PART III: EXHIBITS

OREGON DEPARTMENT OF FORESTRY

TIMBER SALE OPERATIONS PLAN
(See Page 2 for instructions)

Date Received by STATE: _____

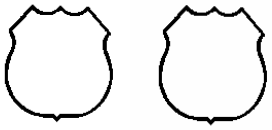
(1) Contract No.: 341-13-25

(2) Sale Name: Buster Brown

(3) Contract Expiration Date: October 31, 2014

(4) Purchaser: _____

(5) State Brand Information (complete):



Project Completion Dates: Nos. 1, 2, & 3 - October 31, 2013
No. 4 – September 1, 2014

(6) Purchaser Representatives:

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

(7) State Representatives:

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

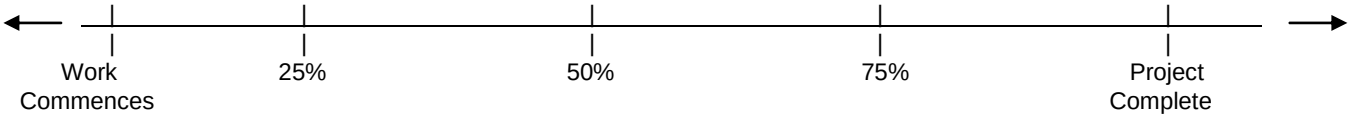
X Temporary stream crossings.

EXHIBIT B

OPERATIONS PLAN

Projects Nos, 1 and 2

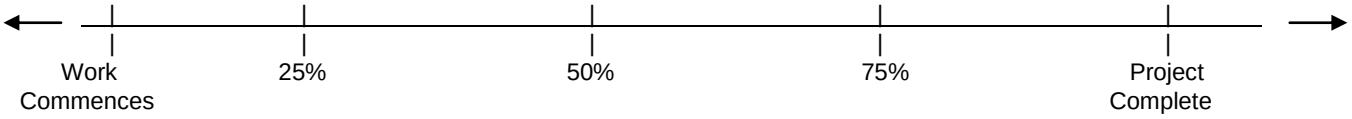
Month/Year Date ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___



Work Commences | 25% | 50% | 75% | Project Complete

Project No. 3 Type F Stream Crossing Structure

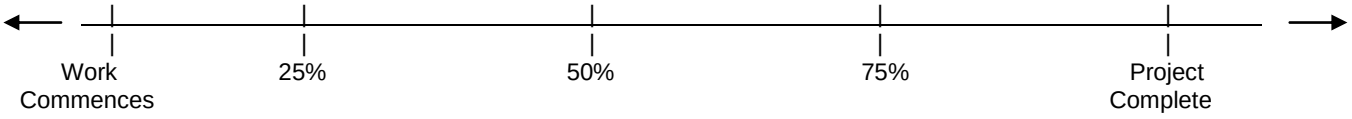
Month/Year Date ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___



Work Commences | 25% | 50% | 75% | Project Complete

Project No. 4 Stream Enhancement

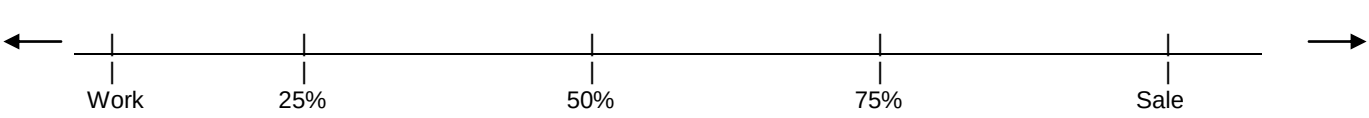
Month/Year Date ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___



Work Commences | 25% | 50% | 75% | Project Complete

Felling

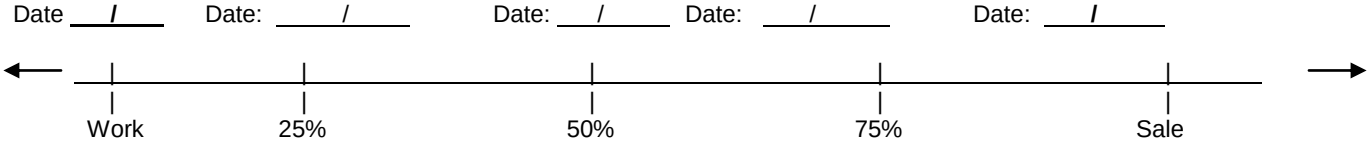
Month/Year Date ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___



Work Commences | 25% | 50% | 75% | Sale Complete

Harvest & Other Requirements

Month/Year Date ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___ Month/Year Date: ___/___



Work Commences | 25% | 50% | 75% | Sale Complete

EXHIBIT B

OPERATIONS PLAN

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
Purchaser

Operations Plan.doc/Jaz B (TS)

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 Highway 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	☐	☐

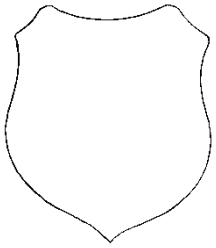
(8) **APPROVED SCALING LOCATIONS** (as shown on the ODF Approved Locations web-site)	Species	Yard	Truck	Weight

(9) SALE NAME: Buster Brown
COUNTY: Clatsop

(10) STATE CONTRACT NUMBER: 341-13-25

(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, Jewell 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

Southern Oregon Log Scaling & Grading Bureau
P.O. Box 580, Roseburg, OR 97470
Phone: (541) 673-5571 Fax: (541) 672-6381
Email: info@southernoregonlogscaling.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 __5__ 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: Buster Brown

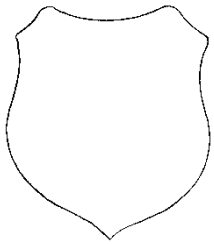
_____

COUNTY: Clatsop

(10) STATE CONTRACT NUMBER: 341-13-25

(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, Jewell 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

Southern Oregon Log Scaling & Grading Bureau
P.O. Box 580, Roseburg, OR 97470
Phone: (541) 673-5571 Fax: (541) 672-6381
Email: info@southernoregonlogscaling.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	3A to 3B	0+00 to 3+00	Crowned/Ditch
16 feet	12 feet	3C to 3D	0+00 to 3+00	Crowned/Ditch
16 feet	12 feet	3E to 3F	0+00 to 3+00	Crowned/Ditch
16 feet	12 feet	I1 to I2	0+00 to 103+10	Crowned/Ditch
16 feet	12 feet	I3 to I4	0+00 to 47+80	Crowned/Ditch
16 feet	12 feet	I5 to I6	0+00 to 20+00	Crowned/Ditch
16 feet	12 feet	I7 to I8	0+00 to 92+80	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. 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.

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 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

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.

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. Bank Slough Removal. Dig out 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 L.

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

6. 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.

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

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

8. 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 subgrade preparation by windrowing existing crushed rock surface and forming a subgrade crown, as directed by STATE. Begin applying and processing a 6 inch lift of 4"-0" crushed rock. Place and process the windrowed crushed rock onto the compacted 4"-0" surface. Begin application of a 3 inch lift of new 1½"-0" crushed rock. Junction with Wage Road.
	5+60	Improve turnout left. Utilize 22 cubic yards of 4"-0" crushed rock.
	16+15	Turnout left.
	18+00	Junction left.
	19+00	Replace existing culvert. Utilize 33 cubic yards of 1½"-0" crushed rock for bedding and backfill. Install a culvert marker.
	21+00	Turnout right.
	26+60	Turnout right.
	31+85	Turnout right.
	42+80	Turnout right.
	44+40	Junction left.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description:
I1 to I2	44+55	Replace existing culvert. Utilize 33 cubic yards of 1½"-0" crushed rock for bedding and backfill. Install a culvert marker. Construct ditchout.
	53+00	Turnout right.
	57+20	Replace existing culvert. Utilize 33 cubic yards of 1½"-0" crushed rock for bedding and backfill. Install a culvert marker.
	66+65	Turnout and turnaround left.
	74+75	Turnout left.
	83+10	Turnout left.
	86+10	Triangle junction left.
	89+50	Repair culvert inlet as directed by STATE.
	90+60	Turnout right.
	92+50	Triangle junction right.
	102+70	Replace existing culvert. Skew culvert as directed by STATE. Utilize 33 cubic yards of 1½"-0" crushed rock for bedding and backfill. Install a culvert marker.
	103+10	Junction with Grassland Road. End subgrade preparation by windrowing existing crushed rock surface End applying and processing a 6 inch lift of 4"-0" crushed rock. End application of a 3 inch lift of new 1½"-0" crushed rock.
I3 to I4	0+00	Junction with Wage Road. Begin application of a 6 inch lift of 4"-0" crushed rock. Begin ditchline re-establishment.
	3+85	End ditchline re-establishment. Improve turnout left, utilizing 22 cubic yards of 4"-0" crushed rock.
	6+30	Install new culvert. Utilize 22 cubic yards of 1½"-0" crushed rock for bedding and backfill. Install a culvert marker.
	7+30	Replace existing culvert. Utilize 44 cubic yards of 1½"-0" crushed rock for bedding and backfill. Install a culvert marker.
	9+30	Replace existing culvert. Utilize 33 cubic yards of 1½"-0" crushed rock for bedding and backfill. Install a culvert marker. Start traction rock 2 inch lift of 1½"-0" crushed rock.
	10+70	Install new culvert. Utilize 22 cubic yards of 1½"-0" crushed rock for bedding and backfill. Install a culvert marker.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description:
I3 to I4	11+60	Improve turnout right, utilizing 22 cubic yards of 4”-0” crushed rock. Utilize 6 cubic yards of 1½”-0” crushed rock. Remove tree and grub stump as directed by STATE.
	13+05	End traction rock. Turnout right.
	15+75	Replace existing culvert. Utilize 22 cubic yards of 1½”-0” crushed rock for bedding and backfill. Install a culvert marker.
	19+35	Begin 2 inch lift of 1½”-0” crushed traction rock.
	20+40	Construct turnout right. Utilize 22 cubic yards of 4”-0” crushed rock. Utilize 6 cubic yards of 1½”-0” crushed rock.
	23+70	Turnout right. End traction rock.
	24+25	Replace existing culvert. Utilize 33 cubic yards of 1½”-0” crushed rock for bedding and backfill. Install a culvert marker.
	26+90	Replace existing culvert. Utilize 55 cubic yards of 1½”-0” crushed rock for bedding and backfill. Utilize 88 cubic yards of borrow material approved by STATE for additional backfill. Utilize 55 cubic yards of 24”-6” riprap for an energy dissipator. Utilize 22 cubic yards of 4”-0” for base rock. Install a culvert marker.
	28+60	Replace existing culvert. Utilize 33 cubic yards of 1½”-0” crushed rock for bedding and backfill. Utilize 22 cubic yards of borrow material approved by STATE for additional backfill. Utilize 22 cubic yards of 4”-0” for base rock. Install a culvert marker. Start traction rock 2 inch lift of 1½”-0” crushed rock.
	32+95	Construct turnout right, utilizing 22 cubic yards of 4”-0” crushed rock. End traction rock.
	35+05	Replace existing culvert. Utilize 44 cubic yards of 1½”-0” crushed rock for bedding and backfill. Utilize 111 cubic yards of borrow material approved by STATE for additional backfill. Utilize 55 cubic yards of 24”-6” riprap for an energy dissipator. Utilize 22 cubic yards of 4”-0” for base rock. Install a culvert marker.
	36+65	Install new culvert. Utilize 33 cubic yards of 1½”-0” crushed rock for bedding and backfill. Install a culvert marker.
	38+00	Construct turnout right. Utilize 22 cubic yards of 4”-0” crushed rock. Utilize 6 cubic yards of 1½”-0” crushed rock.
	44+55	Turnaround right.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description:
I3 to I4	45+25	Install new culvert. Utilize 33 cubic yards of 1½"-0" crushed rock for bedding and backfill. Install a culvert marker.
	47+80	End application of lift of 4"-0" crushed rock.
I5 to I6	0+00	Junction with Buster Creek Road. Begin application of 200 cubic yards of 4"-0" crushed rock as leveling rock as directed by STATE. Begin sod removal. Begin ditchline re-establishment. Utilize 33 cubic yards of 1½"-0" crushed rock for junction rock. Begin ditchline and ditchout re-establishment.
	6+80	Junction right. Clean existing culvert and catch basin as directed by STATE. Install culvert marker.
	11+50	End application of leveling rock. End sod removal. Utilize 60 cubic yards of 6"-0" pit-run for landing rock. End ditchline re-establishment. Turnaround and landing on left.
	18+00	Utilize 55 cubic yards of 4"-0" crushed rock as subgrade re-enforcement.
	20+00	Point I6. Utilize 60 cubic yards of 6"-0" pit-run for landing rock. End ditchline and ditchout re-establishment.
I7 to I8	0+00	Begin application of 500 cubic yards of 4"-0" crushed rock as re-enforcement rock as directed by STATE.
	64+00	Install new culvert. Utilize 33 cubic yards of 1½"-0" crushed rock for bedding and backfill. Utilize 11 cubic yards of 24"-6" riprap for an energy dissipator. Install a culvert marker.
	65+00	Replace existing culvert with a Type F open bottom concrete box culvert as specified in Exhibit H. Haul excavated fill material not used as structure backfill to the designated waste area as directed by STATE. Structure backfill material may be borrowed from the Nettle Quarry as directed by STATE.
	66+00	Install new culvert. Utilize 33 cubic yards of 1½"-0" crushed rock for bedding and backfill. Utilize 11 cubic yards of 24"-6" riprap for an energy dissipator. Install a culvert marker.
	92+80	Point I8. End application of re-enforcement rock.

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: 3A to 3B				**POINT TO POINT**		**Sta. to Sta.**		
				3A to 3B		0+00 to 3+00		
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	**Volume (CY) Per**		**Number of**		**TOTAL VOLUME (CY)**
Base Rock	4”-0” crushed		8	Station	50	Stations	3	150
Junctions	4”-0” crushed	3A	8	Junction	22	Junctions	1	22
Landings	6”-0” pit-run	3+00	8	Landing	60	Landings	1	60
Total Rock for Road Segment:			3A to 3B					232
ROAD SEGMENT: 3C to 3D				**POINT TO POINT**		**Sta. to Sta.**		
				3C to 3D		0+00 to 3+00		
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	**Volume (CY) Per**		**Number Of**		**TOTAL VOLUME (CY)**
Base Rock	4”-0” crushed		8	Station	50	Stations	3	150
Junctions	4”-0” crushed		8	Junction	22	Junction	1	22
Landings	6”-0” pit-run	3+00	8	Landing	60	Landings	1	60
Total Rock for Road Segment:			3C to 3D					232
ROAD SEGMENT: 3E to 3F				**POINT TO POINT**		**Sta. to Sta.**		
				3E to 3F		0+00 to 3+00		
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	**Volume (CY) Per**		**Number of**		**TOTAL VOLUME (CY)**
Base Rock	4”-0” crushed		8	Station	50	Stations	3	150
Junctions	4”-0” crushed		8	Junction	22	Junctions	1	22
Landings	6’-0” pit-run	3+00	8	Landing	60	Landings	1	60
Total Rock for Road Segment:			3E to 3F					232
ROAD SEGMENT: I1 to I2				**POINT TO POINT**		**Sta. to Sta.**		
				I1 to I2		0+00 to 103+10		
Application	**Rock Size And Type**	**Location**	**Depth of Rock (inches)**	**Volume (CY) Per**		**Number Of**		**TOTAL VOLUME (CY)**
Base Rock	4”-0” crushed		6	Station	38	Stations	10 3.1	3,918
Curve Widening	4”-0” crushed		6	Curve	n/a	Curves	n/a	198
Turnouts	4”-0” crushed		6	Turnout	17	Turnouts	10	170
New Turnouts	4”-0” crushed	5+60	2	Turnout	6	Turnouts	1	6
Surface Rock	1½”-0” crushed		3	Station	19	Stations	10 3.1	1,959
Junctions	1½”-0” crushed		3	Junction	n/a	Junctions	6	176
Turnouts	1½”-0” crushed		3	Turnout	8	Turnouts	10	80
Bedding/Backfill	1½”-0” crushed		n/a	Culvert	33	Culverts	4	132
Curve Widening	1½”-0” crushed		3	Curve	n/a	Curves	n/a	99
Turnarounds	1½”-0” crushed		3	Turnaround	5	Turnarounds	1	5
Total Rock for Road Segment:			I1 to I2					6,743

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: I3 to I4				**POINT TO POINT**		**Sta. to Sta.**		
				I3 to I4		0+00 to 47+80		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	**Volume (CY) Per**		**Number of**		
Base Rock	4”-0” crushed		6	Station	38	Stations	47.8	1,816
Additional Base (Culverts)	4”-0” crushed	26+90,28+60,35+05	8	Culvert	22	Culverts	3	66
Curve Widening	4”-0” crushed		6	Curve	n/a	Curves	n/a	88
Turnouts	4”-0” crushed		6	Turnout	17	Turnouts	8	136
New Turnouts	4”-0” crushed		2	Turnout	6	Turnouts	5	30
Turnaround	4”-0” crushed		8	Turnaround	22	Turnaround	1	22
Traction Rock	11/2”-0” crushed		2	Station	13	Stations	12.45	162
Traction Rock turnouts	11/2”-0” crushed	11+60,20+40,38+00	2	Turnout	6	Turnouts	3	18
Junctions	11/2”-0” crushed		3	Junction	22	Junction	1	22
Bedding/Backfill	11/2”-0” crushed		n/a	Culvert	n/a	Culvert	n/a	374
Dissipators	24”-6” riprap		n/a	Dissipator	55	Dissipators	2	110
Total Rock for Road Segment:			I3 to I4					2,844

ROAD SEGMENT: I5 to I6				**POINT TO POINT**		**Sta. to Sta.**		
				I5 to I6		0+00 to 20+00		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	**Volume (CY) Per**		**Number of**		
Leveling Rock	4”-0” crushed		n/a	Load	10	Loads	20	200
Subgrade re-enforcement	4”-0” crushed	18+00	n/a	n/a	n/a	n/a	n/a	55
Junctions	11/2”-0” crushed	0+00, 6+80	4	n/a	n/a	Junctions	2	55
Landings	6”-0” crushed	11+50, 20+00	n/a	Landing	60	Landings	2	120
Total Rock for Road Segment:			I5 to I6					430

EXHIBIT D

ROAD SURFACING

ROAD SEGMENT: I7 to I8				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
				I7 to I8		0+00 to 92+80		
Application	Rock Size And Type	Location	Depth of Rock (inches)	Volume (CY) Per		Number of		
Re-enforcement	4”-0” crushed		n/a	Load	10	Loads	50	500
Base Rock	4”-0” crushed	65+50 - 66+50	8	Station	50	Stations	1	50
Streambed material	4”-0” crushed		n/a	Load	11	Loads	1	11
Surface Rock	1½ ”-0” crushed	65+60 - 66+50	4	Station	25	Stations	1	25
Footing Base material	1½”-0” crushed	65+00	12	Footing	8	Footings	2	16
Wing wall material	1½”-0” crushed	65+00	24	Wing wall	n/a	Wing walls	4	18
Bedding/Backfill	1½”-0” crushed	64+00, 66+00	n/a	Culvert	33	Culverts	2	66
Dissipators	24”-6” riprap	64+00, 66+00	n/a	Dissipator	11	Dissipators	2	22
Wing wall Backfill	11/2”-0” crushed	65+00	n/a	Wing wall	n/a	Wing walls	4	88
Fill Armor	24”-6” riprap	65+00	36	Structure side	n/a	Struct. sides	4	99
Stream bank Armor	24”-6” riprap		36	Stream bank	n/a	Stream bank	4	99
Footing re-enforcement	24”-6” riprap		24	Footing	n/a	Footings	2	55
Wing wall re-enforcement	24”-6” riprap		24	Wing wall	n/a	Wing walls	4	55
Streambed retention	36”-12” riprap		n/a	n/a	n/a	n/a	1	22
Total Rock for Road Segment:			I7 to I8					1,126

ROCK TOTALS (CY)	36”-12”	24"-6"	6"-0”	4"-0”	1½"-0”
11,817	22	440	300	7,782	3,295

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 road segments 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, and 4

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

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.

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, or ASTM F2648 Culvert.

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

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

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

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

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.

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 on road improvement segments.

Backfill shall consist of, crushed rock, rock crusher reject, 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.

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”. 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.

EXHIBIT E

CULVERT SPECIFICATIONS

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, 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 step beveled inlets.

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

All culverts scheduled for replacement shall become property of the PURCHASER and be removed from STATE land 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	ROAD SEGMENT POINT TO POINT	STATION
1	18	40	CPP	I1 to I2	19+00
2	18	45	CPP	I1 to I2	44+55
3	18	40	CPP	I1 to I2	57+20
4	18	45	CPP	I1 to I2	102+70
5	*18*	*35*	*CPP*	*I3 to I4*	*6+30*
6	24	60	CPP	I3 to I4	7+30
7	18	30	CPP	I3 to I4	9+30
8	18	30	CPP	I3 to I4	10+70
9	18	30	CPP	I3 to I4	15+75
10	18	35	CPP	I3 to I4	24+25
11	24	60	CPP	I3 to I4	26+90
12	24	44	CPP	I3 to I4	28+60
13	24	52	CPP	I3 to I4	35+05
14	*18*	*35*	*CPP*	*I3 to I4*	*36+65*
15	18	30	CPP	I3 to I4	45+25
16	*18*	*40*	*CPP*	*I7 to I8*	*64+00*
17	12’	25’	Concrete	I7 to I8	65+00
18	*18*	*40*	*CPP*	*I7 to I8*	*66+00*

ACSP = Aluminized, CPP = Polyethylene

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. At the Nettle Quarry, fall all timber within the posted right-of-way boundary and remove all merchantable timber. All woody debris, including stumps and Slash shall be hauled to the designated disposal areas, piled and disposed of by burning as directed by STATE.

7. 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.

8. 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.

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

10. 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.

11. 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.

State Timber Sale Contract
No. 341-13-25
Buster Brown

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 24"-12" 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 36"-6" Riprap A minimum of 50 percent of the material shall measure a minimum of 36 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.

EXHIBIT H

TYPE F STREAM CROSSING STRUCTURE SPECIFICATIONS

Project No. 3

PURCHASER shall design and install a Type F structure. Structure will be a PURCHASER designed open bottom concrete box culvert.

GENERAL TYPE F CONSTRUCTION SPECIFICATIONS

(a) Must allow free passage of fish as provided in the Oregon Forest Practice Rules.

(b) In-stream work shall be conducted only during periods of low water flows and between July 1 and August 30, annually. STATE shall be notified a minimum of 48 hours prior to beginning the work. STATE has prepared FPA "Written Plan" for this work.

(c) Cleared debris and excavated materials unsuitable for structure backfill shall be hauled to the designated waste areas as directed by STATE.

(d) Waste materials shall be sloped for drainage and stability, as directed by STATE. Prior to hauling waste materials, the waste area shall be cleared of large woody debris. The debris shall be piled adjacent to the waste area. All exposed excavation areas and waste materials shall be mulched with straw. Applied mulch shall be a minimum of 2 inches deep and provide a uniform cover. Large woody debris shall be redistributed over the waste area after all waste materials have been hauled.

(e) Oil spill response materials shall be on site before the work begins.

(f) A minimum 2 cubic-yard, track-mounted excavator shall be used for all excavation, stream channel development, ecology block and riprap placement. Use of an on-site hydraulic rock hammer may be required for the breaking of rock strata encountered during the development of footing foundations.

(g) Grass seed and straw mulch shall be applied to all exposed areas, bare soils and waste materials in accordance with Exhibit L.

(h) De-watering of the work site shall be accomplished according to PURCHASER'S STATE approved plan and prior to the removal of any excavated material for the development of the footing pad, and stream channel. Salvage of existing riprap may be accomplished prior to de-watering. The work site shall be de-watered by the use of cofferdams, pumps, temporary diversion ditches and/or drainage structures.

(i) Remove any logs or woody debris encountered during footing excavation.

(j) Stream crossing structure excavation, installation, structure backfilling, fill armoring, and structure surfacing shall be consistent with Exhibits D and H, specifications for road segment I7 to I8.

EXHIBIT H

TYPE F STREAM CROSSING STRUCTURE SPECIFICATIONS

OPEN BOTTOM CONCRETE BOX CULVERT CONSTRUCTION INSTRUCTIONS

PURCHASER shall design and construct an open bottom concrete box culvert that is sufficient to provide a clear span of 12' on road segment I7 to I8 (Station 64+94 to 65+06), and maintains the present waterway width on centerline of 9 feet.

These specifications require a fully engineered prefabricated concrete open bottom box culvert of pre-cast conventionally reinforced concrete construction. Structural members shall be designed in accordance with AASHTO LRFD Bridge Design Specifications, 1998 (Modified). Welding and weld procedure qualification tests shall conform to the provisions of ANSI/AWS D1.1 "Structural Welding Code", 1996 Edition and/or CWB – CSA W59. The structure shall be designed for HS25 vehicle loads with occasional U80 vehicle overload allowance, and up to 12 inches of crushed rock loading on the deck. The design shall be prepared by a Professional Engineer licensed in Oregon and approved by STATE.

The stream crossing structure shall accommodate the alignment of road improvement segment I7 to I8. STATE has performed a site survey for the purposes of displaying the road and stream location, elevations, Footing Plan, Wing Wall Plan, Site Plan, Structure Profile Plan, Stream Gradient Plan and Armor/Riprap Plan. Retaining curbs shall be designed to accommodate and retain roadway embankments. Footings shall extend a minimum of 2 feet below the predicted natural stream bottom elevation at the southerly footing edge and prevent the scour of any substructure, footing or roadway embankment. Riprap rock shall be utilized to armor and protect road approach embankments, wing walls, and stream banks

GENERAL INSTRUCTIONS

(a) Structure backfill shall consist of select borrow material from the Nettle Ridge Quarry as directed by STATE. Backfill shall be compacted as specified in Exhibit D.

(b) All leg and deck joints are to be filled with non-shrink grout. Remaining joints shall be sealed and filled with a construction sealant to prevent material from entering the stream.

(c) PURCHASER'S engineer to provide STATE with bottom of footing coordinates for each footing corner. Engineer will pin each corner prior to footing placement.

(d) PURCHASER'S engineer shall use EDM type survey instrument to establish the location and elevations of Box Culvert footings. Engineer shall verify that placed footing elevations are consistent with approved plans prior to Box Culvert component placement.

(e) PURCHASER shall submit a site specific de-watering plan which provides for 24 hour de-watering from the time of the commencement of footing excavation until the placement of the concrete open bottom slab components.

(f) PURCHASER shall develop and submit for STATE approval an Erosion Control Plan that addresses the prevention of sediment entering the un-named tributary of Buster Creek during construction.

EXHIBIT H

TYPE F STREAM CROSSING STRUCTURE SPECIFICATIONS

PROJECT PLANS. PURCHASER shall submit plans to STATE for approval, prior to commencement of any work on the project. The plans shall include design calculations, scaled drawings, elevations and section drawings for the structure, including sizes and dimensions of components. The plans shall also include a description of special tools, equipment, the required lifting capacity and the general process to install and connect the components. Plans must contain erosion control measures, site de-watering measures and all information necessary for the administration and inspection of the project by STATE. The plans shall be stamped and signed by a professional engineer licensed in Oregon.

SITE SPECIFIC CONSTRUCTION INSTRUCTIONS

(a) Construct stable foundation bases for footings, and wing walls by utilizing a minimum of 55 cubic yards of 24”-6” riprap. Cap the riprap with 34 cubic yards of 1½”-0” crushed rock enclosed in 6½ ounce woven geotextile fabric. Both the riprap and crushed rock will be compacted in accordance with Exhibit D.

(b) Utilize a minimum of 132 cubic yards of 24”-6" riprap rock for embankment and wing wall armor. Riprap used for embankment armor shall be placed and tamped at a 1½:1 slope for a minimum thickness of 3 feet, beginning at the fill toes. Riprap for wing wall armoring shall be machine placed as directed by STATE.

(c) Utilize a minimum of 99 cubic yards of 24”-6” riprap for stream bank armor, applied 3 feet thick. Stream bank armor shall be machine placed as directed by STATE.

(d) Utilize a minimum of 22 cubic yards of 36”-12” riprap for retention of streambed material. Retention material shall be machine placed as directed by STATE.

(e) As directed by STATE, apply, process, and compact surfacing rock on structure deck in accordance with Exhibit D. Crushed base course, and surface course rock shall provide for a minimum road running surface width of 16 feet. Surface course rock shall slope at 1½:1 to the box culvert curb or deck.

(f) Construct a concrete open bottom slab culvert which spans 12’, has a 25° skew, has an 10 foot rise, a minimum inside curb width of 22 feet measured perpendicular to the roadway, and a 3 foot high footing with stem wall. Footing and stem wall height of 3 feet is measured to the bottom of the keyway. Approach embankments (structure backfill) shall consist of approximately 869 cubic yards of select borrow material approved by STATE. Embankment materials shall be thoroughly compacted in accordance with Exhibit D.

(g) Develop and armor stream channel as directed by STATE.

(h) Cobble and suitable material encountered during footing excavation shall be placed back in the stream channel as directed by STATE.

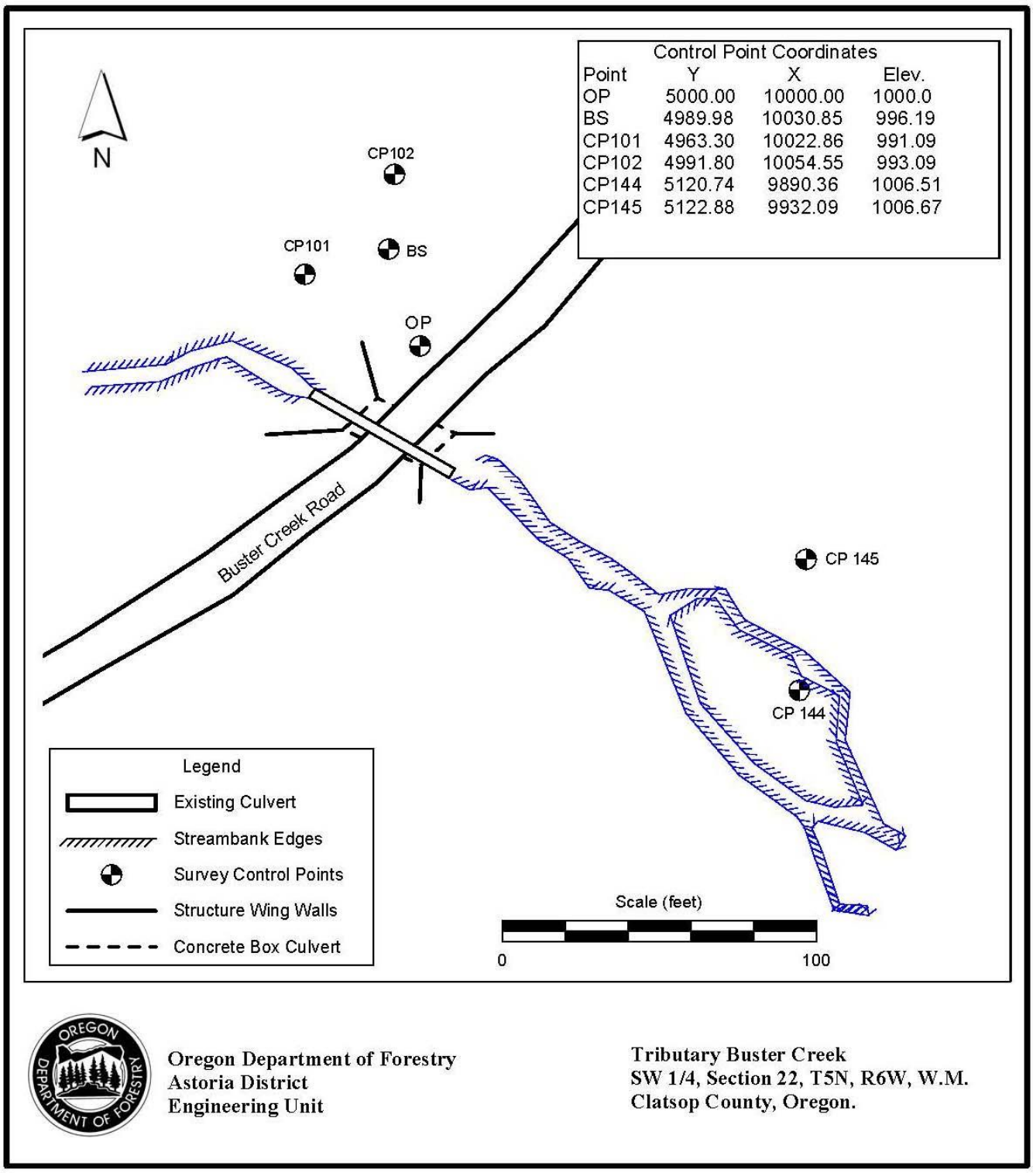
(i) As shown on the ECOLOGY BLOCK WING WALL DETAIL: Wing walls shall have a two foot depth of 1½”-0” crushed rock under the whole length and width of the wing wall; Geogrid (Strata Grid 200) shall be utilized as tie-backs; and Ecology block joints shall be staggered.

The Engineer shall supervise and inspect the construction work and issue STATE written certification upon completion of the project.

EXHIBIT H

TYPE F STREAM CROSSING STRUCTURE SPECIFICATIONS

PLAN VIEW



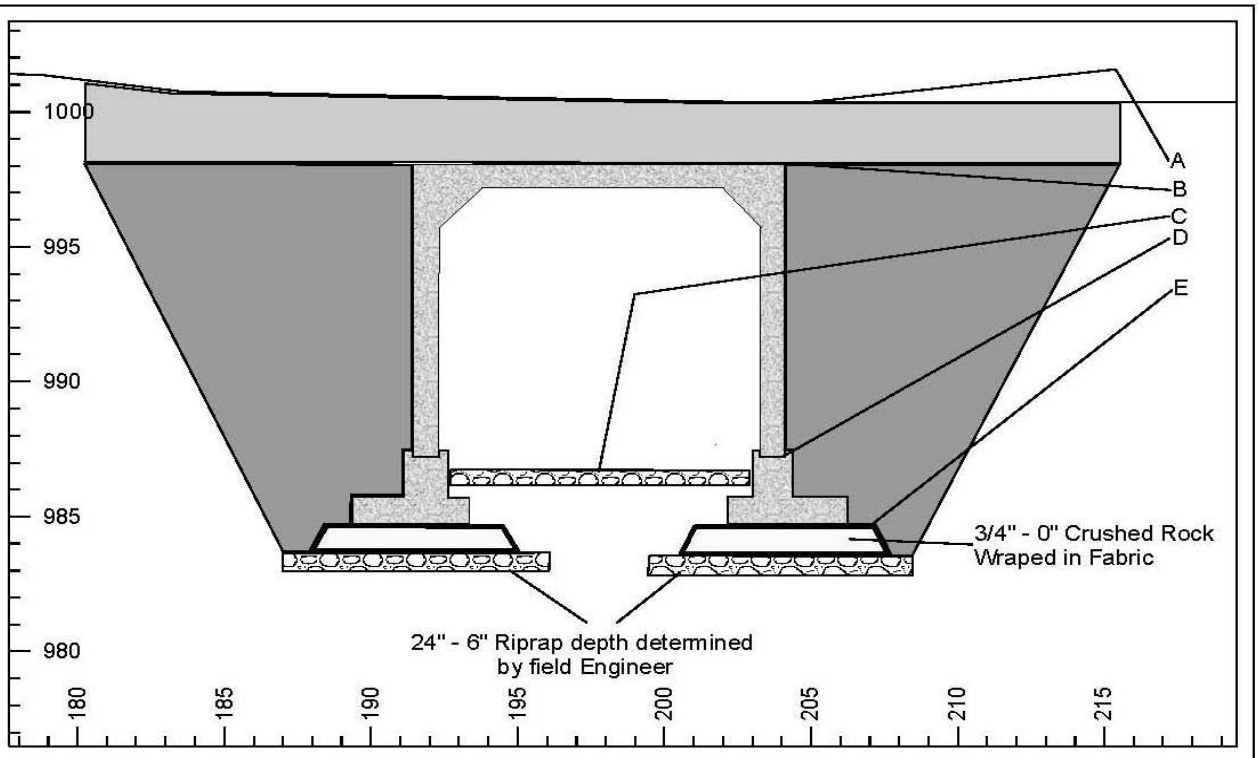
Oregon Department of Forestry
Astoria District
Engineering Unit

Tributary Buster Creek
SW 1/4, Section 22, T5N, R6W, W.M.
Clatsop County, Oregon.

EXHIBIT H

TYPE F STREAM CROSSING STRUCTURE SPECIFICATIONS

STRUCTURE PROFILE



Legend

- Road Surface
- Compacted Select Backfill
- Onsite select material and 4"-0"
- Concrete Structure and Footing
- Geotextile Fabric

ELEVATIONS

A. Road Surface = 1000.0
B. Top of Box Culvert Deck = 998.0
C. Streambed (lower leg) = 986.7
D. Stemwall Notch = 987.2
E. Bottom of Footing = 984.7

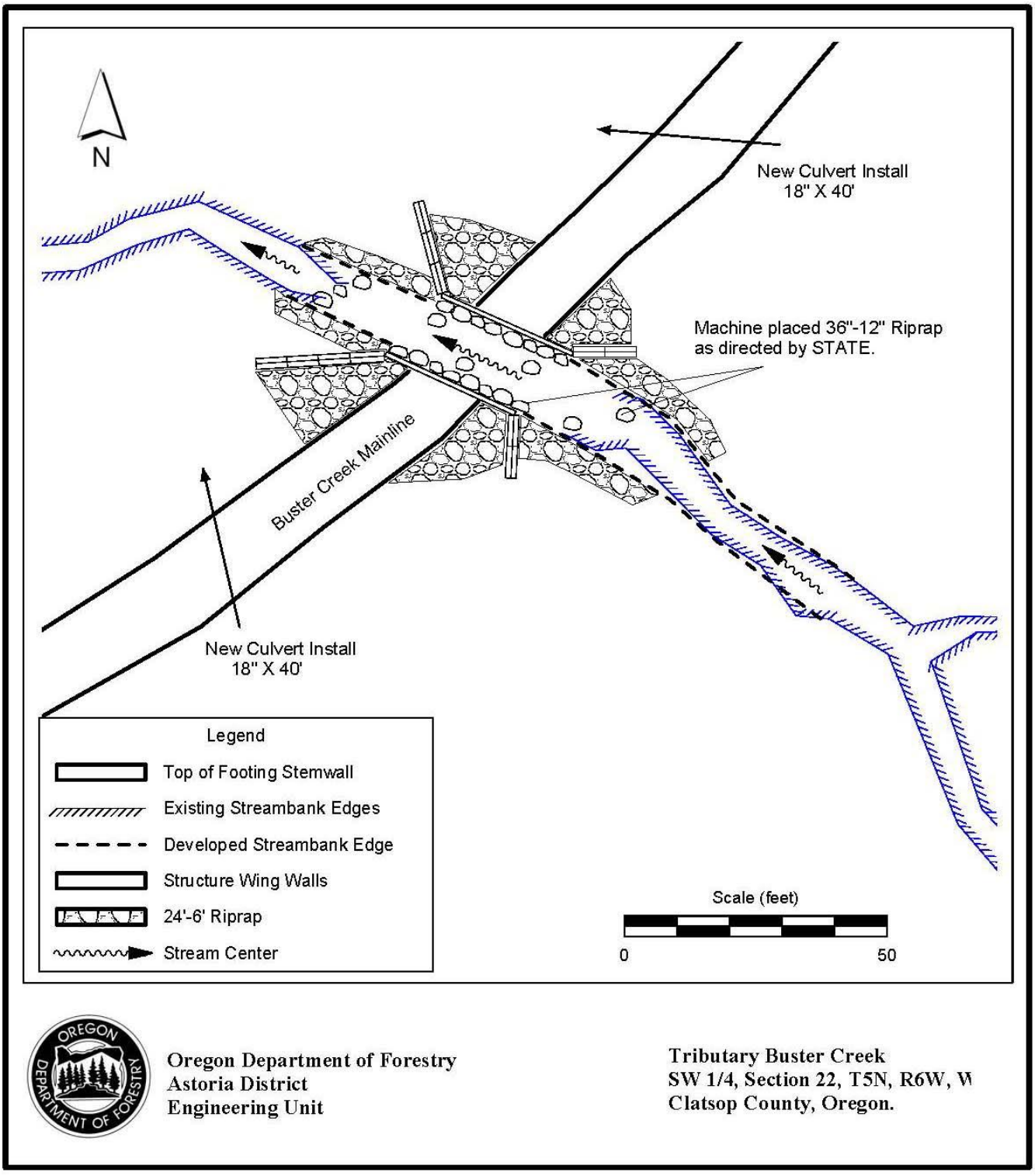
Oregon Department of Forestry
Astoria District
Engineering Unit

Tributary Buster Creek
SW 1/4, Section 22, T5N, R6W, W.M.
Clatsop County, Oregon.

EXHIBIT H

TYPE F STREAM CROSSING STRUCTURE SPECIFICATIONS

FILL AND STREAMBANK ARMOR PLAN



Oregon Department of Forestry
Astoria District
Engineering Unit

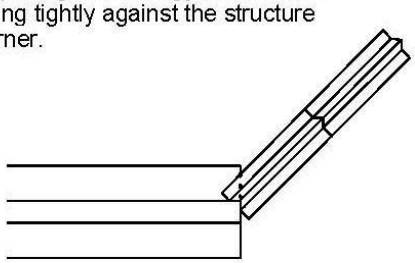
Tributary Buster Creek
SW 1/4, Section 22, T5N, R6W, W
Clatsop County, Oregon.

EXHIBIT H

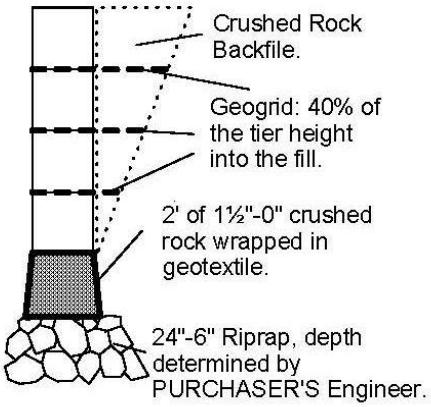
TYPE F STREAM CROSSING STRUCTURE SPECIFICATIONS

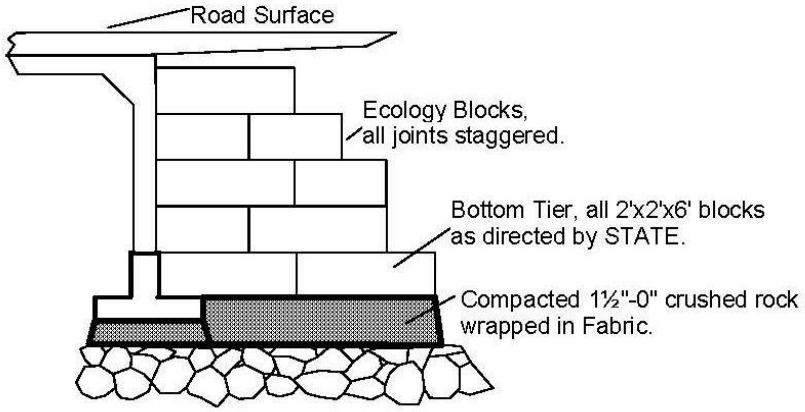
TYPICAL ECOLOGY BLOCK WING WALL DETAIL

NOTE: Typical drawing is for first tier of ecology blocks. Depicting the ecology block notch fitting tightly against the structure corner.



WING WALL PROFILE





Oregon Department of Forestry
Astoria District
Engineering Unit

Tributary North Fork Nehalem River
SW1/4 Section 20, T4N, R8W, W. M.
Clatsop County, Oregon

State Timber Sale Contract
No. 341-13-25
Buster Brown

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:

1.	Grab Tensile	300 lbs.	ASTM D4623
2.	Puncture strength	110 lbs.	ASTM D4833
3.	Mullen Burst	600 lbs.	ASTM D3786
4.	Width – 12.5 feet		

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. 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.

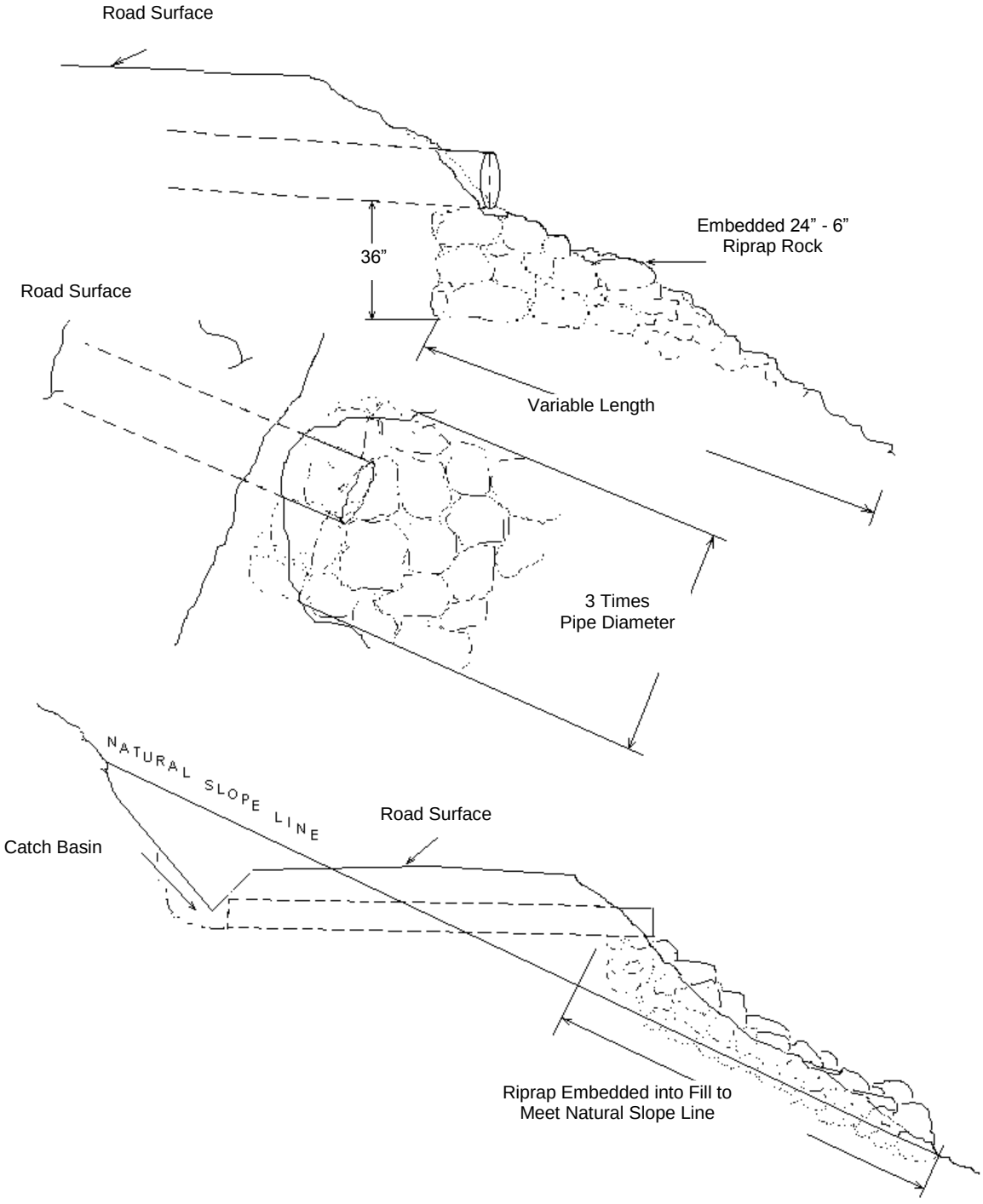
7. Fabric locations:

Road Segment	Location
I7 to I8	65+00

State Timber Sale Contract
No. 341-13-25
Buster Brown

EXHIBIT J

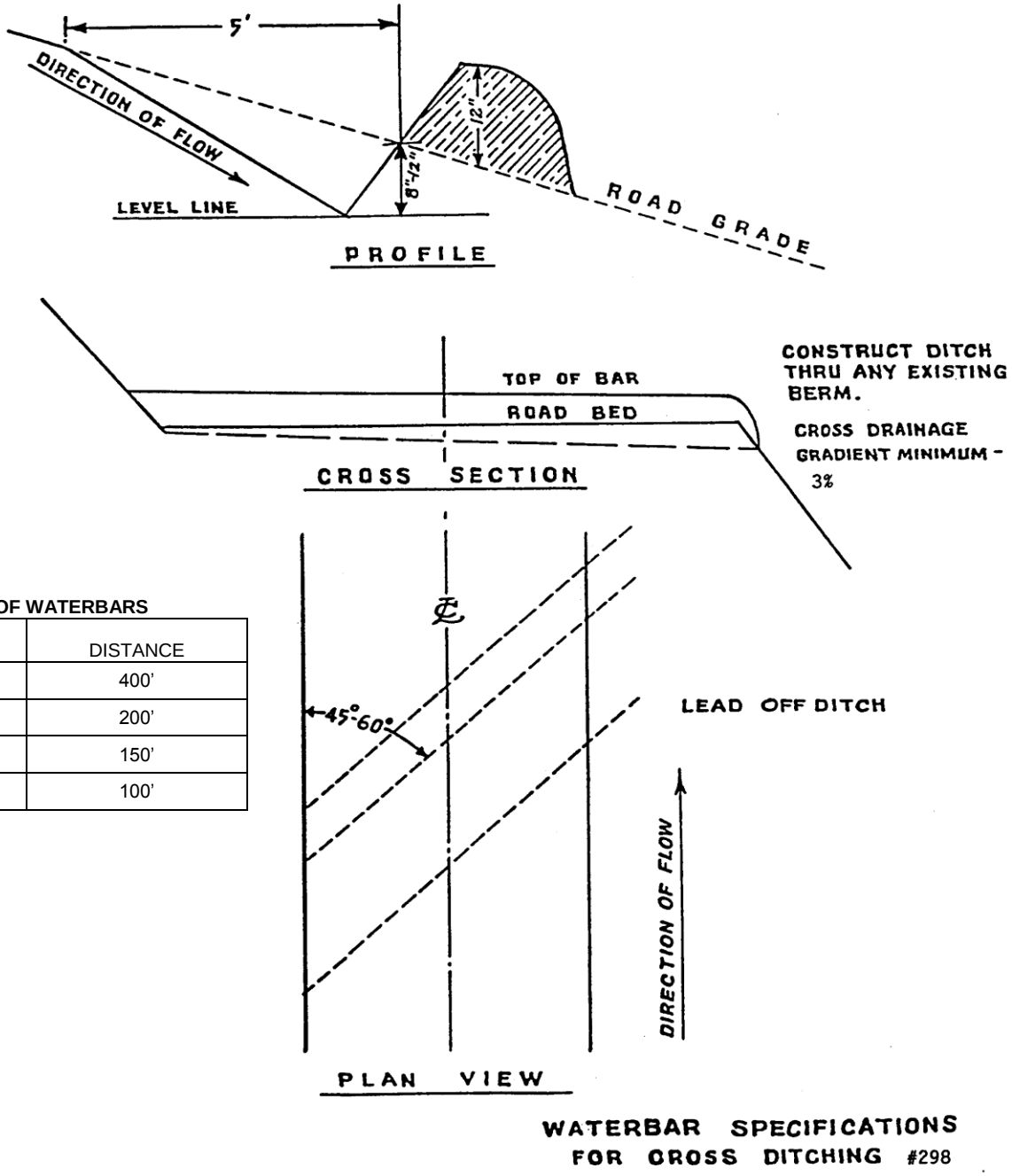
TYPICAL EMBEDDED ENERGY DISSIPATOR



State Timber Sale Contract
No. 341-13-25
Buster Brown

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

SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required seed, fertilizer, 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, 2, 3, and 4 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:

Segment	Location
I7 to I8	65+00
Waste Areas	n/a
SE1 – SE2	n/a

State Timber Sale Contract
No. 341-13-25
Buster Brown

EXHIBIT M

STREAM ENHANCEMENT INSTRUCTIONS

General Instructions:

(a) Work shall be conducted only during periods of low water flows and between July 1 and August 31, annually unless otherwise approved in writing by STATE. STATE shall be notified a minimum of 48 hours prior to beginning work. STATE has prepared the required FPA "Written Plan" for this work.

(b) Stream crossings will be limited to those necessary to access the sites and whenever possible equipment will operate from the banks to minimize stream disturbance. Turbidity shall not exceed 10% above natural stream turbidities as a result of work. The turbidity may be exceeded for a limited duration (per OAR 340-41), provided all practicable erosion control measures have been implemented. Oil spill response materials will be on site before work begins.

(c) Trees required for stream enhancement work shall be obtained from Area 2 of this Timber Sale or at other locations acceptable to STATE.

(d) Trees shall be uprooted where feasible, cut to length, and delivered to the project site, as directed by STATE. Trees will be transported by log truck, skidder, excavator, or other means so that roads are not damaged (i.e. trees cannot be dragged on road surface).

(e) Access routes will be selected to minimize disturbance to the riparian area, and equipment transporting trees to the sites will take care to avoid damage to existing in-stream logs, riparian or other trees**.** Trees that are cleared to gain access will be placed in the creek or used to block access trails.

(f) A minimum 1½ cubic-yard, track-mounted excavator shall be used for all placement.

(g) All areas of bare or disturbed soils shall be seeded with an approved grass seed mix. Fertilizer shall not be used. All access trails will be thoroughly blocked to prevent access using large woody debris or boulders, water barred, de-compacted, and mulched upon completion, as directed by STATE.

Specific Instructions:

Location	Work Description
SE1 to SE2	PURCHASER shall select 5 sites along 1,500 feet of stream between SE1 to SE2. Each site shall have 5 key logs at least 50 feet long and 20 inches in diameter with root wads attached (where available) and 5 additional pieces at least 30 feet long for a total of 25 key logs and 25 other pieces of wood. Logs shall be placed as directed by STATE.

PART IV: OTHER INFORMATION

FOREST PRACTICES ACT "WRITTEN Plan"
Type F Crossing
Buster Brown Timber Sale

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

Protected Resources:

Road Segment I7 to I8, (Sta. 65+00): A unnamed tributary of Buster Creek, a small Type F fisheries resource, located in the SW1/4, Section 22, T4N, R6W, W.M., Clatsop County, Oregon.

A Written Plan is required for any activity within 100 feet of any Type F stream.

Situation:
The old culvert structure failed and a permanent fish passable structure needs to be installed.

Solution:
Design a crossing structure that meets or exceeds the need of this particular stream crossing site and FPA requirements for Type F stream crossings.

Drainage Area and Structure Design: The existing temporary 30" diameter and 55' foot long stream crossing structure will be replaced with an open bottom concrete box culvert with a 12 foot span and 10 foot rise. The stream crossing will utilize a streambed simulation strategy and preserve a natural stream channel, a maximum of 9 feet wide. The stream crossing will meet or exceed the requirements of the FPA for Type F stream crossings. The new stream channel will be seeded with on site stream cobble or 4"-0" crushed rock if sufficient quantities of stream cobble are not available.

New Stream Gradient:	8%
Size of Watershed:	193 acres
Average Stream Width:	9 feet
Streambed material:	Cobble, Sand, Gravel, Bedrock
50 Year Peak Flow/Mi.^{2}:	150 cfs
50 Year Peak Flow:	45 cfs
Flow Capacity of New Structure:	1000 cfs

Resource Protection Measures:

- Machine activity in stream channel shall be minimized.
- All fill excavation, backfilling, stream channel development, and riprap placement shall be performed using a minimum 2 cubic yard track mounted excavator.
- In-stream work, including de-watering, excavation, culvert installation, and riprap placement shall be conducted from July 1 to August 31.
- A dewatering plan shall be developed and followed from the start of excavation until the structure is in place and water flowing.
- An erosion control plan shall be developed and followed to prevent sediment from entering the stream during construction work.

FOREST PRACTICES ACT "WRITTEN Plan"
Type F Crossing
Buster Brown Timber Sale

- Clearing debris, and excavation material shall be hauled to a designated waste area.
- Riprap rock shall be used to protect the structure, road approaches/embankments, and stream banks from erosion.
- Oil spill response materials shall be on site before work begins.

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 _____ _____
Purchaser/Operator Date

Attachments: Exhibit A and H
Original: Salem
Copies: Operator, Purchaser, District File, Engineering Unit, Jewell Unit

State Timber Sale Contract
No. 341-13-25
Buster Brown

FOREST PRACTICES ACT "WRITTEN Plan"
Stream Enhancement
Buster Brown Timber Sale

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

Protected Resources:
The following stream is located in Sections 20 and 21 of T5N, R6W, W.M., Clatsop County, Oregon.

Buster Creek which is designated as a large Type F stream is 10 feet to 25 feet wide at the project site. ODF&W Biologists have plans for stream enhancement projects at five locations east of the Wage Road Bridge and north of Buster Creek Road.

Specific Site Characteristics:
The streambed is approximately 10 to 25 feet wide where it parallels Buster Creek Road in places. The stream has a meandering pattern with a relatively low stream gradient. A broad flood plain accompanies the streams active channel. The stream banks are relatively gentle and riparian vegetation is alder with some mixed conifer and intermixed shrubs and grasses.

Tree and Vegetation Retention:
All logs for stream placement will be taken from an offsite (Area 2) location. Vegetation disturbance in the RMA's will be kept to a minimum. There will not be any harvesting permitted within the RMA.

Practices:
Five stream enhancement structures will be constructed using ground based equipment between points SE1 and SE2. Each structure will be created by placing ten conifer logs (five approximately 20 inches DBH and 50 feet long with root wads attached and five tops) in the Type F stream. The logs will be placed with a log loader or excavator into the stream at locations specified by STATE, and with consultation from an ODF fisheries biologist. STATE shall be notified a minimum of 48 hours prior to beginning work. All conifer logs will be taken from locations outside of the RMA. This work will take place during the instream work period (July 1 – August 31), unless otherwise approved in writing by STATE. No excavation will be conducted during the stream enhancement. The approximate locations are shown on the Exhibit "A".

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

Attachments: Exhibit A
Exhibit M

Original: Salem, copies: Operator, Purchaser, District File, and Jewell Unit

FOREST PRACTICES ACT "WRITTEN Plan"
Buster Brown Timber Sale Operating within 100 feet of Type F Streams

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

The following stream is located in Sections 20 and 21 of T5N, R6W, W.M., Clatsop County, Oregon.

Protected Resources:

1. Buster Creek
2. Tributaries to Buster Creek

Specific Site Characteristics:

1. Buster Creek (Large, Type F) – This stream flows along the northern boundary of Area 2 for approximately 1,500 feet and southern boundary of Area 3 for approximately 460 feet.

2. Unnamed Tributary of Buster Creek (Medium, Type F) – This stream bisects Area 2 and then flows along the southern boundary for approximately 2,925 feet.

3. Unnamed Tributaries of Buster Creek (Small, Type F) – These stream flow along the eastern portion of Area 1 for approximately 300 feet; the southern and southwestern portion of Area 2 for approximately 1,750 feet; and the southeastern boundary of Area 3 for approximately 1,550 feet.

Specific Site Characteristics:
The streambed is of Buster Creek is approximately 10 to 25 feet wide. The stream has a meandering pattern with a relatively low stream gradient. A broad flood plain accompanies the streams active channel. The stream banks are relatively gentle and riparian vegetation is alder with some mixed conifer and intermixed shrubs and grasses.

The streambed is of the unnamed tributaries of Buster Creek are approximately 2 to 12 feet wide. The stream has a meandering pattern with a relatively low stream gradient. A broad flood plain accompanies the streams active channel. The stream banks are relatively gentle and riparian vegetation is alder with some mixed younger mixed conifer and intermixed salmonberry and swordfern.

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

All Type F streams are posted out at least 100 feet. If trees need to be felled within FPA defined stream buffers (RMA's) to allow for cable corridors, no trees will be harvested. Cable lines may extend over and/or through these buffers.

A legacy skid trail in Area 2 (NWSW Section 22, T5N, R6W) will be utilized for harvest of the adjacent ground based setting. This is an existing skid road that is on the outer most edge of the buffer and only infringes for a distance of approximately 30 feet for a distance of 75 feet and is more desirable than the alternative which would require a side hill skid trail to be built which would cause more soil disturbance. The portion of the skid road within the RMA shall be waterbarred, seeded, and mulched upon completion of use.

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:

- No trees will be felled within stream buffers (RMA's), except in cable corridors.
- 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.

FOREST PRACTICES ACT "WRITTEN Plan"
Buster Brown Timber Sale Operating within 100 feet of Type F Streams

- 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.
- When skid trails pass through the RMA all efforts will be taken to limit the number of trees that need to be felled to facilitate yarding.
- Trees felled within the posted RMA will be retained within the buffer.
- All bare soils resulting from log yarding activities within the skid trail shall be waterbarred, seeded, and mulched upon completion of use.

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

Attachments: Exhibit A
Original: Salem
CC: Operator, Purchaser, District file, Engineering Unit, Jewell Unit

State Timber Sale Contract
No. 341-13-25
Buster Brown

OREGON DEPARTMENT of FISH and WILDLIFE

FISH SCREENING PROGRAM

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 tee:

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 (2.38mm) 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 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:

Bernie Kepshire, Oregon Department of Fish and Wildlife,
7118 NE Vandenberg Avenue, Corvallis, OR 97330-9446 (541) 757-4186 x 255

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 St. 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: (_____) _____

bmk
3/11/99
PUMPCERT.doc

NB: ODFW logo is 129% of logo on HQ mail label

State Timber Sale Contract
No. 341-13-25
Buster Brown

NOTICE OF TRANSFER OF STATE TIMBER

Instructions **629:-Form-301-010**

Complete Section 1. Mark the box which applies to you/your company in Section 2. Complete Section 3 and obtain signatures.

SECTION 1

On _____, state timber sale purchaser (Transferor)

_____, sold, exchanged or otherwise transferred to

_____, (Transferee) state timber originating from State

Timber Sale Contract No. _____.

Transferee hereby certifies that they:

(a) Will not export the unprocessed state timber which is the subject of this transaction;

(b) Will not sell, transfer, exchange or otherwise convey the unprocessed timber which is the subject of this transaction to any other person without first obtaining a like certification from that person; and

(c) Are not prohibited by OAR's 629-31-005 through 045 from purchasing state timber or logs directly from the State Forester, or this is a sale of Western Red Cedar for domestic processing.

SECTION 2

☐ Have not exported unprocessed timber originating from private lands in Oregon in the last 24 months.

☐ This is a sale of hardwood logs for domestic processing.

☐ This is a sale of Western Red Cedar for domestic processing.

☐ This is a sale of pulp logs or cull logs processed at domestic pulp mills, domestic chip plants or other domestic operations for the purpose of conversion of the logs into chips.

SECTION 3

The parties understand that falsely entering into this certification, or failure to comply with the terms of this certification is a violation of the Forest Conservation and Shortage Relief Act of 1990 and OAR Chapter 629, Division 31, and is subject to any and all penalties contained therein.

Transferor:	Transferee:
_____	_____
Signed	Signed
_____	_____
Title	Title
_____	_____
Dated	Dated

[Note: For the purpose of this form, the definition of unprocessed timber is the same as in OAR 629-31-005]

Mail To: State Forester
2600 State Street
Salem, OR 97310