N/A	N/A	N/A	N/A	166
Bedding and backfill	3/4"-0" crushed	4+60	N/A	N/A	N/A	N/A	N/A	55
Free Draining Fill	24"-6" riprap	4+60	N/A	N/A	N/A	N/A	N/A	110
Fill Armor	24"-6" riprap	4+60	N/A	N/A	N/A	N/A	N/A	110
Total Rock for Road Segment:			A to B					2,456
ROAD SEGMENT: I1 to I2				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I1 to I2 **Volume (CY) Per**		0+00 to 241+80 **Number of**		
Surface Leveling Rock	3/4"-0" crushed	0+00 – 241+80	N/A	load	11	loads	60	660
Total Rock for Road Segment:			I1 to I2					660
ROAD SEGMENT: I3 to I4				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I3 to I4 **Volume (CY) Per**		0+00 to 87+60 **Number of**		
Subgrade Leveling Rock	4"-0" crushed	0+00 – 87+60	N/A	load	11	loads	20	220
Turnaround	4"-0" crushed	0+00	N/A	load	11	loads	2	22
Surfacing	4"-0" crushed	17+20 – 87+60	4	station	25	stations	70.4	1,760
Turnouts	4"-0" crushed	35+70, 43+90, 51+25, 55+50, 67+30, 68+10, 81+11	4	turnout	11	turnouts	7	77

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: I3 to I4 (con't.)				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3 to I4 Volume (CY) Per		0+00 to 87+60 Number of		
Turnaround	4"-0" crushed	87+20	4	turnaround	11	turnaround	1	11
Junctions	4"-0" crushed	23+70, 59+95, 81+95	4	junction	11	junctions	3	33
Traction Rock	3/4"-0" crushed	34+60-37+70, 49+70-52+60, 54+10-60+70, 64+60-66+45, 68+80-74+40, 76+80-82+40, 84+30-87+00	3	station	19	stations	28.4	539
Subgrade Reinforcement	4"-0" crushed	13+70, 46+10	N/A	location	33	locations	2	66
Culvert Bedding and Backfill	1 1/2"-0" crushed	3+50, 11+10, 45+60, 49+85, 68+80, 71+60, 79+55	N/A	culvert	33	culverts	7	231
Culvert Energy Dissipator	24"-6" riprap	11+10, 33+05, 37+30, 42+35, 45+60, 49+85, 54+30, 71+60, 75+70, 79+55	N/A	dissipator	11	dissipators	10	110
Additional Culvert Energy Dissipator	24"-6" riprap	75+70	N/A	dissipator	11	dissipators	1	11
Rock Ditch Filters	6"-4" pit-run	9+60, 36+90, 46+70, 58+30, 60+10, 62+80, 72+20, 73+80, 76+80	N/A	3 filter series	11	3 filter series	9	99
Large Culvert Energy Dissipator	24"-6" riprap	17+00	N/A	load	11	loads	5	55
Ditch Drain and Buttressing	24"-12" riprap	44+70 - 45+30	N/A	load	11	loads	6	66
Ditch Drain and Buttressing	12"-6" riprap	44+70 - 45+30	N/A	load	11	loads	3	33
Ditch Drain and Buttressing	2"-1" drain rock	44+70 - 45+30	N/A	load	11	loads	3	33
Total Rock for Road Segment:			I3 to I4					3,366

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: I5 to I6				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I5 to I6 **Volume (CY) Per**		0+00 to 11+80 **Number of**		
Subgrade Leveling Rock	4"-0" crushed	0+00 – 11+80	N/A	load	11	loads	4	44
Surfacing	4"-0" crushed	0+00 – 11+80	6	station	38	stations	11.8	448
Traction Rock	3/4"-0" crushed	0+00 - 6+20	3	station	19	stations	6.2	118
Landings	6"-0" pit run	I6	N/A	landing	50	landings	1	50
Total Rock for Road Segment:			I5 to I6					660
ROAD SEGMENT: I7 to I8				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I7 to I8 **Volume (CY) Per**		0+00 to 8+40 **Number of**		
Surfacing	1 1/2"-0" crushed	0+00 – 8+40	3	station	19	stations	8.4	160
Total Rock for Road Segment:			I7 to I8					160
ROAD SEGMENT: I9 to I10				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I9 to I10 **Volume (CY) Per**		0+00 to 10+00 **Number of**		
Base Rock	4"-0" crushed	0+00 to 10+00	4	station	25	stations	10.0	250
Turnouts	4"-0" crushed	1+75, 7+10, 10+00	N/A	turnout	22	turnouts	3	66
Road widening	4"-0" crushed	3+90	10	load	11	loads	6	66
Curve Widening	4"-0" crushed	3+30, 5+10	10	load	11	loads	6	66
Surfacing Rock	3/4"-0" crushed	0+00 to 10+00	4	station	25	stations	10.0	250
Turnouts	3/4"-0" crushed	1+75, 7+10, 10+00	4	turnout	22	turnouts	3	66
Road widening	3/4"-0" crushed	0+00 to 10+00	4	load	11	loads	6	66
Curve Widening	3/4"-0" crushed	3+30, 5+10	4	load	11	loads	6	66
Junctions	3/4"-0" crushed	0+00	4	load	11	loads	2	22
Bedding and backfill	3/4"-0" crushed	5+10	N/A	load	11	loads	2	22
Dissipator/Armor	24"-6" riprap	5+10	N/A	load	11	loads	4	44
Total Rock for Road Segment:			I9 to I10					984

ROCK TOTALS (CY)	**24"-12" rip rap**	**24"-6" rip rap**	**12"-6" rip rap**	**6"-4" pit run**	**6"-0" pit run**	**4"-0" crushed**	**1 1/2"-0" crushed**	**2"-1" drainrock**	**3/4"-0" crushed**
9,565	66	440	33	99	360	5,569	501	33	2,464

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.

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

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

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

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

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

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

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

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All roads that require rock surfacing.	1

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

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All road segments.	1, 2, 3, or 4

EXHIBIT D

COMPACTION AND PROCESSING REQUIREMENTS

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

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

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

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

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

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

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
Segments requiring pit-run rock.	5

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) Dozer. A dozer/track-type tractor weighing a minimum of 82,000 pounds shall be operated over the pit-run rock so that the entire surface comes in contact with the tracks.

EXHIBIT E

CULVERT SPECIFICATIONS

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

Culverts shall be constructed of corrugated double-walled polyethylene, or corrugated aluminized (Type 2) steel.

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

Aluminized (Type 2) steel culverts shall meet the requirements of AASHTO M-36-03[1].

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

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

Culverts shall be located according to the alignment and grade as shown on the Plan and Profile, and/or as staked in the field, or as specified in special instructions. Culverts in live streams shall be installed with the inlet and outlet on grade with the stream bottom, unless otherwise specified in writing.

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

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

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

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

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

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

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

EXHIBIT E

CULVERT SPECIFICATIONS

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

Lengths of individual culvert sections shall be not less than 10 feet, unless otherwise provided for in special instructions.

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

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

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

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

All culverts scheduled for replacement shall be removed from STATE land and hauled to an approved refuse site in the same project period in which replacement occurred.

The intake ends of culverts in fills less than 3 feet to the top of the culvert shall be marked by driving white fiberglass posts within 6 inches of the downgrade side. Posts shall be a minimum of 6 feet long and 2½ inches wide, with the spade driven 2 feet into the ground.

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

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

	Steel Culvert	Thickness			Band Widths (")	
Dia.	Gauge	Uncoated	Coated	Band Gauges	Annular	Helical
12-15	16	(0.0598")	(0.064”)	16	7	12
18-24	16	(0.0598")	(0.064”)	16	12	12
30-36	16	(0.0598")	(0.064”)	16	12	12
42	14	(0.0747")	(0.079”)	16	12	12
48	14	(0.0747")	(0.079”)	16	24	24
54	14	(0.0747")	(0.079”)	16	24	24
60	12	(0.1046")	(0.109”)	16	24	24
66-72	12	(0.1046")	(0.109”)	16	24	24
78	12	(0.1046")	(0.109”)	16	24	24
84	12	(0.1046")	(0.109”)	16	24	24
90-120	12	(0.1046")	(0.109”)	16	26	26

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

EXHIBIT E

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	MATERIAL TYPE	GAUGE	ROAD SEGMENT POINT TO POINT	STATION
1	18	30	CPP		2A to 2B	0+00
2	18	30	CPP		2A to 2B	3+00
3	18	30	CPP		3A to 3B	0+00
4	18	40	CPP		4A to 4B	0+00
5	18	30	CPP		A to B	3+40
6	18	70	ACSP		A to B	4+60
7	18	30	CPP		A to B	7+00
8	18	30	CPP		A to B	10+00
9	18	30	CPP		I3 to I4	3+50
*10	18	30	CPP		I3 to I4	11+10
11	12	60	Perforated CPP		I3 to I4	44+70 to 45+30
*12	18	30	CPP		I3 to I4	45+60
13	18	30	CPP		I3 to I4	49+85
14	18	40	CPP		I3 to I4	68+80
*15	18	30	CPP		I3 to I4	71+60
*16	18	30	CPP		I3 to I4	79+55
17	18	30	CPP		I9 to I10	5+10

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

EXHIBIT F

ROCK QUARRY DEVELOPMENT AND USE

1. PURCHASER shall prepare a written development plan for the quarry area. The plan shall be submitted to STATE for approval prior to conducting any operation in quarry area. The plan shall include, but not be limited to:

   (a) Location of benches and roads to benches.
   (b) Disposal site for woody debris, overburden and reject material.
   (c) Time lines for rock quarry use.
   (d) Erosion Control measures.

2. PURCHASER shall schedule and coordinate quarry and stockpile usage with other existing or planned activity requiring quarry or stockpile usage. PURCHASER shall notify STATE 5 days prior to the start of quarry development activities.

3. The quarry site shall be left in a condition free from overburden and debris. Access roads to the quarry, and the quarry floor, shall be cleared at the termination of use. Overburden shall be removed for a distance of 20 feet beyond the developed rock source.

4. All overburden and reject material shall be hauled to the designated waste area as directed by STATE.

5. PURCHASER shall conduct the operations relative to the disposal of waste material in such manner that sediment, rock, or debris shall not be washed, conveyed, or otherwise deposited in any stream.

6. Controlled blasting techniques shall be utilized for any blasting operations, and shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain as much material as possible within the quarry development area. PURCHASER shall maintain a comprehensive blasting log that contains all pertinent data for all blasting operations. The blasting log shall be submitted to the STATE after the completion of all blasting activity. The blasting log is intended for STATE record keeping purposes only.

7. Benches shall be maintained/constructed at intervals of 40 feet or less in height and shall be a minimum of 20 feet in width. Any gravel or talus slopes shall be left with a working face at an angle of 60 percent or less. There shall be a minimum of one bench with an access road to it. Said bench shall be easily accessible with tractors.

8. Quarry face shall be developed in a uniform manner. All quarry backslopes shall be left in a stable condition.

9. The quarry floor shall be developed to provide for drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained. Quarry access roads shall be cleared and blocked upon completion of quarry use as directed by STATE.

10. Proper winterization and storm-water control measures such as waterbarring, drainage, utilization of filter bales, mulching and/or blocking access shall be constructed and maintained to protect the watershed and Project Work, as directed by STATE.

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Meier Mainline Combo

EXHIBIT G

PIT-RUN AND RIPRAP ROCK SPECIFICATIONS

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

For 6"-4" Pit-Run A minimum of 50 percent of the material shall measure a minimum of 5 inches, measured in one dimension. Material shall be clean, well graded, and free of 3"-0" fines.

For 24"-12" and 24"-6" Riprap A minimum of 50 percent of the material shall measure a minimum of 24 inches, measured in one dimension. Material shall be clean, well graded, and free of 2"-0" fines.

For 12"-6" Riprap A minimum of 50 percent of the material shall measure a minimum of 12 inches, measured in one dimension. Material shall be clean, well graded, and free of 2"-0" fines.

Control of gradation shall be by visual inspection by STATE.

State Timber Sale Contract
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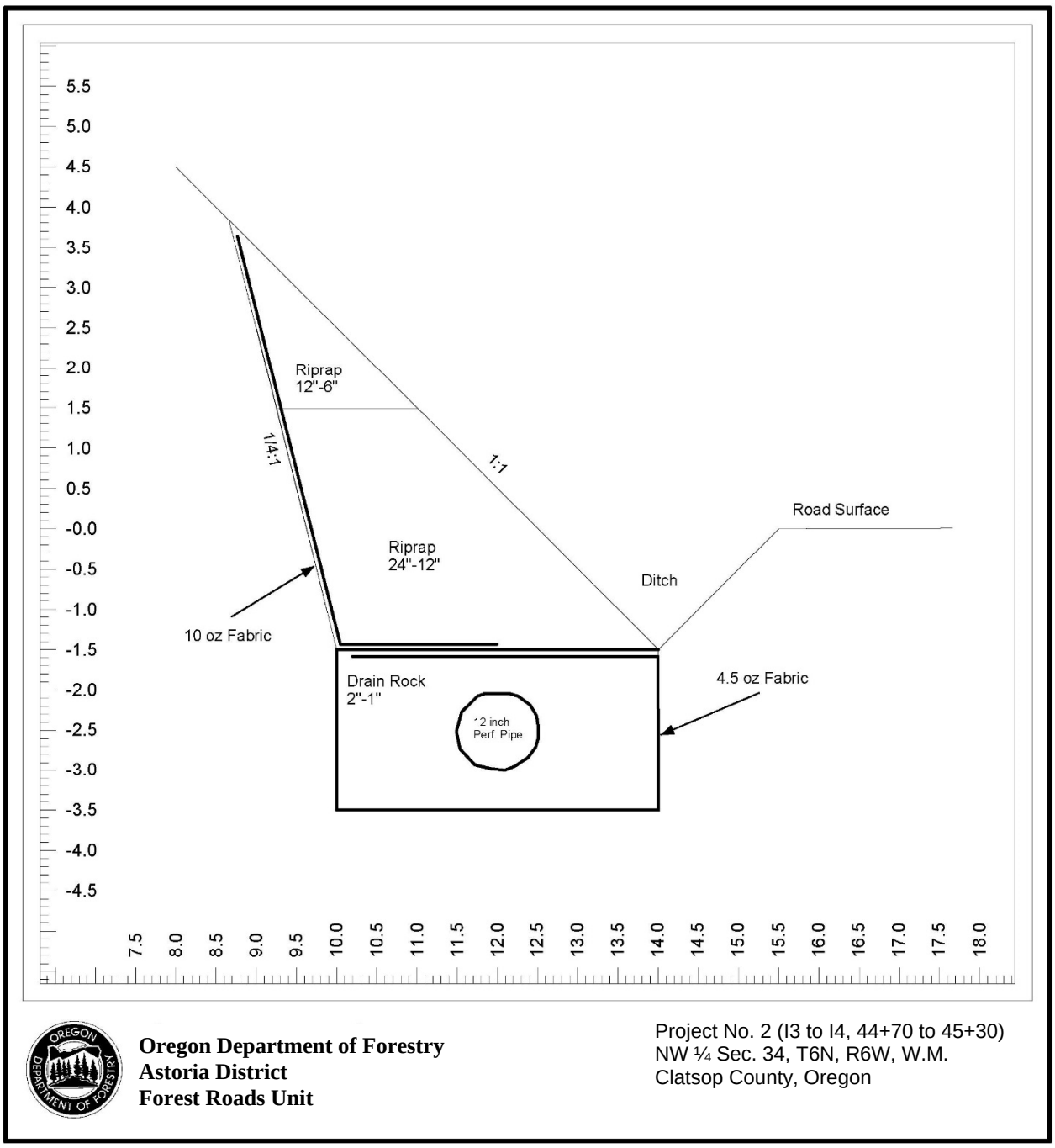
Meier Mainline Combo

EXHIBIT H

DITCH DRAIN AND BUTTRESS CONSTRUCTION



Oregon Department of Forestry
Astoria District
Forest Roads Unit

Project No. 2 (I3 to I4, 44+70 to 45+30)
NW ¼ Sec. 34, T6N, R6W, W.M.
Clatsop County, Oregon

EXHIBIT I

GEOTEXTILE SPECIFICATIONS

GEOTEXTILE SPECIFICATIONS - shall be woven geotextile fabric designed for forest road subgrade surfacing purposes and shall meet or exceed the following requirements, unless otherwise approved in writing by STATE:

4 ½ oz. woven fabric (buttressing drain rock wrap):

Woven drainage fabric designed for free draining fills and shall meet or exceed the following requirements, unless otherwise approved in writing by STATE:

		Test Method	Properties
(1)	Grab Tensile Strength	ASTM D4632	200 lbs.
(2)	Puncture strength	ASTM D4833	90 lbs.
(3)	Mullen Burst Test	ASTM D3786	400 lbs.
(4)	Width – 16 feet		

6 ½ ox. woven fabric (subgrade separation)

		Test Method	Properties
(1)	Grab Tensile Strength	ASTM D4623	300 lbs.
(2)	Puncture strength	ASTM D4833	110 lbs.
(3)	Mullen Burst Test	ASTM D3786	600 lbs.
(4)	Width – 12.5 feet		

10 oz. non-woven (buttressing riprap separation):

Nonwoven drainage fabric designed for SUB surface drain purposes which meets or exceeds the following requirements, unless otherwise approved in writing by STATE:

		Test Method	Properties
(1)	Water Flow Rate	ASTM D 4491	85 gal/min/ft^2
(2)	Water Permeability	ASTM D 4491	0.30 cm/sec
(3)	Grab Tensile Strength	ASTM D 4632	250 lb
(4)	Mullen Burst Test	ASTM D 3766	460 lb
(5)	Mass	ASTM D 4533	10 oz/yd^2
(6)	Thickness	ASTM D 5199	100 mills
(7)	UV Resistance	ASTM D 4355 Xenon Arc	70% retained

EXHIBIT I

GEOTEXTILE SPECIFICATIONS

INSTALLATION REQUIREMENTS - fabric shall be installed according to the following requirements:

1. Subgrade surface shall be leveled and smoothed to remove humps and depressions which exceed 6 inches in height and depth. Small pieces of woody debris shall be removed. Light vegetation (grass, weeds, leaves, and fine woody debris) may be left in place.

2. Fabric shall be installed directly on the prepared surface. Longitudinal and traverse joints shall be overlapped at least 3 feet.

3. Surfacing course material shall be placed to the designated thickness in one lift and spread in the direction of fabric overlap. Hauling and spreading equipment shall not be operated on the fabric until the total thickness of surfacing course material is placed.

4. Torn, punctured, or separated sections of the fabric shall be repaired by installing a fabric patch over the break prior to placing the surfacing course material. The patch shall be at least 4 feet larger in horizontal dimensions than the break to be repaired.

5. Fabric failures resulting after rock placement and as evidenced by subgrade pumping or roadbed distortion shall be corrected. Correction measures shall consist of: (1) removing at least three-quarters the depth of surfacing course material in the affected area, (2) placing a fabric patch over the affected area with a minimum 4-foot overlap around the circumference of the area, and (3) replacing enough rock to cover the patch and blend in with the rest of the road.

6. At I3 to I4 (44+70 to 45+30), fabric shall be installed according to the diagram shown on Exhibit H, and as directed by STATE.

7. Should STATE determine that installation of woven fabric on roads or portions of roads is not necessary, PURCHASER shall deliver an equivalent amount of woven road fabric to STATE.

8. Fabric locations:

Road Segment	Location
A to B (subgrade)	0+00 to 14+30
A to B (free drain fill)	4+60
I3 to I4 (buttressing)	44+70 to 45+30

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EXHIBIT J

TYPICAL EMBEDDED ENERGY DISSIPATOR

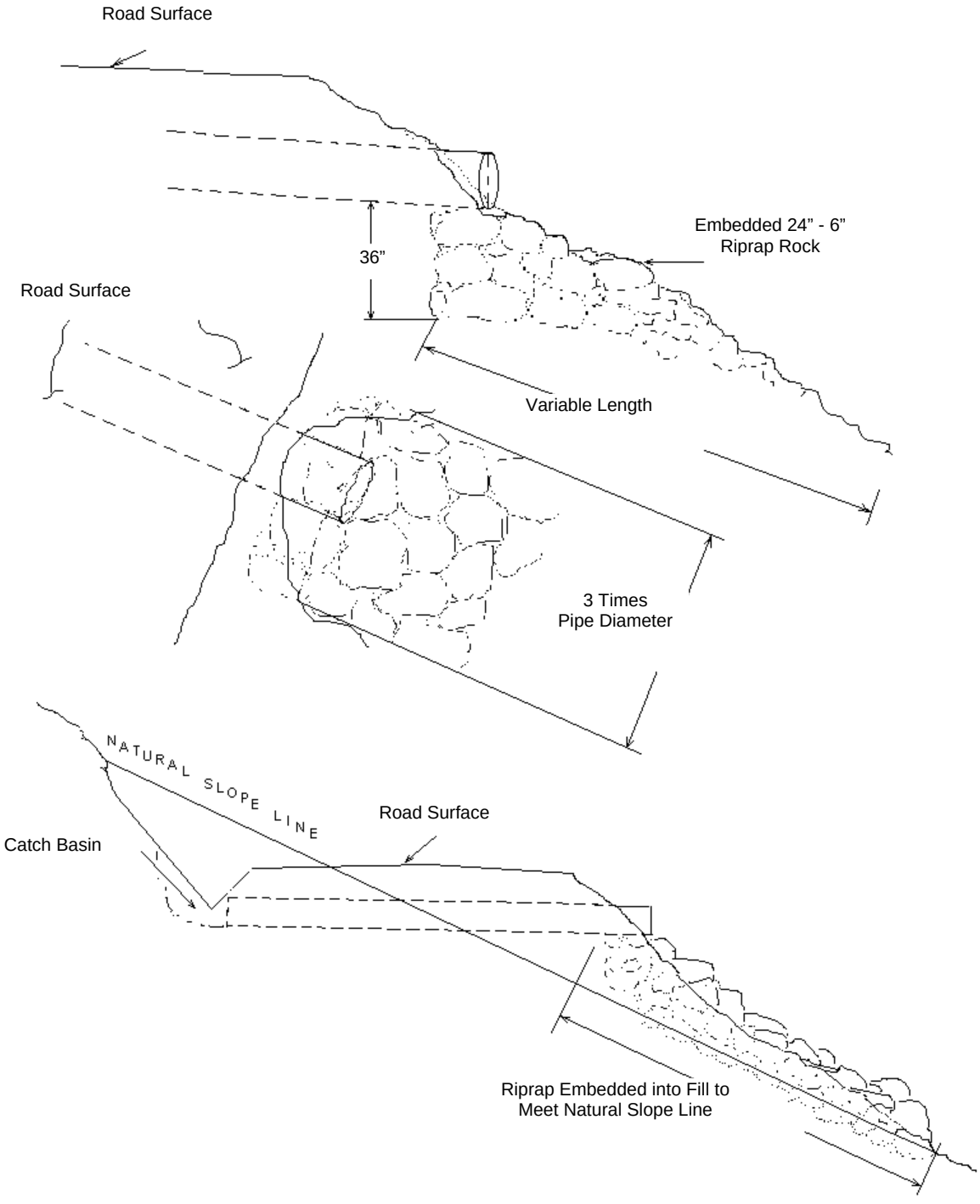

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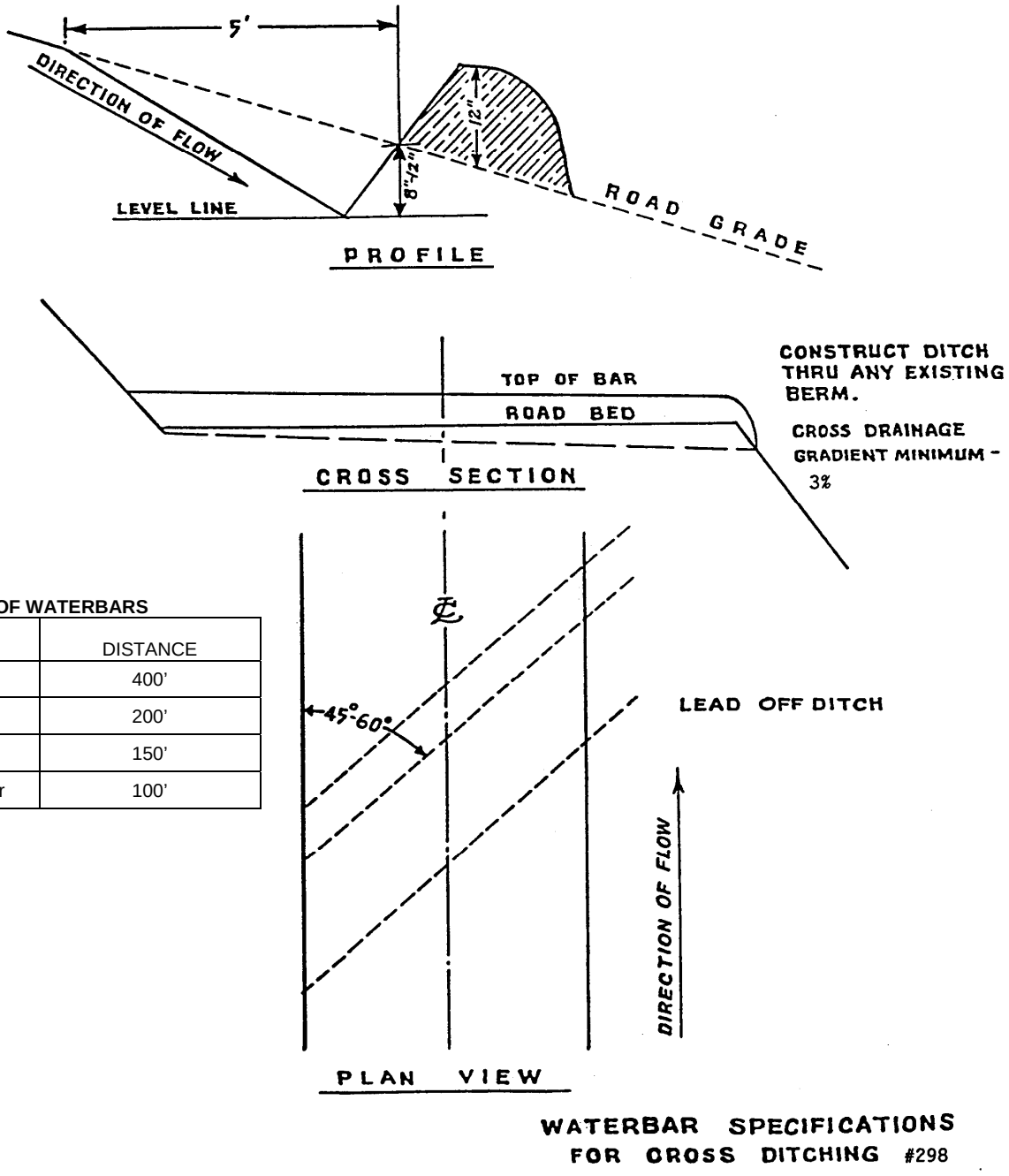
EXHIBIT K

WATERBAR SPECIFICATIONS



SPACING OF WATERBARS

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

EXHIBIT L

ROAD VACATING SPECIFICATIONS

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

(a) Fill removal and stream channel development.
(b) Culvert / drainage structure removal.
(c) Minimize disturbance of existing vegetation.

(1) Tree Removal. Cut or remove all trees necessary to access the project area and to facilitate vacating operations, as directed by STATE. Timber shall NOT be removed as designated timber, unless located within posted timber sale boundaries or right-of-way boundaries.

(2) Fill Removal and Stream Channel Development. Remove fills to the natural stream course levels. Stream channels shall be excavated/developed to specified widths. Developed stream banks shall be sloped at natural contours or no steeper than 1½:1, as directed by STATE.

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

(4) Use of Excavated Materials.

(A) Fill Excavation and Sidecast Pullback. Excavated materials shall be placed on the interior (cut) side of the road, and utilized to restore the cutslope to natural contours, or to a minimum 10 percent outsloped surface for drainage. Any excess material will be hauled to a designated waste area, as directed by STATE.

(B) Woody Debris Shall be placed on the surface of pullback/fill material.

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

(5) Erosion Control. Erosion control shall be completed in a progressive manner. Grass seed and straw mulch shall be applied for every 500 feet of road vacated, prior to continuing work.

All excavated material and bare soil shall utilize grass seed and straw mulch approved by STATE and in accordance with the specifications in Exhibit M. Applied mulch shall be a minimum of two inches deep and provide a uniform cover.

(6) Construct Waterbars as directed by STATE. Construct waterbars according to the specifications in Exhibit K.

EXHIBIT L

ROAD VACATING SPECIFICATIONS

(7) Equipment. A minimum 1½ cubic-yard, track mounted excavator shall be used for all excavation, culvert removal, streambed preparation, road blocking, and waterbarring, unless otherwise approved in writing by STATE.

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

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

SPECIFIC INSTRUCTIONS/SPECIFICATIONS:

Segment	Station	Work Description
V1		Remove fill. Place waste material onsite as directed by STATE. Restore stream banks to natural contours. Develop four foot stream channel.
V2		Remove fill. Place waste material onsite as directed by STATE. Restore stream banks to natural contours. Develop four foot stream channel.

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EXHIBIT M

SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required seed and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed and straw mulch to all waste areas, and bare soils resulting from Project Nos. 1, 2, and 3, and any skid trails within posted stream buffers.

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

APPLICATION METHODS FOR SEED

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

APPLICATION RATES FOR SEED

The seed mixture listed below shall be applied at 100 lbs. per acre. The seed mixture shall be comprised of the following:

SPECIES	MIXTURE	PURE LIVE SEED	GERMINATION
Annual Rye	33%	95%	>90%
Orchard Grass	33%	95%	>90%
Perennial Rye	34%	95%	>90%

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

APPLICATION RATES FOR MULCH

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

Application Locations:

(a) All waste areas.
(b) All borrow sites.
(c) All vacating locations.
(d) All road improvement fill replacements.

PART IV: OTHER INFORMATION

State Timber Sale Contract
No. 341-16-42
Meier Mainline Combo

FOREST PRACTICES ACT "WRITTEN PLAN"
Meier Mainline Timber Sale 341-16-42
Project Segment V1

Operating within 100 feet of a stream
Classified as Type F

NE 1/4 of Section 4, T5N, R6W, W.M.
Clatsop County, Oregon.

Landowner: Oregon Department of Forestry
92219 Hwy 202
Astoria, OR 97103
(503) 325-5451

Protected Resources:

An existing fill crosses Strum Creek, a small Type F stream. A written plan is required for operations within 100 feet of a stream classified as Type F.

Specific Site Characteristics:

An existing fill crosses the upper reaches of Strum Creek. This fill will be removed returning the stream channel to a natural condition.

Resource Protection Practices:

- Work will be performed only during dry weather periods, low water stream flows and between July 1 and August 31, annually.
- Work will be performed in an efficient and timely manner to reduce the amount of time of stream disturbance.
- Machine activity in stream channel will be minimized. All excavation will be performed using a minimum 1 ½ cubic yard track mounted excavator.
- Reconstructed slopes will not exceed 1.5:1.
- Excavated waste materials will be hauled to approved waste areas and left in a stable condition.
- All bare soils and waste areas will be mulched and/or seeded/fertilized to prevent erosion.

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

Submitted: _____ Date: _____
Purchaser/Operator Contract Representative

Original: Salem
CC: Operator, Purchaser, District file, Forest Roads. Unit, Jewell Unit

State Timber Sale Contract
No. 341-16-42
Meier Mainline Combo

Forest Practices Act
"WRITTEN PLAN"

For operating within 100 feet of a Type F Stream

Portions of Sections 3 and 4 of T5N, R6W, W.M., Clatsop County, Oregon.

Landowner: Oregon Department of Forestry
92219 Hwy 202
Astoria, OR 97103
(503) 325-5451

Protected Resources:
Strum Creek.

Specific Site Characteristics:
Strum Creek – A small Type F stream flows within and along the south western boundary of Area 1 of the Timber Sale.

Tree and Vegetation Retention:
Vegetation within the buffers consists of a combination of conifers, hardwoods, and shrubs.

Resource Protection Practices:
Along all of the above mentioned streams, as well as any other streams, the following practices are required under the timber sale contract, to protect the streams and streamside areas:

- In Area 1 conifer may be thinned down to 25 feet of streams. A minimum Basal Area of 160 will be left within the outer 25 to 100 feet RMA of all Type F streams. No hardwood trees will be cut within 100 feet of Type F streams.
- No ground based logging equipment will be permitted within 50 feet of Type F streams in Area 1.
- Trees that fall or slide into Type F RMA's shall not be removed without prior approval from STATE.
- Trees adjacent to the stream buffers (RMA's) will be felled away from or parallel to the streams to prevent trees from entering the aquatic areas.
- When cable logging is conducted nearby the RMA's, logging lines may cross, but will not be lowered into the RMA's during yarding, except during rigging. During rigging the lines must be pulled out of the RMA's when changing corridors.
- Logs shall be fully suspended when yarding across all stream buffers (RMA's.)
- Cable corridors must be at least 100 feet apart where they cross the RMA's.

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

Submitted: _____ Date: _____
Purchaser/Operator Contract Representative

Original: Salem
CC: Operator, Purchaser, District file, Jewell Unit

State Timber Sale Contract
No. 341-16-42
Meier Mainline Combo

OREGON DEPARTMENT of FISH and WILDLIFE

SMALL PUMP SCREEN SELF CERTIFICATION

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

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

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

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

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

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

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

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

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

For further information on fish screening please contact:

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

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

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

Applicant Signature: _____ Date: __/__/___ WRD File #: _____

Printed Name and Address: _____

Phone: (___) _____ Fax: (___)_____