# *PART III: EXHIBITS*



**OREGON DEPARTMENT OF FORESTRY**

**TIMBER SALE OPERATIONS PLAN**

(See Page 2 for instructions)

Date Received by STATE: _____

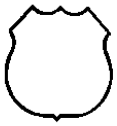
(1) Contract No.: 341-15-04

(2) Sale Name: Swede Retreat

(3) Contract Expiration Date: October 31, 2017

(4) Purchaser: _____

(5) State Brand Information (complete):



Project Completion Dates: Projects 1, 2, 3, 5a, and 8: October 31, 2016

Project Nos. 5b and 6: October 31, 2017

Project Nos. 4 and 7: August 31, 2017

(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.

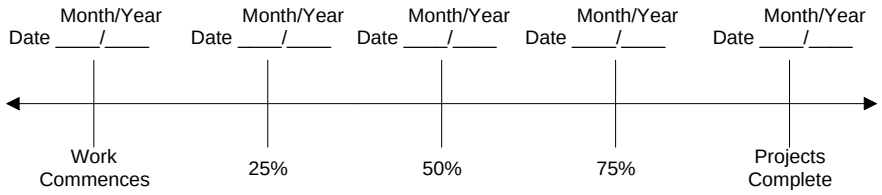
EXHIBIT B

OPERATIONS PLAN

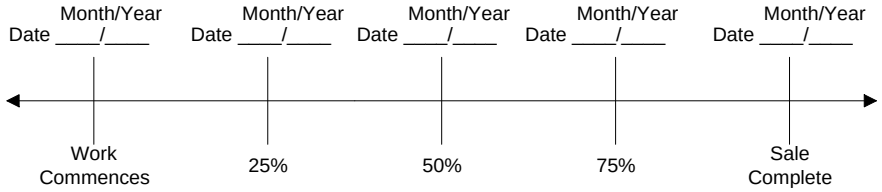
**Completion Timeline**

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**




**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

# 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 District Phone (503) 325-5451
(State Forestry District)
Address 92219 Highway 202
Astoria, Oregon 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

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

(7) Weight Scale Sample ☐ ☒

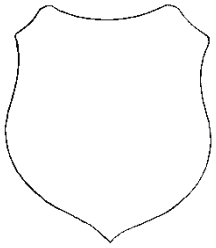
| (8) **APPROVED SCALING LOCATIONS** (as shown on the ODF Approved Locations web-site) | **Species** | **Yard** | **Truck** | **Weight** |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | |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

(9) SALE NAME: Swede Retreat
COUNTY: Clatsop

(10) STATE CONTRACT NUMBER: 341-15-04

(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@solsgb.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) 639-04880
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.

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

# 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 District 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

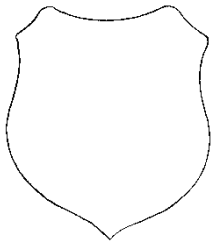
- Mail to ODF weekly.
- Convert to mbf using 10 tons per mbf.

(9) SALE NAME: Swede Retreat
COUNTY: Clatsop

(10) STATE CONTRACT NUMBER: 341-15-04

(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: info@solsgb.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) 639-04880
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 29+45 | Crowned/Ditched |
| 16 feet | 12 feet | 2A to 2B | 0+00 to 1+70 | Outsloped |
| 16 feet | 12 feet | 2A to 2B | 1+70 to 20+40 | Crowned/Ditched |
| 16 feet | 12 feet | 2E to 2F | 0+00 to 4+00 | Crowned/Ditched |
| 16 feet | 12 feet | 2G to 2H | 0+00 to 2+70 | Crowned/Ditched |
| 16 feet | 12 feet | 2G to 2I | 0+00 to 7+00 | Crowned/Ditched |
| 16 feet | 12 feet | 3A to 3B | 0+00 to 1+00 | Outsloped |
| 16 feet | 12 feet | 3A to 3B | 1+00 to 24+40 | Crowned/Ditched |
| 16 feet | 12 feet | 3C to 3D | 0+00 to 2+80 | Crowned/Ditched |
| 16 feet | 12 feet | 3E to 3F | 0+00 to 3+50 | Crowned/Ditched |
| 16 feet | 12 feet | 3H to 3I | 0+00 to 11+25 | Crowned/Ditched |
| 16 feet | 12 feet | 4A to 4B | 0+00 to 9+25 | Crowned/Ditched |
| 14 feet | N/A | 4C to 4D | 0+00 to 5+50 | Outsloped |
| 16 feet | 12 feet | I1 to I2 | 0+00 to 42+90 | Crowned/Ditched |
| 16 feet | 12 feet | I3 to I4 | 0+00 to 9+70 | Crowned/Ditched |
| 16 feet | 12 feet | I5 to I6 | 0+00 to 3+00 | Crowned/Ditched |
| 16 feet | 12 feet | I7 to I8 | 0+00 to 78+20 | Crowned Ditched |
| 16 feet | 12 feet | I9 to I10 | 0+00 to 6+50 | Crowned Ditched |

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.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

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.

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 |

EXHIBIT D

FOREST ROAD SPECIFICATIONS

Top of cutslope shall be rounded.

LANDINGS. Landings shall be constructed as posted in the field, no less than 70 feet wide and no more than 100 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 M, and blocked from vehicular traffic prior to October 1, annually and as directed by STATE.

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

1. Timber Removal. Remove all trees within posted right-of-way boundary 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. Excess excavated material not used for embankment shall be end hauled or pushed to waste areas as shown on Exhibit A and marked in the field.

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. 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" section of this exhibit or as directed by STATE. Locations of the filters shall be determined by STATE.

5. 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.

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

7. 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 Road Construction as specified above in the General Instructions and below in the Specific Instructions. Construct "Y" junction, utilize 55 cubic yards 4"-0" crushed rock and 5 cubic yards 1½"-0" crushed rock to fill in gap at "Y" junction. Begin 10 feet inside curve widening left and right, utilize 128 cubic yards 4"-0" crushed rock and 64 cubic yards 1½"-0" crushed rock. Install new cross drain culvert across existing road. Install new culvert marker. Begin 8" lift 4"-0" crushed rock base and 4" lift 1 ½"-0" crushed rock surfacing. |
| | 0+90 | End 10 feet inside curve widening left and right. |
| | 1+65 | Begin 3 feet inside curve widening left, utilize 14 cubic yards 4"-0" crushed rock and 7 cubic yards 1½"-0" crushed rock. |
| | 2+15 | End 3 feet inside curve widening left. |
| | 3+00 | Begin excavation and end haul of excess material. End haul material to 6+70 to 7+10. |
| | 4+20 | Begin 2 feet inside curve widening left, utilize 19 cubic yards 4"-0" crushed rock and 9 cubic yards 1½"-0" crushed rock. |
| | 4+70 | End excavation and end haul of excess material. |
| | 4+80 | Construct turnout right. |
| | 5+30 | End 2 feet inside curve widening left. |
| | 6+20 | Begin fill widening 1 foot left and right additional subgrade width. |
| | 6+85 | Armor fill left and right utilizing 66 cubic yards 24"-6" riprap rock.<br>Install new cross drain culvert. |
| | 7+40 | End fill widening. |
| | 9+05 | Begin excavation and end haul of excess material. End haul material to 6+70 to 7+10. |
| | 9+35 | End excavation and end haul of excess material.<br>Begin excavation and end haul of excess material. End haul material to 11+50 to 11+70. |
| | 9+50 | End excavation and end haul of excess material. |
| | 10+85 | Begin 6 feet inside curve widening right, utilize 49 cubic yards 4"-0" crushed rock and 25 cubic yards 1½"-0" crushed rock. |
| | 11+50 | Construct turnout left. |
| | 12+35 | End 6 feet inside curve widening right. |

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

| Segment | Station | Work Description: |
|---|---|---|
| A to B | 13+40 | Begin excavation and end haul of excess material. End haul material to 17+10 to 19+10. Begin full containment of sidecast material. |
| | 14+00 | End full containment of sidecast material. |
| | 14+95 | Install new cross drain culvert. |
| | 15+15 | End excavation and end haul of excess material. |
| | 20+00 | Construct turnout right. |
| | 22+90 | Begin excavation and end haul of excess material. End haul material to 19+10 to 20+95. |
| | 24+10 | Begin 2 feet inside curve widening left, utilize 31 cubic yards 4”-0” crushed rock and 16 cubic yards 1½”-0” crushed rock. |
| | 25+20 | Install new cross drain culvert. |
| | 25+60 | Construct turnout right. |
| | 25+85 | End excavation and end haul of excess material. |
| | 26+15 | End 2 feet inside curve widening left. |
| | 28+55 | Begin 6 feet inside curve widening right, utilize 28 cubic yards 4”-0” crushed rock and 14 cubic yards 1½”-0” crushed rock. |
| | 29+30 | End 6 feet inside curve widening right. |
| | 29+45 | End construction. Install new cross drain culvert across existing road. Utilize 22 cubic yards 1 ½”-0” crushed rock for junction. End 8” lift 4”-0” crushed rock base and 4” lift 1 ½”-0” crushed rock surfacing. |
| 2A to 2B | 0+00 | Begin Swede Road vertical grade adjustment as needed to maintain truck passage on Swede Road while matching 2A to 2B new construction vertical grade until road separation. Utilize 63 cubic yards 4”-0” crushed rock and 63 cubic yards 1 ½”-0” crushed rock as needed. |
| | 0+55 | Begin Road Construction as specified above in the General Instructions and below in the Specific Instructions. Construct outsloped road surface. Left side (upper) slope of 2A to 2B outsloped road surface shall match right side of Swede Road crowned surface until road separation. Install new cross drain culvert across existing road. Utilize 11 cubic yards 1 ½”-0” crushed rock for junction. Begin 8” lift 4”-0” crushed rock base and 4” lift 1 ½”-0” crushed rock surfacing. |
| | 1+00 | Begin 2 feet inside curve widening right, utilize 14 cubic yards 4”-0” crushed rock and 7 cubic yards 1½”-0” crushed rock. |

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

| Segment | Station | Work Description: |
|---|---|---|
| 2A to 2B | 1+10 | Begin excavation and end haul of excess material. End haul material to 4+30 to 6+30. |
| | 1+70 | End 2 feet inside curve widening right. |
| | 1+90 | Begin cut slope rounding. |
| | 2+30 | End excavation and end haul of excess material. |
| | 3+00 | Construct turnout left. |
| | 3+40 | End cut slope rounding. |
| | 3+45 | Begin fill widening 1 foot right additional subgrade width. |
| | 3+65 | End fill widening. |
| | 3+95 | Armor fill right utilizing 33 cubic yards 24”-6” riprap rock. |
| | 4+00 | Install new cross drain culvert. |
| | 5+00 | Begin fill widening 1 foot left and right additional subgrade width. |
| | 5+50 | End 4” lift 1 ½”-0” crushed rock surfacing. |
| | 5+85 | Armor fill left and right utilizing 33 cubic yards 24”-6” riprap rock. |
| | 6+00 | Install new cross drain culvert. |
| | 6+30 | End fill widening. |
| | 8+50 | Begin excavation and end haul of excess material. End haul material to 12+10 to 13+00. |
| | 9+00 | End excavation and end haul of excess material. Construct turn out left. Begin excavation and end haul of excess material. End haul material to 11+10 to 11+50. |
| | 9+10 | End excavation and end haul of excess material. |
| | 9+85 | Begin 1 foot inside curve widening right, utilize 20 cubic yards 4”-0” crushed rock and 10 cubic yards 1½”-0” crushed rock. |
| | 11+00 | Begin fill widening 1 foot left and right additional subgrade width. |
| | 11+10 | Install new cross drain culvert. |
| | 11+15 | Armor fill left and right utilizing 11 cubic yards 24”-6” riprap rock. |

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

| Segment | Station | Work Description: |
|---|---|---|
| 2A to 2B | 11+30 | End fill widening. |
| | 11+60 | End 1 foot inside curve widening right. |
| | 12+00 | Construct rock ditch filter left. |
| | 12+50 | Construct rock ditch filter left. |
| | 12+70 | Begin fill widening 1 foot left and right additional subgrade width. |
| | 12+90 | Install culvert at live stream crossing, utilize 110 cubic yards 1 ½”-0” crushed rock for culvert bedding and backfill. Armor fill left and right utilizing 44 cubic yards 24”-6” riprap rock. Install culvert outlet dissipator, dissipator length shall equal at least 3 times culvert diameter. |
| | 13+05 | End fill widening. |
| | 13+40 | Begin 1 foot inside curve widening left, utilize 11 cubic yards 4”-0” crushed rock and 6 cubic yards 1½”-0” crushed rock. |
| | 13+60 | Begin excavation and end haul of excess material. End haul material to 17+10 to 18+20. |
| | 13+75 | Construct ditchout left and right. Construct Rock Ditch Filter left. |
| | 14+50 | End excavation and end haul of excess material. |
| | 14+55 | Construct ditchout right. |
| | 16+10 | Install new cross drain culvert. |
| | 16+65 | Construct turnout / truck turnaround left. |
| | 16+90 | Begin fill widening 1 foot left and right additional subgrade width. |
| | 17+10 | Armor fill right utilizing 11 cubic yards 24”-6” riprap rock. |
| | 17+20 | End fill widening. |
| | 19+65 | Construct ditchout right. |
| | 20+00 | Construct landing. |
| | 20+40 | End Construction. End 8” lift 4”-0” crushed rock. |

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

| Segment | Station | Work Description: |
|---|---|---|
| 3A to 3B | 0+00 | Begin Road Construction as specified above in the General Instructions and below in the Specific Instructions. Construct outsloped road surface. Right side (upper) slope of 3A to 3B outsloped road surface shall match right side of Road Segment A to B crowned surface until road separation. Begin 8” lift 4”-0” crushed rock base |
| | 0+50 | Install cross drain culvert. |
| | 1+80 | Begin full containment of sidecast material. Begin cutslope rounding. |
| | 3+20 | End full containment of sidecast material. End cutslope rounding. |
| | 4+60 | Install cross drain culvert. |
| | 5+80 | Construct roadside landing left. |
| | 6+20 | Begin cutslope rounding. |
| | 7+40 | End cutslope rounding. |
| | 7+50 | Begin fill widening 1 foot left and right additional subgrade width. |
| | 8+50 | End fill widening 1 foot left and right additional subgrade width. |
| | 12+20 | Construct turnout right. |
| | 13+30 | Install cross drain culvert. |
| | 13+50 | Begin fill widening 2 foot left and right additional subgrade width. |
| | 14+00 | End fill widening 1 foot left and right additional subgrade width. |
| | 17+00 | Install cross drain culvert. |
| | 17+70 | Begin 4 feet inside curve widening left, utilize 22 cubic yards 4”-0” crushed rock and 6 cubic yards 1½”-0” crushed rock. |
| | 18+00 | Construct turnout right. |
| | 18+30 | End 4 feet inside curve widening left. |
| | 23+75 | Construct landing. |
| | 24+40 | End Construction. End 8” lift 4”-0” crushed rock. |

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

| Segment | Station | Work Description: |
|---|---|---|
| 4A to 4B | | |
| | 0+00 | Begin Road Construction as specified above in the General Instructions and below in the Specific Instructions. Remove existing gate located at highway entrance. Widen existing junction. Install cross drain culvert across existing road. Begin 8” lift 4”-0” crushed rock base and 3” lift 3/4”-0” crushed rock surfacing. Begin placement of 36”-12” rocks to mitigate traffic off of new construction road. |
| | 0+80 | Begin subgrade reinforcement. Utilize 22 cubic yards of 6”-0” pitrun. |
| | 1+00 | End placement of 36”-12” rocks at Project No. 8 gate location. |
| | 1+10 | End subgrade reinforcement. |
| | 3+75 | Construct turnout right. |
| | 4+20 | Install cross drain culvert. Begin application of a 4” lift of 1 ½”-0” crushed rock. |
| | 5+70 | Begin cutslope rounding. |
| | 7+50 | End cutslope rounding |
| . | | |
| | 8+00 | Construct turnaround right. End application of 4” lift of 1 ½”-0” crushed rock. |
| | 9+00 | Construct Landing. |
| | 9+25 | End Construction. End 8” lift 4”-0” crushed rock. |

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. Non-merchantable timber and pulp logs shall be processed and decked in stable locations, as directed by STATE. All slash generated from timber removal 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. Roadside Brushing and Spraying. Conduct roadside brushing and spraying as specified in Exhibits K and L.

3. 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.

4. 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 O.

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

6. 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.

7. 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" section of this exhibit or as directed by STATE. Locations of the filters shall be determined by STATE.

EXHIBIT D

FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS:

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. Subgrade Preparation and Application of Surfacing Rock.

(a) Complete culvert installations, drainage ditches, fill reconstruction, ditchouts, and other specified work (except spraying) 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. |
| | 2+95 | Replace existing culvert / reconstruct fill. Utilize 6"-0" pit-run rock for culvert bedding and 1½"-0" crushed rock for culvert bedding and backfill. Utilize 24"-6" riprap rock for dissipater. Utilize approved material for fill reconstruction. Armor fill utilizing 24"-6" riprap rock. Apply 4"-0" crushed rock for road base reconstruction and 1½"-0" crushed rock for road surface reconstruction. Finished subgrade width shall be 20 feet. |
| | 3+70 | Install new stream disconnect culvert. Utilize 1½"-0" crushed rock for bedding and backfill. Install new culvert marker. |
| | 7+60 | Install new cross drain culvert. Utilize 1½"-0" crushed rock for bedding and backfill. Install new culvert marker. |
| | 18+00 | Install new culvert marker. |
| | 23+60 | Install new culvert marker. |
| | 26+55 | Install new culvert marker. |

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

| Segment | Station | Work Description: |
|---|---|---|
| I1 to I2 | 45+00 | End road improvement. |
| I3 to I4 | 0+00 | Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. |
| | 0+35 | Utilize excavator to clean out and improve outlet flow of existing cross drain culvert. |
| | 1+00 | Replace existing culvert with Type “F” culvert / fill reconstruction. Install 102 inch diameter by 70 foot long ACSP culvert at 6% grade, see Exhibit I. New culvert shall be embedded 3.40 feet and high beveled on the inlet side. Utilize 6”-0” pit-run rock for culvert bedding and 1½”-0” crushed rock for culvert bedding and backfill. Utilize 24”-6” riprap rock for stream bed retention. Utilize approved material for fill reconstruction. Armor fill utilizing 24”-6” riprap rock. Apply 4”-0” crushed rock for road base reconstruction and 1½”-0” crushed rock for road surface reconstruction. Finished subgrade width shall be 20 feet. |
| | 9+70 | End road improvement. |
| I5 to I6 | 0+00 | Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Begin new lift of 4”-0” crushed rock. |
| | 1+50 | Fill in existing waterbar. Utilize 4”-0” crushed rock. |
| | 3+00 | End lift of 4”-0” crushed rock. End road improvement. |
| I7 to I8 | 0+00 | Begin Road Improvement as specified above in the General Instructions and below in the Specific Instructions. Replace existing ditchline culvert at junction of Swede Road and Highway 202. |
| | 2+50 | Install new stream disconnect culvert. Utilize 1½”-0” crushed rock for bedding and backfill. Install new culvert marker. |
| | 6+75 | Replace existing culvert / reconstruct fill. Utilize 6”-0” pit-run rock for culvert bedding and 1½”-0” crushed rock for culvert bedding and backfill. Utilize 24”-6” riprap rock for dissipater. Utilize approved material for fill reconstruction. Armor fill utilizing 24”-6” riprap rock. Apply 4”-0” crushed rock for road base reconstruction and 1½”-0” crushed rock for road surface reconstruction. Finished subgrade width shall be 20 feet. |
| | 14+80 | Utilize excavator to construct slopes of existing slide to 1½ :1. Construct excavator work pad for machine access to toe of slide as directed by STATE. Place waste material in approved waste area on site. Utilize 6”-0” pit-run rock for fill slope improvement and armoring. |

EXHIBIT D

FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

| Segment | Station | Work Description: |
|---|---|---|
| I7 to I8 | 15+60 | Install Ditch Filter in accordance with the “Typical Rock Ditch Filter” section of this exhibit or as directed by STATE. |
| | 34+70 | Install new culvert marker. |
| | 46+30 | Install new culvert marker. |
| | 49+20 | Improve inlet and outlet of existing culvert to improve outlet flow. |
| | 53+00 | Unplug existing culvert. Utilize excavator to improve outlet flow. |
| | 76+60 | Replace existing culvert. Utilize 1½”-0” crushed rock for bedding and backfill. Utilize 24”-6” riprap rock to construct new outlet dissipater. |
| | 78+20 | End road improvement. |

EXHIBIT D

FULL BENCH AND END-HAUL REQUIREMENTS

| POINT TO POINT | STA. TO STA. | CONTAINMENT - SIDECAST |
|---|---|---|
| A to B | 3+00 to 4+70 | 2 |
| A to B | 9+05 to 9+50 | 2 |
| A to B | 13+40 to 14+00 | 1 |
| A to B | 14+00 to 15+15 | 2 |
| A to B | 22+90 to 25+85 | 2 |
| 2A to 2B | 1+10 to 2+30 | 2 |
| 2A to 2B | 8+50 to 9+10 | 2 |
| 2A to 2B | 13+60 to 14+50 | 2 |
| 3A to 3B | 1+80 to 3+20 | 1 |

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

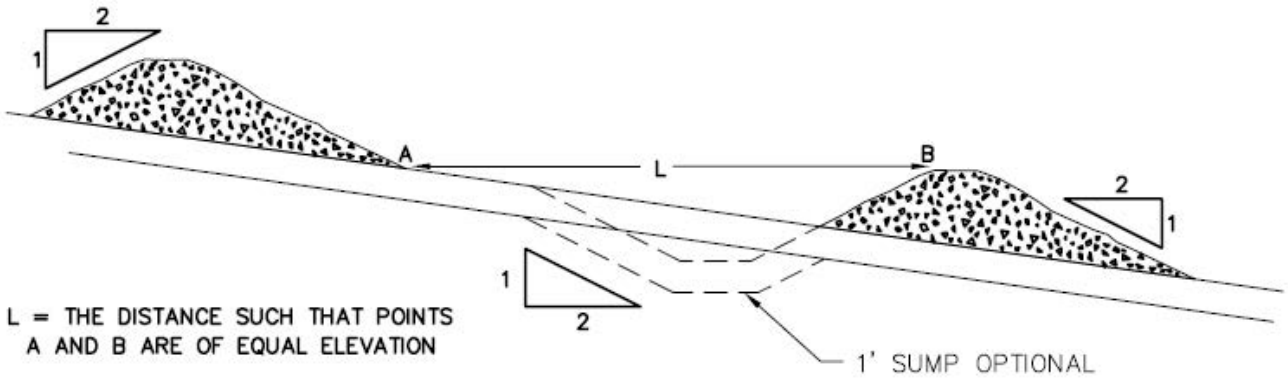
- Excess material not utilized for road construction shall be hauled to waster area as shown on Exhibit A and as marked in the field.

Waste Area Treatment

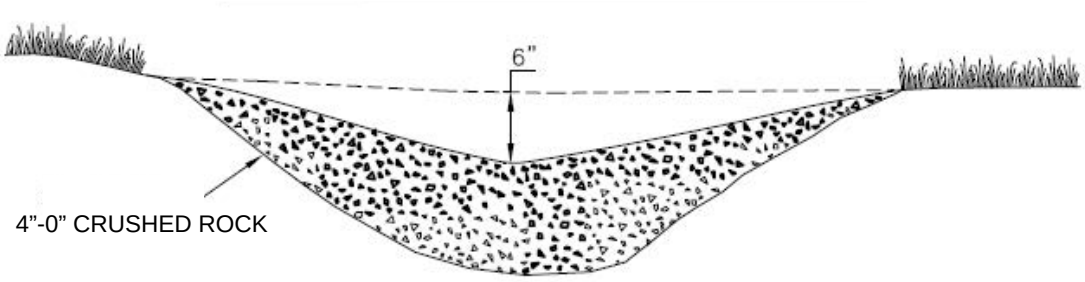
- Deposit at waste area, spread evenly, compact, and provide adequate drainage.
- Pile woody debris separate from other waste material.
- Mulch and seed all waste areas in accordance with Exhibit O.

EXHIBIT D

TYPICAL ROCK DITCH FILTER




SPACING BETWEEN ROCK FILTERS




ROCK DITCH FILTER

EXHIBIT D

ROAD SURFACING

| **ROAD SEGMENT** | **A to B** | | | **POINT TO POINT** | | **Sta. to Sta.** | | |
|---|---|---|---|---|---|---|---|---|
| | | | | A to B | | 0+00 to 29+45 | | **TOTAL** |
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | **Volume (CY) per** | | **Number of** | | **VOLUME (CY)** |
| Base Rock | 4"-0" crushed | 0+00 to 29+45 | 8 | station | 50 | stations | 29.45 | 1,473 |
| Curve Widening | 4"-0" crushed | 0+00 to 0+90, 1+65 to 2+15, 4+20 to 5+30, 10+85 to 12+35, 24+10 to 26+15, 28+55 to 29+30 | 8 | n/a | - | n/a | - | 269 |
| Turnouts | 4"-0" crushed | 4+80, 11+50, 20+00, 25+60 | 8 | TO | 22 | TO's | 4 | 88 |
| Traction Rock | 1 1/2"-0" crushed | 0+00 to 29+45 | 4 | station | 25 | stations | 29.45 | 736 |
| Curve Widening | 1 1/2"-0" crushed | 0+00 to 0+90, 1+65 to 2+15, 4+20 to 5+30, 10+85 to 12+35, 24+10 to 26+15, 28+55 to 29+30 | 4 | n/a | - | n/a | - | 135 |
| Turnouts | 1 1/2"-0" crushed | 4+80, 11+50, 20+00, 25+60 | 4 | TO | 11 | TO's | 4 | 44 |
| Fill Armor | 24"-6" riprap | 6+85 | n/a | n/a | - | n/a | - | 66 |
| Junctions | 4"-0" crushed | 0+00 | n/a | Load | 11 | Loads | 5 | 55 |
| Junctions | 1 1/2"-0" crushed | 0+00, 29+45 | n/a | Load | 11 | Loads | 7 | 77 |
| Total Rock for Road Segment: | | | A to B | | | | | 2,943 |

EXHIBIT D

ROAD SURFACING

| **ROAD SEGMENT** | **2A to 2B** | | | **POINT TO POINT** | | **Sta. to Sta.** | | |
|---|---|---|---|---|---|---|---|---|
| | | | **Depth of** | 2A to 2B | | 0+00 to 20+40 | | **TOTAL** |
| **Application** | **Rock Size and Type** | **Location** | **Rock (inches)** | **Volume (CY) per** | | **Number of** | | **VOLUME (CY)** |
| Base Rock | 4"-0" crushed | 0+00 to 20+40 | 8 | station | 50 | stations | 20.40 | 1,020 |
| Curve Widening | 4"-0" crushed | 1+00 to 1+70, 9+85 to 11+60, 13+40 to 14+20 | 8 | n/a | - | n/a | - | 45 |
| Turnouts | 4"-0" crushed | 3+00, 9+00, 16+65 | 8 | TO | 22 | TO's | 3 | 66 |
| Turnarounds | 4"-0" crushed | 16+65 | 8 | TA | 11 | TA's | 1 | 11 |
| Fill Armor | 24"-6" riprap | 3+95, 5+85, 11+15, 12+90, 17+10 | n/a | n/a | - | n/a | - | 132 |
| Landing | 6"-0" pit-run | 20+00 | n/a | landing | 55 | landings | 1 | 50 |
| Rock Ditch Filter | 6"-0" pit-run | 12+00, 12+50, 13+75 | n/a | filter | 22 | filters | 3 | 66 |
| Traction Rock | 1 1/2"-0" crushed | 0+00 to 5+50 | 4 | station | 25 | stations | 5.5 | 138 |
| Curve Widening | 1 1/2"-0" crushed | 1+00 to 1+70 | 4 | n/a | - | n/a | - | 11 |
| Turnouts | 1 1/2"-0" crushed | 3+00 | 4 | TO | 11 | TO's | 1 | 11 |
| Junctions | 1 1/2"-0" crushed | 0+55 | n/a | load | 11 | loads | 1 | 11 |
| Culvert Bedding & Backfill | 1 1/2"-0" crushed | 12+90 | n/a | load | 11 | loads | 10 | 110 |
| Dissapator | 24"-6" riprap | 12+90 | n/a | load | 11 | loads | 3 | 33 |
| Swede Road Regrading | 4"-0" crushed | 0+00 | 4 | station | 25 | stations | 2.5 | 63 |
| Swede Road Regrading | 1 1/2"-0" crushed | 0+00 | 4 | station | 25 | stations | 2.5 | 63 |
| Total Rock for Road Segment: | | | 2A to 2B | | | | | 1,830 |

EXHIBIT D

ROAD SURFACING

| ROAD SEGMENT | 2C, 2D, 3G, and 3J | | | POINT TO POINT | | Sta. to Sta. | | |
|---|---|---|---|---|---|---|---|---|
| Application | Rock Size and Type | Location | Depth of Rock (inches) | 2C, 2D, 3G, and 3J Volume (CY) per | | n/a Number of | | TOTAL VOLUME (CY) |
| Junctions | 1 1/2"-0" crushed | 2C, 2D | n/a | load | 11 | loads | 2 | 22 |
| Landings | 6"-0" pit-run | 2C, 2D, and 3J | N/A | Landing | 50 | Landings | 3 | 150 |
| Landings | 6"-0" pit-run | 3G | N/A | Landing | 70 | Landings | 1 | 70 |
| Total Rock for Road Segment: | 2C, 2D, 3I, and 3G | | | | | | | 242 |
| ROAD SEGMENT | 2E to 2F | | | POINT TO POINT | | Sta. to Sta. | | |
| Application | Rock Size and Type | Location | Depth of Rock (inches) | 2E to 2F Volume (CY) per | | 0+00 to 4+00 Number of | | TOTAL VOLUME (CY) |
| Base Rock | 4"-0" crushed | 0+00 to 4+00 | 8 | station | 50 | stations | 4.00 | 200 |
| Junctions | 1 1/2"-0" crushed | | N/A | junction | 22 | junctions | 1 | 22 |
| Landings | 6"-0" pit-run | 2F | N/A | Landing | 50 | Landings | 1 | 50 |
| Total Rock for Road Segment: | | 2E to 2F | | | | | | 272 |
| ROAD SEGMENT | 2G to 2H | | | POINT TO POINT | | Sta. to Sta. | | |
| Application | Rock Size and Type | Location | Depth of Rock (inches) | 2G to 2H Volume (CY) per | | 0+00 to 2+70 Number of | | TOTAL VOLUME (CY) |
| Base Rock | 4"-0" crushed | 0+00 to 2+70 | 8 | station | 50 | stations | 2.70 | 135 |
| Turnouts | 4"-0" crushed | 1+50 | N/A | TO | 22 | TO's | 1 | 22 |
| Turnarounds | 4"-0" crushed | | N/A | TA | 11 | TA's | 1 | 11 |
| Junctions | 1 1/2"-0" crushed | | N/A | junction | 22 | junctions | 1 | 22 |
| Landings | 6"-0" pit-run | 2H | N/A | Landing | 50 | Landings | 1 | 50 |
| Total Rock for Road Segment: | | 2G to 2H | | | | | | 240 |
| ROAD SEGMENT | 2G to 2I | | | POINT TO POINT | | Sta. to Sta. | | |
| Application | Rock Size and Type | Location | Depth of Rock (inches) | 2G to 2I Volume (CY) per | | 0+00 to 7+00 Number of | | TOTAL VOLUME (CY) |
| Base Rock | 4"-0" crushed | 0+00 to 7+00 | 8 | station | 50 | stations | 7.00 | 350 |
| Turnouts | 4"-0" crushed | 4+00 | N/A | TO | 22 | TO's | 1 | 22 |
| Turnarounds | 4"-0" crushed | 6+20 | N/A | TA | 11 | TA's | 1 | 11 |
| Junctions | 1 1/2"-0" crushed | | N/A | junction | 22 | junctions | 1 | 22 |
| Landings | 6"-0" pit-run | 2I | N/A | Landing | 50 | Landings | 1 | 50 |
| Total Rock for Road Segment: | | 2G to 2I | | | | | | 455 |

EXHIBIT D

ROAD SURFACING

| **ROAD SEGMENT** | **3A to 3B** | | | **POINT TO POINT** | | **Sta. to Sta.** | | |
|---|---|---|---|---|---|---|---|---|
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | 3A to 3B **Volume (CY) per** | | 0+00 to 24+40 **Number of** | | **TOTAL VOLUME (CY)** |
| Base Rock | 4"-0" crushed | 0+00 to 24+40 | 8 | station | 50 | stations | 24.40 | 1,220 |
| Curve Widening | 4"-0" crushed | 17+70 to 18+30 | 8 | n/a | - | n/a | - | 22 |
| Turnouts | 4"-0" crushed | 5+80, 12+20, 18+00 | N/A | TO | 22 | TO's | 3 | 66 |
| Turnarounds | 4"-0" crushed | 22+00 | N/A | TA | 11 | TA's | 1 | 11 |
| Landings | 6"-0" pit-run | 5+80 | N/A | Landing | 70 | Landings | 1 | 50 |
| Landings | 6"-0" pit-run | 3B | N/A | Landing | 70 | Landings | 1 | 70 |
| Total Rock for Road Segment: | | | 3A to 3B | | | | | 1,439 |
| **ROAD SEGMENT** | **3C to 3D** | | | **POINT TO POINT** | | **Sta. to Sta.** | | |
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | 3C to 3D **Volume (CY) per** | | 0+00 to 2+80 **Number of** | | **TOTAL VOLUME (CY)** |
| Base Rock | 4"-0" crushed | 0+00 to 2+80 | 8 | station | 50 | stations | 2.80 | 140 |
| Landings | 6"-0" pit-run | 3D | N/A | Landing | 70 | Landings | 1 | 70 |
| Total Rock for Road Segment: | | | 3C to 3D | | | | | 210 |
| **ROAD SEGMENT** | **3E to 3F** | | | **POINT TO POINT** | | **Sta. to Sta.** | | |
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | 3E to 3F **Volume (CY) per** | | 0+00 to 3+50 **Number of** | | **TOTAL VOLUME (CY)** |
| Base Rock | 4"-0" crushed | 0+00 to 3+50 | 8 | station | 50 | stations | 3.50 | 175 |
| Landings | 6"-0" pit-run | 3F | N/A | Landing | 70 | Landings | 1 | 70 |
| Total Rock for Road Segment: | | | 3E to 3F | | | | | 245 |
| **ROAD SEGMENT** | **3H to 3I** | | | **POINT TO POINT** | | **Sta. to Sta.** | | |
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | 3H to 3I **Volume (CY) per** | | 0+00 to 11+25 **Number of** | | **TOTAL VOLUME (CY)** |
| Base Rock | 4"-0" crushed | 0+00 to 11+25 | 8 | station | 50 | stations | 11.25 | 563 |
| Traction Rock | 1 1/2"-0" crushed | 0+00 to 4+50 | 4 | station | 25 | stations | 4.50 | 113 |
| Turnouts | 4"-0" crushed | 4+45 | N/A | TO | 22 | TO's | 1 | 22 |
| Turnarounds | 4"-0" crushed | 5+00 | N/A | TA | 11 | TA's | 1 | 11 |
| Junctions | 4"-0" crushed | 3H | N/A | junction | 22 | junctions | 1 | 22 |
| Landings | 6"-0" pit-run | 3I | N/A | Landing | 50 | Landings | 1 | 50 |
| Total Rock for Road Segment: | | | 3H to 3I | | | | | 781 |

EXHIBIT D

ROAD SURFACING

| **ROAD SEGMENT** | **4A to 4B** | | | **POINT TO POINT** | | **Sta. to Sta.** | | |
|---|---|---|---|---|---|---|---|---|
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | 4A to 4B **Volume (CY) per** | | 0+00 to 9+25 **Number of** | | **TOTAL VOLUME (CY)** |
| Base Rock | 4"-0" crushed | 0+00 to 9+25 | 8 | station | 50 | stations | 9.25 | 463 |
| Subgrade Reinforcement | 6"-0" pit-run | 0+80 to 1+10 | N/A | n/a | - | n/a | - | 22 |
| Traction Rock | 1 1/2"-0" crushed | 4+20 to 8+00 | 4 | station | 25 | stations | 7.8 | 195 |
| Junction Rock | ¾"-0" Stockpile | 0+00 to 2+00 | 3 | station | 20 | stations | 2 | 40 |
| Turnouts | 4"-0" crushed | 3+75 | N/A | TO | 22 | TO's | 1 | 22 |
| Turnarounds | 4"-0" crushed | 8+00 | | TA | 11 | TA's | 1 | 11 |
| Road Block | 36"-12" riprap | 0+00 to 1+00 | N/A | Block | 20 | Blocks | 1 | 20 |
| Landings | 6"-0" pit-run | 4B | N/A | Landing | 50 | Landings | 1 | 50 |
| Total Rock for Road Segment: | | | 4A to 4B | | | | | 783 |

| **ROAD SEGMENT** | **I1 to I2** | | | **POINT TO POINT** | | **Sta. to Sta.** | | |
|---|---|---|---|---|---|---|---|---|
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | I1 to I2 **Volume (CY) per** | | 0+00 to 45+00 **Number of** | | **TOTAL VOLUME (CY)** |
| Culvert Bedding/Backfill | 1 1/2"-0" stockpile | 2+95 | N/A | load | 11 | loads | 3 | 33 |
| Culvert Bedding | 6"-0" pit-run | 2+95 | N/A | load | 11 | loads | 2 | 22 |
| Culvert Dissipator Rock | 24"-6" riprap | 2+95 | N/A | load | 11 | loads | 2 | 22 |
| Fill Armor | 24"-6" riprap | 2+95 | N/A | load | 11 | loads | 14 | 154 |
| Road Subgrade Reconst. | 4"-0" stockpile | 2+95 | N/A | load | 11 | loads | 3 | 33 |
| Road Surface Reconst. | 1 1/2"-0" stockpile | 2+95 | N/A | load | 11 | loads | 2 | 22 |
| Culvert Bedding/Backfill | 1 1/2"-0" stockpile | 3+70, 7+60 | N/A | culvert | 22 | culverts | 2 | 44 |
| Subgrade Leveling | 1 1/2"-0" crushed | 0+00 - 45+00 | N/A | load | 11 | loads | 20 | 220 |
| Turnouts | 1 1/2"-0" crushed | 11+05 | N/A | turnout | 22 | turnouts | 1 | 22 |
| Surfacing | 1 1/2"-0" crushed | 32+50 - 45+00 | 4 | station | 25 | stations | 13 | 325 |
| Junctions | 1 1/2"-0" crushed | 36+60 | N/A | junction | 11 | junctions | 1 | 11 |
| Total Rock for Road Segment: | | | I1 to I2 | | | | | 908 |

EXHIBIT D

ROAD SURFACING

| **ROAD SEGMENT** | **I3 to I4** | | | **POINT TO POINT** | | **Sta. to Sta.** | | |
|---|---|---|---|---|---|---|---|---|
| | | | | I3 to I4 | | 0+00 to 9+70 | | **TOTAL** |
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | **Volume (CY) per** | | **Number of** | | **VOLUME (CY)** |
| Culvert Bedding/Backfill | 1 1/2"-0" stockpile | 1+00 | N/A | load | 11 | loads | 15 | 286 |
| Culvert Bedding | 6"-0" pit-run | 1+00 | N/A | load | 11 | loads | 3 | 33 |
| Stream Bed Retention | 24"-6" riprap | 1+00 | N/A | load | 11 | loads | 4 | 44 |
| Fill Armor | 24"-6" riprap | 1+00 | N/A | load | 11 | loads | 17 | 187 |
| Road Subgrade Reconst. | 4"-0" stockpile | 0+00 - 1+60 | 6 | station | 38 | stations | 1.6 | 61 |
| Road Surface Reconst. | 1 1/2"-0" stockpile | 0+00 - 1+60 | 4 | station | 25 | stations | 1.6 | 40 |
| Subgrade Leveling | 1 1/2"-0" crushed | 0+00 - 9+70 | N/A | load | 11 | loads | 3 | 33 |
| Total Rock for Road Segment: | | | I3 to I4 | | | | | 684 |
| **ROAD SEGMENT** | **I5 to I6** | | | **POINT TO POINT** | | **Sta. to Sta.** | | |
| | | | | I5 to I6 | | 0+00 to 3+00 | | **TOTAL** |
| **Application** | **Rock Size and Type** | **Location** | **Depth of Rock (inches)** | **Volume (CY) per** | | **Number of** | | **VOLUME (CY)** |
| Surfacing | 4"-0" crushed | 0+00 - 3+00 | 4 | station | 25 | stations | 3.00 | 75 |
| Remove/Rebuild Waterbar | 4"-0" crushed | 1+50 | N/A | load | 11 | loads | 1 | 11 |
| Total Rock for Road Segment: | | | I5 to I6 | | | | | 86 |

EXHIBIT D

ROAD SURFACING

| 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 78+20 Number of | | |
| Culvert Bedding/Backfill | 1 1/2"-0" stockpile | 0+00, 2+50, 65+40 76+60 | N/A | culvert | 22 | culverts | 4 | 88 |
| Additional Culvert Backfill | 1 1/2"-0" stockpile | 0+00 | N/A | load | 11 | loads | 2 | 22 |
| Culvert Bedding/Backfill | 1 1/2"-0" stockpile | 6+75 | N/A | load | 11 | loads | 3 | 33 |
| Culvert Bedding | 6"-0" pit-run | 6+75 | N/A | load | 11 | loads | 1 | 11 |
| Fill Armor | 24"-6" riprap | 6+75 | N/A | load | 11 | loads | 6 | 66 |
| Road Subgrade Reconst. | 4"-0" stockpile | 6+75 | N/A | load | 11 | loads | 3 | 33 |
| Road Surface Reconst. | 1 1/2"-0" stockpile | 6+75 | N/A | load | 11 | loads | 2 | 22 |
| Excavator Pad | 6"-0" pit-run | 14+80 | N/A | load | 11 | loads | 2 | 22 |
| Slope Improvement | 6"-0" pit-run | 14+80 | N/A | load | 11 | loads | 4 | 22 |
| Road Surface Repair | 1 1/2"-0" stockpile | 14+80 | N/A | load | 11 | loads | 2 | 22 |
| Ditch Filter | 6"-0" pit-run | 15+60 | N/A | load | 11 | loads | 2 | 22 |
| Culvert Dissipator Rock | 24"-6" riprap | 76+60 | N/A | load | 11 | loads | 1 | 11 |
| Subgrade Leveling | 1 1/2"-0" crushed | 0+00 - 78+20 | N/A | load | 11 | loads | 18 | 198 |
| Total Rock for Road Segment: | | | I7 to I8 | | | | | 572 |
| **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 6+50 Number of** | | |
| Culvert Bedding/Backfill | 1 1/2"-0" crushed | 0+00 | N/A | load | 22 | loads | 1 | 22 |
| Base Rock | 4"-0" crushed | 0+00 to 6+50 | 8 | station | 50 | stations | 6.50 | 325 |
| Traction Rock | 1 1/2"-0" crushed | 5+50 to 6+50 | 4 | station | 25 | stations | 1.00 | 25 |
| Turnouts | 4"-0" crushed | 1+00 | N/A | TO | 22 | TO's | 1 | 22 |
| Junctions | 1 1/2"-0" crushed | 3H | N/A | junction | 22 | junctions | 1 | 22 |
| Total Rock for Road Segment: | | | I9 to I10 | | | | | 416 |

| ROCK TOTALS (CY) | 36"-12" | 24"-6" | 6"-0" | 4"-0" crushed | 1½"-0" crushed | 4"-0" stockpile | 1½"-0" stockpile | ¾"-0" stockpile | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | 20 | 715 | 1,000 | 7,022 | 2,610 | 127 | 612 | 100 | 12,206 |

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 | 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, or 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 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.

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, 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.

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 | 40 | CPP | | A to B | 0+00 |
| 2 | 18 | 35 | CPP | | A to B | 6+85 |
| 3 | 18 | 30 | CPP | | A to B | 14+95 |
| 4 | 18 | 30 | CPP | | A to B | 25+20 |
| 5 | 18 | 35 | CPP | | A to B | 29+45 |
| 6 | 18 | 30 | CPP | | 2A to 2B | 0+00 |
| 7 | 18 | 30 | CPP | | 2A to 2B | 4+00 |
| 8 | 18 | 30 | CPP | | 2A to 2B | 6+00 |
| 9 | 18 | 35 | CPP | | 2A to 2B | 11+10 |
| 10 | 24 | 50 | CPP | | 2A to 2B | 12+90 |
| 11 | 18 | 30 | CPP | | 2A to 2B | 16+10 |
| 12 | 18 | 30 | CPP | | 2E to 2F | 0+00 |
| 13 | 18 | 30 | CPP | | 2G to 2H | 0+00 |
| 14 | 18 | 40 | CPP | | 2G to 2I | 0+00 |
| 15 | 18 | 40 | CPP | | 3A to 3B | 0+50 |
| 16 | 18 | 30 | CPP | | 3A to 3B | 4+60 |
| 17 | 18 | 40 | CPP | | 3A to 3B | 13+30 |
| 18 | 18 | 40 | CPP | | 3A to 3B | 17+00 |
| 19 | 18 | 30 | CPP | | 3H to 3I | 0+50 |
| 20 | 18 | 30 | CPP | | 3H to 3I | 3+00 |
| 21 | 18 | 50 | CPP | | 3H to 3I | 6+00 |
| 22 | 18 | 50 | CPP | | 4A to 4B | 0+00 |
| 23 | 18 | 70 | ACSP | 14 | I1 to I2 | 2+95 |
| 24* | 18 | 30 | CPP | | I1 to I2 | 3+70 |
| 25 | 18 | 30 | CPP | | I1 to I2 | 7+60 |
| 26 | 102 | 70 | ACSP | 12 | I3 to I4 | 1+00 |
| 27 | 18 | 60 | CPP | | I7 to I8 | 0+00 |
| 28* | 18 | 30 | CPP | | I7 to I8 | 2+50 |
| 29 | 18 | 65 | ACSP | 14 | I7 to I8 | 6+75 |
| 30 | 18 | 40 | CPP | | I7 to I8 | 65+40 |
| 31 | 18 | 30 | CPP | | I7 to I8 | 76+60 |
| 32 | 18 | 40 | CPP | | I9 to I10 | 0+00 |

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. PURCHASER shall obtain a FPA Burn Permit prior to debris disposal for the Wooden Road Quarry.

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.

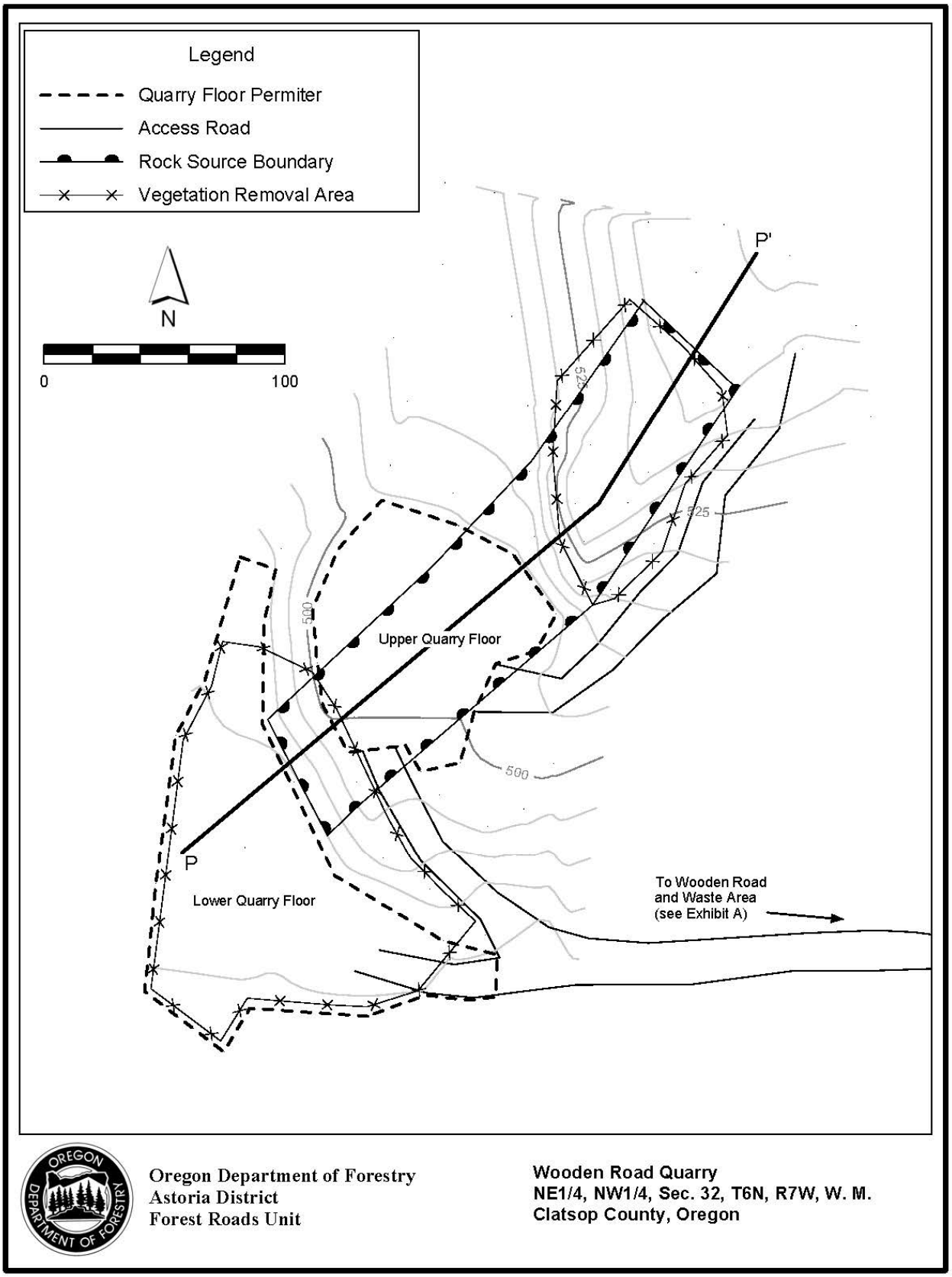
9. Oversized material that is produced or encountered during development shall be broken down and utilized for crushing.

10. STATE will require screening and/or rejecting of materials utilized for production of crushed rock for the purpose of removing fine material.

11. 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.

12. 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.

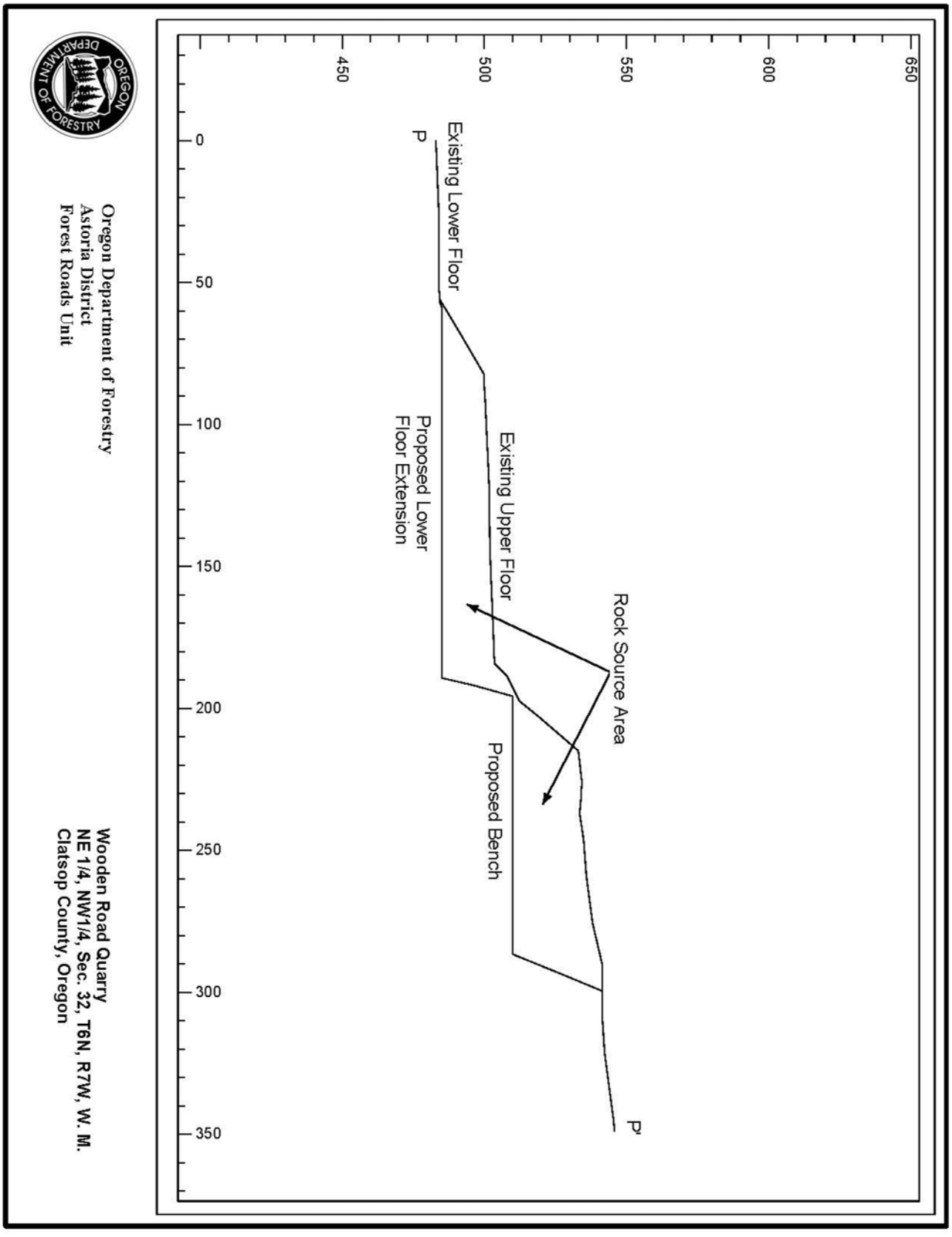
EXHIBIT F
ROCK QUARRY DEVELOPMENT AND USE




Oregon Department of Forestry
Astoria District
Forest Roads Unit

**Wooden Road Quarry**
**NE1/4, NW1/4, Sec. 32, T6N, R7W, W. M.**
**Clatsop County, Oregon**

EXHIBIT F
ROCK QUARRY DEVELOPMENT AND USE



# EXHIBIT G

## CRUSHED ROCK SPECIFICATIONS

Materials. The material shall be fragments of rock crushed to the required size. The material shall be free from vegetation and lumps of clay. STATE will require screening and/or rejecting of materials utilized for production of crushed rock for the purpose of removing fine material at Wooden Road Quarry. Rock crushing shall be limited to periods when weather conditions are acceptable to STATE.

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

Rock strength: for rock not produced from STATE quarries, the material from which base material is produced or manufactured shall meet the following test requirement for Aggregate Hardness - Test Method AASHTO T 96, 35 percent Maximum.

For the purpose of crushing rock specified under the projects in Section 2610, “Project Work,” PURCHASER shall utilize a three-stage rock crusher, or equivalent, unless otherwise approved by STATE.

The rock crusher shall be calibrated to produce rock as specified in this exhibit. Prior to the commencement of production crushing, PURCHASER shall sample, test, and provide rock test results meeting STATE specifications. STATE may then sample and test crushed rock for approval to proceed. PURCHASER shall take one sample of each 2,000 cubic yards of crushed rock material produced thereafter, using approved AASHTO sampling procedures. PURCHASER shall submit samples to a certified laboratory or shall perform testing for gradation requirements using AASHTO T 11 and AASHTO T 27 testing procedures. Prior to testing, each sample shall be split, making one-half of the sample, with proper identification, available for testing by STATE. Each sample and the results of PURCHASER testing shall be made available to STATE within 24 hours of sampling. Any rock crushed prior to STATE approval to proceed shall not be credited to the required rock quantity. Any subsequent rock tests not meeting STATE specifications shall be reason for rejection of that portion of crushed rock produced after that test and shall not be credited to the required rock quantity. STATE may sample the crushed rock at any time during the operation. Results of STATE’s tests shall prevail over all other test results.

EXHIBIT G

CRUSHED ROCK SPECIFICATIONS

Grading Requirements

| | | | |
|---|---|---|---|
| For 1½"-0" | Passing | 2" sieve | 100% |
| | Passing | 1½" sieve | 90-100% |
| | Passing | 3/4" sieve | 60-90% |
| | Passing | 1/4" sieve | 30-50% |
| | Passing | No. 10 sieve | 15-30% |
| | Passing | No. 40 sieve | 7-15% |
| For 4"-0" | Passing | 5" sieve | 100% |
| | Passing | 4" sieve | 90-100% |
| | Passing | 2" sieve | 60-90% |
| | Passing | 3/4" sieve | 35-60% |
| | Passing | 1/4" sieve | 15-35% |
| | Passing | No. 10 sieve | 0-20% |

The referenced sieve shall have square openings as set forth in AASHTO M 92, Woven Cloth Series. The determinations of size and gradation shall be as set forth in AASHTO T 27.

PIT-RUN and RIPRAP ROCK SPECIFICATIONS

| | | | |
|---|---|---|---|
| For Jaw-Run | Passing | 6" sieve | 100% |
| | Passing | 3" sieve | 45-65% |
| 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"-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.

Control of gradation shall be by visual inspection by STATE.

# EXHIBIT H

## TEST DRILLING REQUIREMENTS

(1) PURCHASER shall notify STATE a minimum of 48 hours prior to beginning any operations. A STATE Representative shall be present during test drilling to monitor results, issue instructions, determine test hole locations and depths.

(2) Work scheduling shall provide for continual operation until contract work is completed, unless interrupted by poor weather, fire closures, or other uncontrollable circumstances, Equipment breakdowns shall be repaired without undue delay, and provision shall be made for replacement of equipment to prevent prolonged delays. Any exception to these instructions must be authorized in writing by STATE.

(3) The hydraulic rock drill shall be a crawler-type in the 40,000 pound class or greater, with a minimum penetration rate of 120 feet per hour while drilling a 3½”-6” bore hole, in overburden, fractured rock and solid rock.

(4) The operator shall be experienced in operating the required equipment and be able to operate the equipment proficiently and efficiently. If STATE determines that an operator(s) or other personnel is/are not operating in a proficient and efficient manner, STATE considers the operator(s) or personnel not approved and not acceptable and may require the PURCHASER to do one or more of the following measures:

Replace operator(s) and/or personnel;
Replace equipment;

(5) Support including transport, other equipment, replacements, supplies, maintenance, and repairs shall be furnished as required to complete work; and shall be furnished without cost to STATE.

(6) Test holes shall be drilled to determine mass attitudes of rock strata, rates of drill advancement, depths of overburden and other pertinent information.

(7) Each test hole shall be staked and assigned an individual number. Test holes shall be drilled for various depths, as directed by STATE.

(8) STATE may elect to change the test drilling locations at the drilling sites. However, no more than a total of 19 hours of hydraulic rock drill time and 9 hours of small excavator time will be utilized.

(9) Equipment trail construction will be required. Trails shall be constructed by PURCHASER using a small excavator. All routes and location of access trails shall be flagged and approved by STATE prior to construction.

(10) Cutting of trees may be necessary for access for test drilling. Trees to be cut shall be approved by STATE. Trees cut at the test drilling sites shall be, properly accounted for prior to felling, decked as directed by STATE, and shall remain the property of the STATE.

(11) Trails constructed shall be water barred and blocked, as directed by STATE.

EXHIBIT H

TEST DRILLING REQUIREMENTS

(12) Record Keeping. PURCHASER shall keep an accurate log of operating time (exclusive of standby time, repair delays, down time, etc.) and invoices for all equipment, and submit it to the STATE Representative upon request. STATE shall provide the form for recording the required log. If the log is determined by STATE to not be complete or accurate, then PURCHASER shall not get credited for all or a portion of the work, as determined by STATE.

(13) Site Priority. Test drilling priority shall be as listed and shall be completed prior to August 31, 2017.

| Priority | Site Location |
|---|---|
| 1. | Wooden Road Quarry (Drill Site #1) |
| 2. | Swede Quarry (Drill Site #2) |

(14) Penalty. A penalty of $250 per day shall be assessed for any 8-hour work day that either equipment, personnel, or supplies are not operating or available due to failure to supply approved and acceptable equipment, personnel, or supplies in order to continue the project for priority sites one and two in an efficient and progressive manner.

(15) Credit Rates. Rates credited toward completion of the project will be applied for periods of active operation on the project work only and exclusive of initial move in of equipment or supplies. The method of crediting PURCHASER will be determined by applying the following credit rates for equipment and mobilization.

| | | |
|---|---|---|
| (a) | C315 excavator, or equivalent, and operator. | $101 per operating hour |
| (b) | Hydraulic drill (3½”-6” bore hole), and operator. | $307 per operating hour |
| (c) | C315 mobilization with lowboy. | $805 per approved move |
| (d) | Hydraulic drill mobilization with lowboy. | $1,406 per approved move |
| (e) | Hydraulic drill mobilization partial move. | $703 per approved move |

(16) Credit for Project Work. Final credit for Project No. 4 shall not exceed $9,656 per Section 2630, “Credit for Project Work,” in the Timber Sale Contract. STATE may adjust the credit in Section 2630 in the event that the work is completed prior to using all available credit rates.

EXHIBIT I

TYPE F STREAM CROSSING STRUCTURE

PURCHASER shall install one fish passable Type F structure. Culvert shall be 12 gauge Aluminized Steel.

GENERAL TYPE F CONSTRUCTION SPECIFICATIONS

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

(b) Remove the existing embankment and culvert to accommodate the work area for stream crossing construction. Existing embankment(s) shall be excavated to the natural stream course level. All woody debris encountered during excavation shall be removed.

(c) Salvage onsite existing riprap material for reuse as riprap for the new structure.

(d) Excavated debris and materials unsuitable for embankment construction shall be end hauled to the designated waste area, as directed by STATE. The existing, removed culvert, shall be hauled to an approved refuse site off of STATE land.

(e) 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 seeded and mulched as per Exhibit M. 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.

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

(g) A minimum 2 cubic-yard, track-mounted excavator shall be used for all excavation, stream channel development, and riprap placement.

(h) Grass seed and straw mulch shall be applied to all exposed areas, bare soils and waste materials as directed by STATE in accordance with Exhibit M.

(i) De-watering of the work site shall be accomplished according to PURCHASER's STATE approved plan and prior to the removal of any additional fill material for the development of the culvert bed, and stream channel. The work site shall be de-watered by the use of cofferdams, pumps, temporary diversion ditches and/or drainage structures.

(j) Remove existing fill, culvert, and any logs or woody debris.

(k) Type "F" stream fill reconstruction must allow free passage of fish as provided in the Oregon Forest Practice Rules. Modifications of the existing culvert geometry shall be required to allow free passage of fish.

(l) Use of an on-site hydraulic rock hammer may be required for the breaking of rock strata encountered during the development of the culvert bed.

(m) Remove additional fill and logs or woody debris for the development of the new culvert bed. The new culvert bed will be different horizontally and vertically from the existing culvert bed. The new culvert inlet for Road Segment I3 to I4, Station 1+00, shall be 4.7 feet deeper than the existing culvert inlet and extend downstream at a -6% gradient. The new culvert inlet and outlet coordinates are designated on pages 3 and 4 of this exhibit.

EXHIBIT I

TYPE F STREAM CROSSING STRUCTURE

SPECIFIC CULVERT INSTALLATION SPECIFICATIONS

**Road Segment I3 to I4 (Sta. 1+00)**

(a) Develop the stream channel for a distance of 45 feet upstream of the inlet of the culvert, as directed by STATE. The stream channel width shall be 8.3 feet and stream channel banks shall be sloped at 1½:1. Utilize 22 cubic yards of 24”-6” riprap rock to armor the developed stream channel, as directed by STATE.

(b) Utilize 22 cubic yards of 24”-6” riprap rock (streambed retention material) placed and embedded at the outlet of the new culvert to establish the stream channel elevation and allow stream sediment materials to settle in the barrel of the pipe.

(c) Utilize recovered stream cobble on both the inlet and outlet to assist in the formation of a new stream bed. At the culvert inlet taper cobble into the barrel of the culvert as directed by STATE. At the outlet inter-mingle the cobble with the 24”-6” riprap as directed by STATE.

(d) Fill reconstruction backfill shall consist of suitable onsite excavated material and borrowed material, as directed by STATE. Backfill shall be compacted as specified in Exhibit D. Riprap rock shall be placed and tamped at a 1½:1 slope for a minimum thickness of 2 feet beginning at the toes.

(e) Utilize 66 cubic yards 1 1/2”-0” crushed rock for culvert bedding material, and 220 cubic yards of 1 1/2”-0” crushed rock for backfill around culvert haunches and to cover the top of the culvert. Bedding and top cover shall be a minimum of 12” compacted depth.

(f) Utilize 187 cubic yards of 24”-6” riprap rock for fill armor material placed and tamped at a 1½:1 slope for a minimum thickness of 2 feet beginning at the toes.

(g) Finished subgrade shall be at least 20 feet in width.

EXHIBIT I

TYPE F STREAM CROSSING STRUCTURE

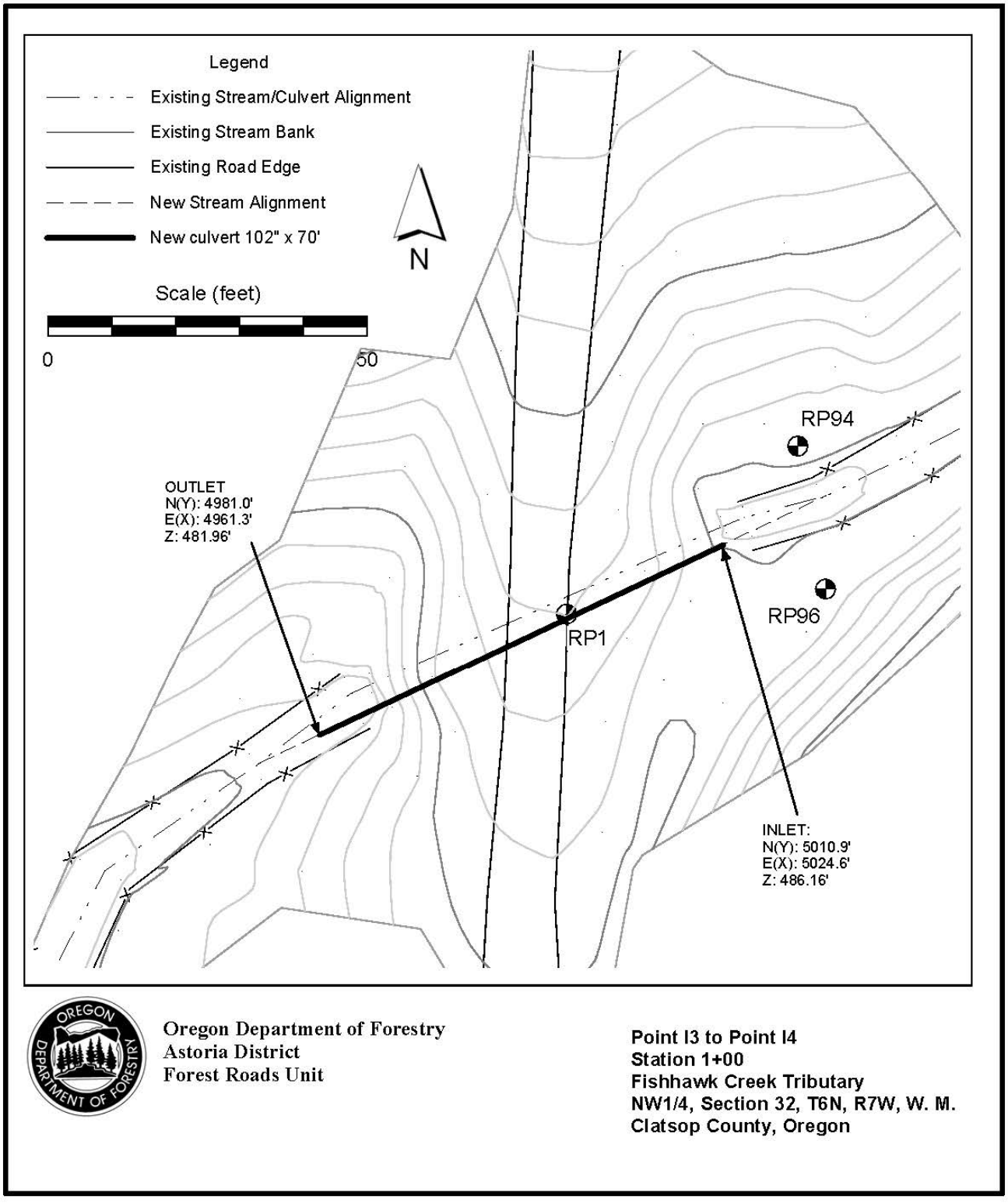
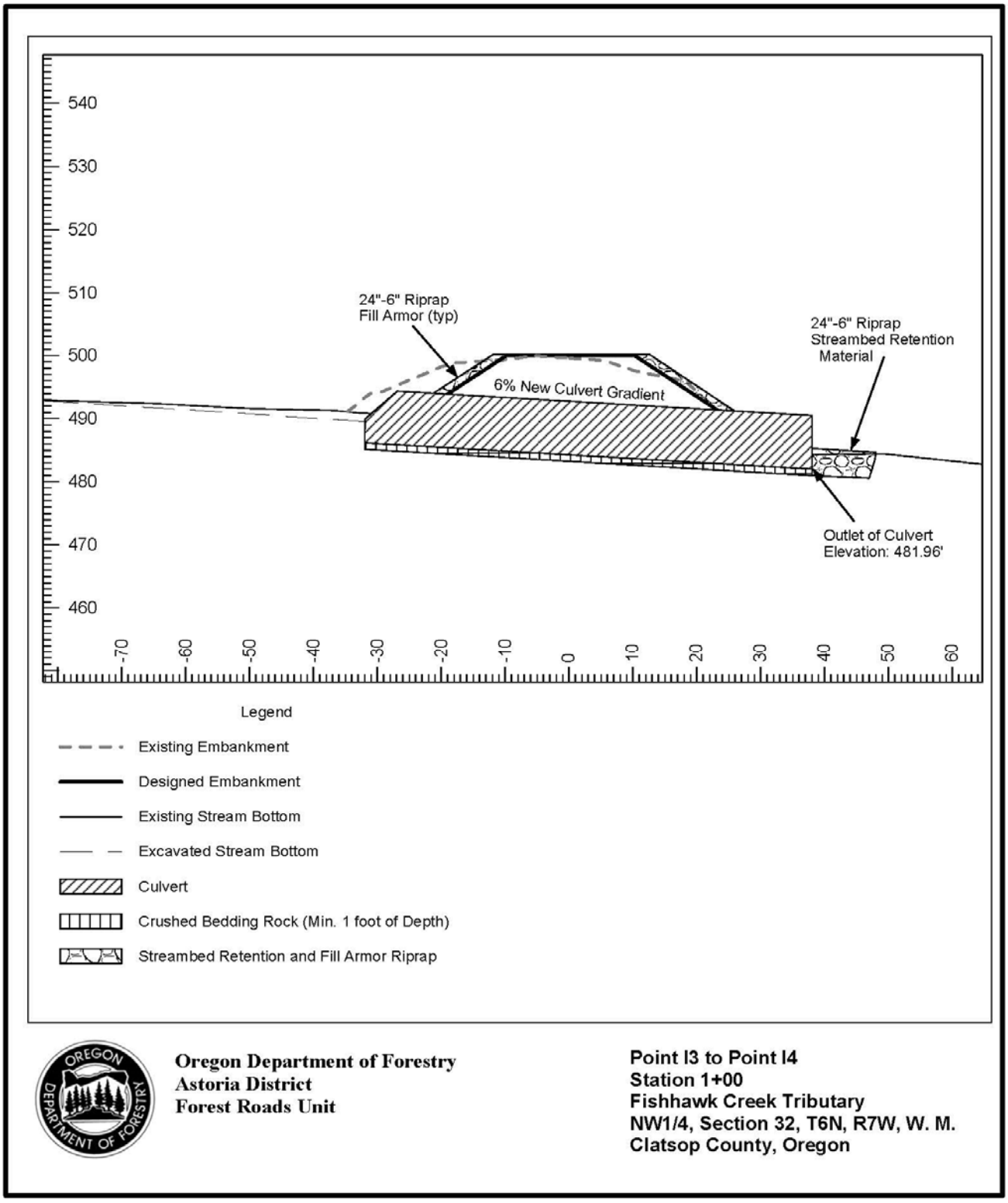


EXHIBIT I

TYPE F STREAM CROSSING STRUCTURE




**Oregon Department of Forestry**
**Astoria District**
**Forest Roads Unit**

**Point I3 to Point I4**
**Station 1+00**
**Fishhawk Creek Tributary**
**NW1/4, Section 32, T6N, R7W, W. M.**
**Clatsop County, Oregon**

State Timber Sale Contract
No. 341-15-04
Swede Retreat

EXHIBIT J

TYPICAL EMBEDDED ENERGY DISSIPATOR

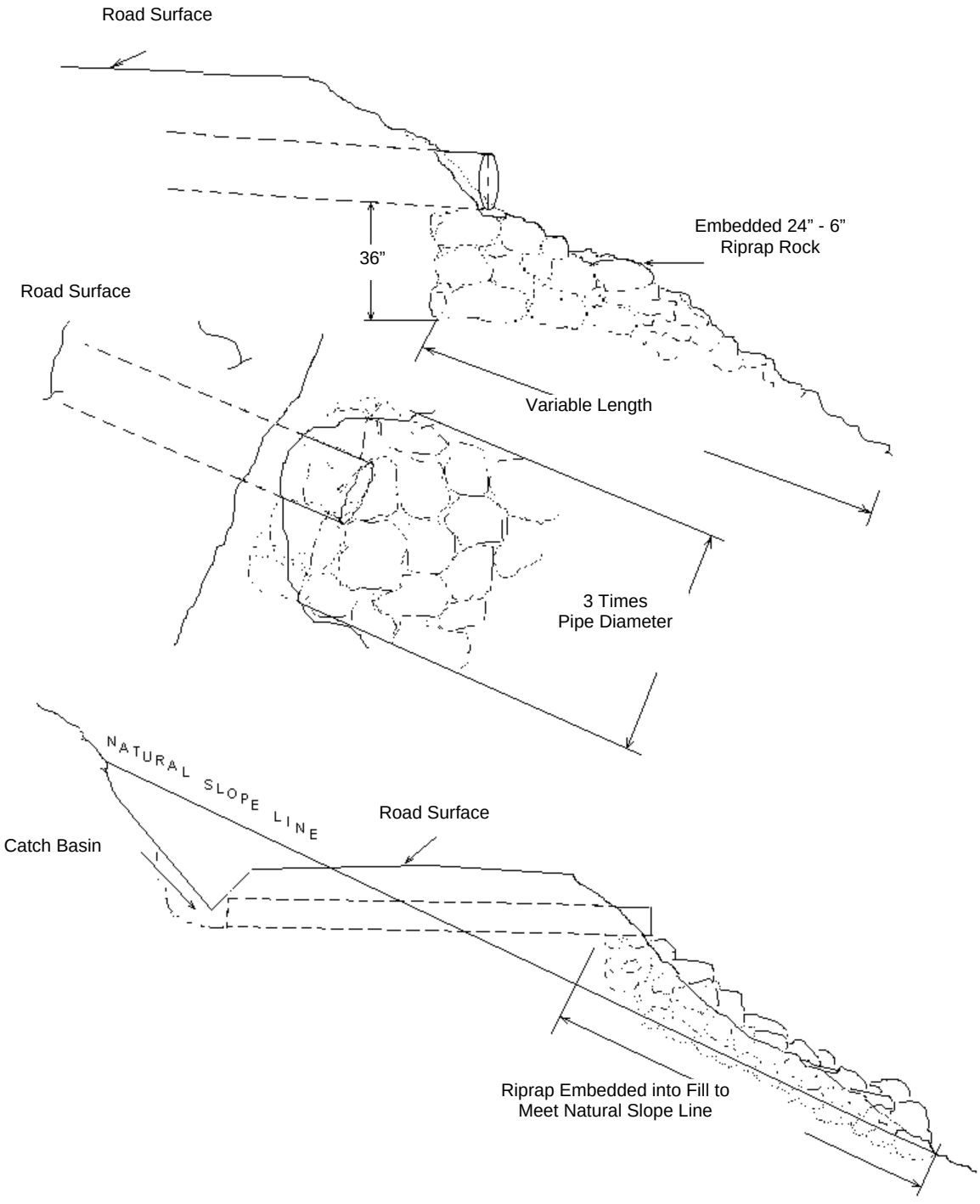


EXHIBIT K

ROAD BRUSHING SPECIFICATIONS

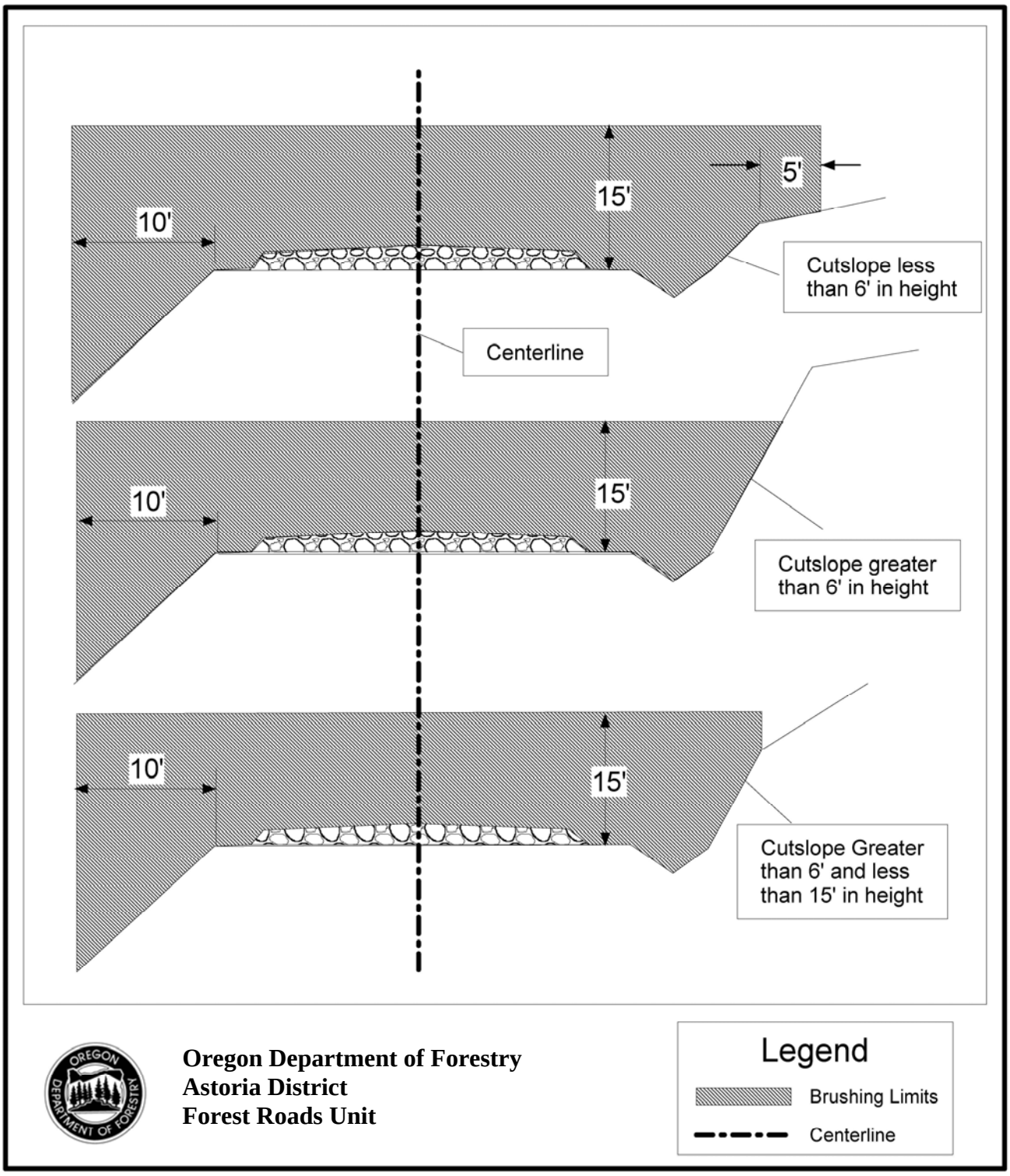


EXHIBIT K

ROAD BRUSHING SPECIFICATIONS

REQUIREMENTS

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

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

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

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

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

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

Operator shall utilize excavator to pull vegetation out of road running surface when existing vegetation density makes the road undriveable.

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

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

EXHIBIT L

ROADSIDE SPRAYING SPECIFICATIONS

REQUIREMENTS

The PURCHASER shall conduct roadside spray treatments on the roads shown on the Exhibit A, for an estimated 28 miles (136 acres) to be treated. As directed by STATE representative, PURCHASER shall apply the prescribed herbicide mix to all foliage/vegetation on the road surface and within twenty (20) horizontal feet from the road edge, vehicle turnouts, and landings. The application shall be made to wet all the foliage, but not to the point of significant runoff.

PURCHASER shall provide one (1) Application Truck with an applicator, licensed in the State of Oregon; driver; support; required chemicals; ground personnel; and all facilitating equipment for roadside spray treatments on forest roads. Additional equipment and support personnel may be utilized with written approval from STATE.

During the last year of this Timber Sale Contract, spraying is to be conducted between June 1, 2017 and August 15, 2017, during dry weather periods, unless otherwise approved by STATE.

Buffer Zones. A buffer strip ten (10) feet wide shall be left unsprayed along each side of all live streams and open water or in other areas as directed by STATE. A buffer strip sixty (60) feet wide shall be left unsprayed along ESA listed streams as directed by STATE.

INSPECTION. Satisfactory work shall be determined from visual reconnaissance by STATE, once die-off has begun. If greater than 10 untreated plants per mile of road side are identified then the work is deemed unsatisfactory. PURCHASER shall be required, without cost to STATE, to re-treat areas that are not treated according to specifications in this exhibit.

SPRAY EQUIPMENT. PURCHASER shall furnish one application truck with a metered injection sprayer. The sprayer must have at minimum two injection units and a water supply tank that has a minimum 50 gallon capacity. The application truck shall have at least one spray gun or wand connected to a minimum of 50 feet of hose. All vehicles shall have the power to negotiate roads in the contract area with a full load. PURCHASER shall furnish all equipment necessary to prepare the specified chemical mixtures. Quantities shall be measured as accurately as possible using calibrated dip sticks or other approved means of measuring liquids. The application truck shall be equipped with an agitation system capable of keeping the herbicide evenly distributed in the tank. Each application truck shall be equipped with a pump capable of rapid filling and mixing. Any deviation from the above specifications must be approved by STATE in writing.

(a) The spraying equipment shall be capable of disseminating the liquid chemical mixture at a measured rate.

(b) Handgun, wand type, or any other spray systems shall be designed to receive spray nozzles with changeable orifices and shall operate under controllable pressure to the spray nozzle. The system must be leak proof with the nozzles equipped with diaphragm check valves or equivalent to assure positive shutoff.

(c) Nozzles shall be maintained free of plugs to assure a uniform application of sprayed mixture. Replacement nozzles and diaphragms shall be kept with each application truck for use whenever a nozzle is determined to be leaking.

(d) The spraying equipment shall be capable of operating at an even nozzle pressure. The lowest nozzle pressure recommended by the nozzle manufacturer shall be used to reduce the potential of off-target drift.

(e) Equipment shall be maintained to operate efficiently and to prevent leakage of chemicals, carriers, or spray mixture.

EXHIBIT L

ROADSIDE SPRAYING SPECIFICATIONS

(f) Contractor shall furnish portable pumps with necessary suction hose and feed hoses to supply the application truck with water from streams. This unit will be used for water only. An air gap separation or suitable back-flow preventer shall be provided where mixing water is obtained by direct connection to a domestic water supply or where water is taken from streams or ponds. Portable pumps shall be equipped with a fish screen that complies with Section 2415. Protection of Watershed. of this contract and the Oregon Department of Fish and Wildlife Small Pump Screen Self-Certification Form.

(g) Equipment shall be maintained to operate efficiently and to prevent leakage of chemicals, carriers, or spray mixture.

WEATHER RECORDS. PURCHASER's applicator is required to maintain hourly weather records when spraying. PURCHASER's applicator must have equipment available to accurately determine wind speed, direction, temperature and relative humidity. Documentation of hourly weather condition will be on a form provided by STATE. Weather records shall be readily available for inspection by STATE's representative.

TRACKING RECORDS.

(a) PURCHASER's applicator is required to record start and stop points/coordinates using the aid of a GPS (Global Positioning System) on the areas of herbicide application. The points/coordinates shall be recorded in longitude and latitude expressed in decimal degrees and decimal places shall be carried out to achieve at least 35 feet accuracy. WGS84 shall be the datum used for the coordinates. The data shall be submitted in the form of a layer compatible to ArcGIS10 or other format as specified by STATE.

(b) The PURCHASER's applicator is required to record on an ODF map, areas of herbicide application.

CHEMICALS.

(a) PURCHASER shall furnish the herbicide chemicals listed in the Spray Mixture Table. All chemicals shall be registered and applicable for forest and right-of-way uses.

(b) STATE reserves the right to add surfactants or drift control chemicals to enhance spray and brush contact or protect streams and private property. All chemicals shall be registered and applicable for forest and right-of-way uses.

(c) Water shall be the basic carrier.

(d) All chemicals and carriers shall be transported to mixing or project site by PURCHASER. Mixtures shall be transported from mixing sites to project sites and from area to area by PURCHASER.

(e) PURCHASER shall be responsible for chemical storage, decontamination treatment, and transportation of empty chemical containers to an authorized disposal site.

(f) SPRAY MIXTURES. Refer to Exhibit A for location of application areas and Spray Mixture Table for spray mixtures.

Spray Mixture Table

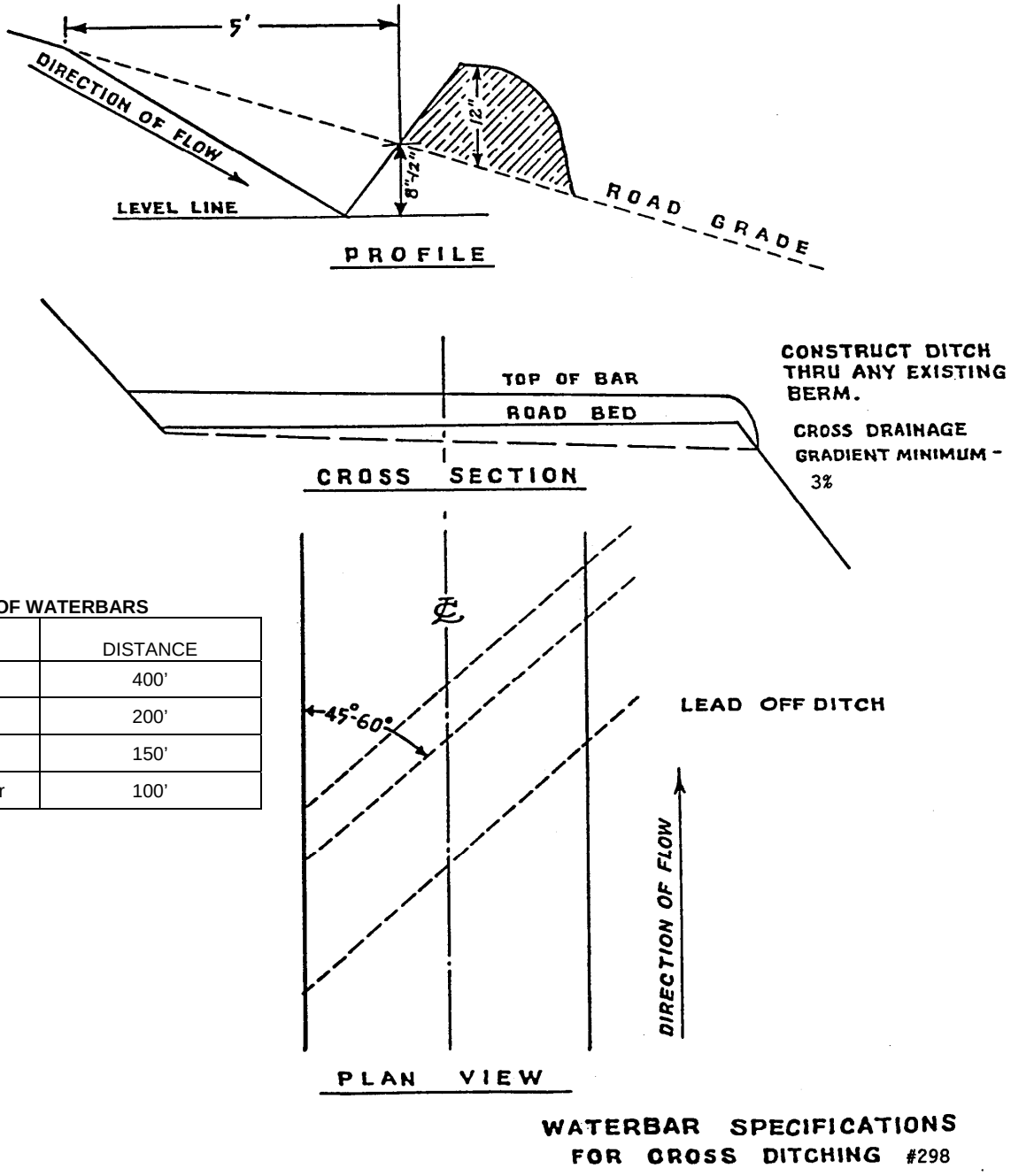
| Area Description | Herbicide | Application/Acre |
|---|---|---|
| Area Shown on Exhibit A | Accord XRT | 48 ounces |
| | *Forestry Garlon XRT | 42 ounces |
| | 2, 4-D LV6 | 48 ounces |
| | MSO | 32 ounces |

*Interior to ODF property only and not within 1/8 mile of structures.

Timber Sale Contract
No. 341-15-04
Swede Retreat

EXHIBIT M

WATERBAR SPECIFICATIONS




**SPACING OF WATERBARS**

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

# EXHIBIT N

## 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.

(1) Tree Removal. Cut or remove all trees necessary to access the project area and to facilitate vacating operations, as directed by STATE.

(2) Fill Removal and Stream Channel Development. Remove fills to the natural stream course level(s). Stream channel(s) shall be excavated/developed to specified widths. Developed stream banks shall be sloped at natural contours or no steeper than 1 ½:1, as directed by STATE.

(3) Use of Excavated Materials.

(A) Fill Excavation and Sidecast Pullback. Excavated materials shall be placed on the interior (cut) side of the skid 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.

(4) Erosion Control. Erosion control shall be completed in a progressive manner.

All excavated material and bare soil shall utilize grass seed and straw mulch approved by STATE and in accordance with the specifications in Exhibit O. Applied mulch shall be a minimum of 2 inches deep and provide a uniform cover.

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

(6) 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.

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

(8) 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 | Work Description |
|---|---|
| V1 | Remove existing puncheon. Develop a 3 foot wide channel. Banks shall be sloped 2:1, as directed by STATE. Fill material is to be placed on either side of the existing puncheon and blended into the existing grade. |
| V2 | Remove existing puncheon. Develop a 3 foot wide channel. Banks shall be sloped 2:1, as directed by STATE. Fill material is to be placed on either side of the existing puncheon and blended into the existing grade. |

State Timber Sale Contract
No. 341-15-04
Swede Retreat

EXHIBIT O

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 No. 2 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:

| Road Segment | Location | Road Segment | Location |
|---|---|---|---|
| Project No. 2 | Waste Areas | V1 and V2 | Exposed Soils |
| I1-I2, I3-I4, I5-I6, I7-I8 | Exposed Soils | | |
| A to B | Waste Areas | | |

State Timber Sale Contract
No. 341-15-04
Swede Retreat

EXHIBIT P

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 4 of this Timber Sale or at other locations acceptable to STATE. Trees have been pre-selected for this project and are marked with a blue "S" within the boundaries of Area 4.

(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 | STATE shall select six sites along 1,700 feet of stream between SE1 to SE2. Each site shall have two key logs at least 50 feet long and greater than 25 inches in diameter with root wads attached (where available) and two to four additional pieces greater than 15 inches in diameter and at least 30 feet long, preferably with root wads attached, for a total of 12 key logs and 12 to 24 additional pieces of wood. Logs shall be placed as directed by STATE. |

EXHIBIT Q

FOREST ROAD GATE DESIGN, CONSTRUCTION, AND INSTALLATION

Hinged Swing Gate

PURCHASER shall design, construct, and install one hinged swing gate at the beginning of road segment 4A to 4B at station 1+00, as directed by STATE.

The project requires site visitation, preliminary design and approval, final design and approval, gate construction (including painting), and installation at the above location.

PROJECT REQUIREMENTS AND MINIMUM SPECIFICATIONS

(a) Coordinate site visitation, preliminary designs, and final design, construction, and installation of gate with STATE.

(b) Site visitation to determine the direction of swing and width for gate.

(c) A preliminary detailed design proposal shall be submitted to STATE of the proposed gates to be installed and obtain written approval by STATE. STATE is responsible for timely review of preliminary design and giving approval to prepare a final design. The design shall meet the following specifications:

(1) The gate shall be a hinged swing gate. The structure shall have an underground cross-arm and stabilizers.

(2) The gate opening shall be a minimum of 16 feet, and no more than 20 feet. The total structure height shall be a minimum of 8 feet.

(3) The gate shall be constructed with steel component materials as shown on page 2 of this Exhibit, unless approved in writing by STATE. The Stabilizer shall be a minimum of 3 feet in length, extending from the posts; with a total minimum length of 6 feet.

(4) A blocking post shall be installed beside the road in the direction of the swing on the hinge side of the road; and have a three foot chain attached for securing the gate in the open position. The blocking post shall be constructed with a minimum of 6” SCH 40 steel pipe.

(5) The tops of all posts shall have 1/4” caps.

(6) The gate shall utilize a lock box capable of a minimum of two locks. The PURCHASER shall supply a minimum of 2 splitters and one pin. The pin shall be permanently connected to the lock box with chain.

(7) Prior to painting, gate and posts shall be cleaned and free of rust scale. Paint with a rust resistant primer coat and a topcoat of a rust resistant high visibility yellow paint.

(d) The final detailed design shall be submitted to STATE for written approval before construction. STATE is responsible of timely review of the final design and giving approval to proceed with construction.

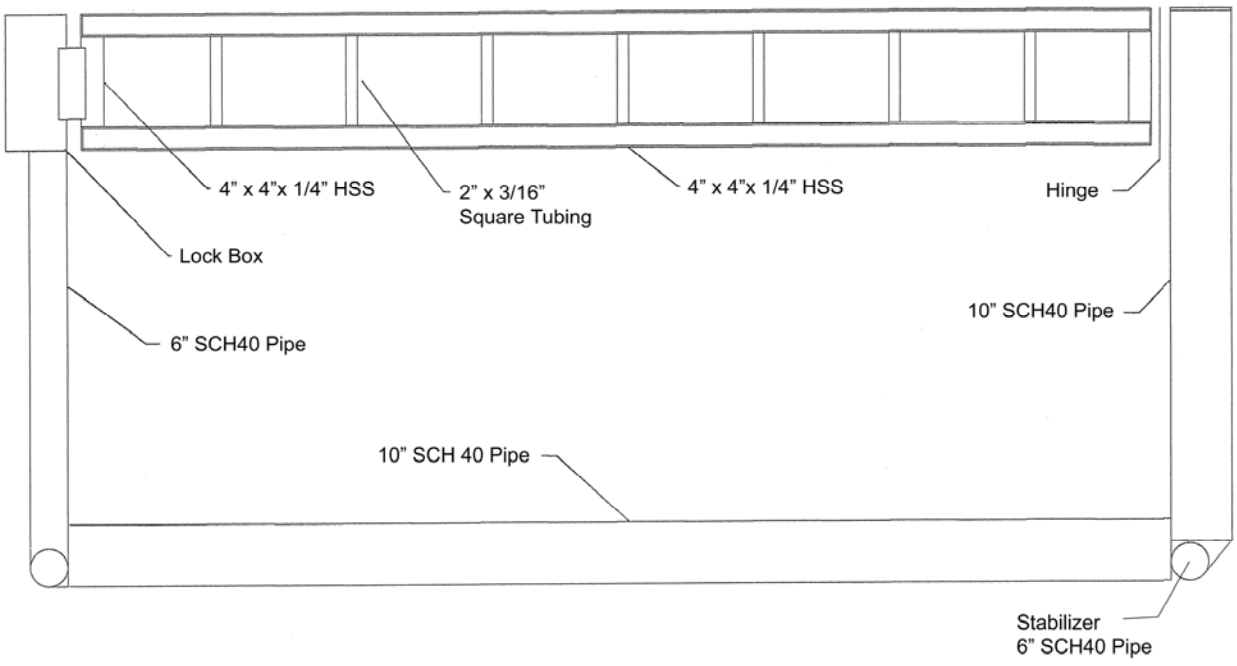
(e) Construct the gate as to the specifications above and to the approved final design.

(f) Install the gate at the proper location and as approved by STATE.

EXHIBIT Q

FOREST ROAD GATE DESIGN, CONSTRUCTION, AND INSTALLATION

Hinged Swing Gate



# *PART IV: OTHER INFORMATION*

State Timber Sale Contract
No. 341-15-04
Swede Retreat

## FOREST PRACTICES ACT "WRITTEN PLAN"

## Operating within 100 feet of a Type F or Type D stream
## Roadside Spraying

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

**Protected Resources:**
The Type F streams located in portions of Sections 17, 18, 19, 20, 29, 30, 31, and 32 T6N, R7W, and portions of Sections 13, 24, and 25 T6N, R8W, W.M., Clatsop County, Oregon. See attached maps.

**Specific Site Characteristics:**
Roadside spray treatment of foliage will be performed on approximately 27 miles of forest road in the area listed above. The treatment shall be applied to all foliage/vegetation on the road surface and within twenty (20) horizontal feet from the road edge, vehicle turnouts, and landings. No Type D streams are present in the treatment area.

**Practices:**
Along the Type F streams in the area listed above, as well as all other perennial Type N streams and other open water not listed, the following practices are required under the timber sale contract:

- The application will be made to avoid significant runoff.
- The application will be made during dry weather periods, unless otherwise approved by STATE.
- A buffer strip ten (10) feet wide shall be left unsprayed along each side of all Type N streams and open water or in other areas as directed by STATE. A buffer strip sixty (60) feet wide shall be left unsprayed along streams classified as Type F or Type D or as directed by STATE.
- The application will be made in a direction away from all streams or other open water.
- All chemical mixing will be performed on a road or landing at least 250 feet away from open water.
- All equipment will be kept in a leak proof condition.
- Equipment will be cleaned in a location that will protect all streams and other open water.
- A separate portable pump with filler and suction hose will be used to withdraw water from streams and other open water. This pump will be used for water only. An air gap or suitable back-flow preventer will be used where mixing water is obtained by direct contact to a domestic water supply of where water is taken from streams or other open water.
- The application will be made by a licensed commercial applicator and supervised by an individual who has a public pesticide applicator's license.

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 or Type D streams. I agree to the protection measures listed on this plan:

Submitted: _____ Date: _____
Purchaser/Operator Contract Representative

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

# FOREST PRACTICES ACT "WRITTEN PLAN"
# Fill greater than 15 Feet

## Swede Retreat Timber Sale

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

**Protected Resources:**

**Road Segment I1 to I2,** (Sta. 2+95): A tributary of Fishhawk Creek, a small perennial Type N resource, located in the NW1/4, Section 32, T6N, R7W, W.M., Clatsop County, Oregon.

A written plan is required for fills greater than 15 feet in height.

**Situation:**
The current structures are failing.

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

**Drainage Area and Structure Design:** On segment I1 to I2 (Sta. 2+95), the existing 18" diameter and 70' long perennial stream crossing structure will be replaced with a 18" diameter, 70' long, 14 gage aluminized steel round culvert pipe.

| | |
|---|---|
| Road segment: | Point I1 to I2 (Sta. 2+95) |
| New Stream Gradient: | 10% |
| Size of Watershed: | 2.5 acres |
| Average Stream Width: | 1 foot |
| Streambed material: | Cobble, Sand, Gravel, bedrock |
| 50 Year Peak Flow/Mi.$^2$: | 325 cfs |
| 50 Year Peak Flow: | 1.27 cfs |
| Flow Capacity of New Structure: | 5.39 cfs |

**Resource Protection Measures:**

- In water work is only allowed from July 1 through August 31.
- 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.
- 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.
- 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.

# FOREST PRACTICES ACT "WRITTEN PLAN"
## Fill greater than 15 Feet

## Swede Retreat Timber Sale

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practices Act regarding the operations conducted when, fill work exceeds 15 feet in height. I agree to the protection measures listed on this plan.

Submitted _____ _____
Purchaser/Operator Date

Attachments: Exhibit A
Original: Salem
Copies: Operator, Purchaser, District File, Forest Roads Unit, Jewell Unit

# FOREST PRACTICES ACT "WRITTEN PLAN"
## Type F Crossing and Fill greater than 15 Feet

## Swede Retreat Timber Sale

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

**Protected Resources:**

**Road Segment I3 to I4,** (Sta. 1+00): A tributary of Fishhawk Creek, a small Type F fisheries resource, located in the NW1/4, Section 32, T6N, R7W, W.M., Clatsop County, Oregon.

A written plan is required for any activity within 100 feet of any Type F stream and for fills greater than 15 feet in height.

**Situation:**

The current structures are failing, are undersized, and are a partial blockage to fish passage upstream.

**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.

**Road Segment I3 to I4,** (Sta. 1+00)**. Drainage Area and Structure Design:** The existing stream crossing structure will be replaced with a 70' long, 102" diameter 12 gage aluminized steel round culvert pipe, embedded 40.8", with the inlet step beveled. The stream crossing will utilize a streambed simulation strategy and preserve a natural stream channel, a maximum of 8.5 feet wide. The stream crossing will meet or exceed the requirements of the FPA for type F stream crossings. The culvert barrel will be seeded with on-site stream cobble if available.

| | |
|---|---|
| New Stream Gradient: | 6% |
| Size of Watershed: | 96 acres |
| Average Stream Width: | 8 feet |
| Streambed material: | Cobble, Sand, Gravel, bedrock |
| 50 Year Peak Flow/Mi.$^2$: | 325 cfs |
| 50 Year Peak Flow: | 48.8 cfs |
| Flow Capacity of New Structure: | 283.5 cfs |

# FOREST PRACTICES ACT "WRITTEN PLAN"
# Type F Crossing and Fill greater than 15 Feet

## Swede Retreat Timber Sale

**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.
- 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 I
Original: Salem
Copies: Operator, Purchaser, District File, Roads Unit, Jewell Unit

State Timber Sale Contract
No. 341-15-04
Swede Retreat

# Forest Practices Act
# "WRITTEN PLAN"

## For operating within 100 feet of a Type F Stream

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

**Protected Resources:**
Hamilton Creek and unnamed tributaries of Fishhawk Creek located in portions of Section 29, 30, and 32, T6N, R7W, W.M., Clatsop County, Oregon.

**Specific Site Characteristics:**

1. Unnamed trib. to Fishhawk Creek (Small Type F) borders the west and southwest boundary of Area 2.
2. Unnamed trib. to Fishhawk Creek (Small Type F) borders the west and southeast boundary of Area 3.
3. Hamilton Creek (Large Type F) borders the east boundary of Area 4.

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

All Type F buffers are posted outside the 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.

**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 ground based logging equipment will be permitted within 100 feet of Type F streams.
- No trees will be felled within the Type F 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.
- 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. 341-15-04
Swede Retreat

# Forest Practices Act
# "WRITTEN PLAN"
# For Project 7, Stream Enhancement
# Swede Retreat Timber Sale

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

**Protected Resources:**
Hamilton Creek (Large Type F stream) - The affected portion is located in Section 32, T6N, R7W, W.M., Clatsop County, Oregon.

ODF and ODF&W Aquatic and Riparian Specialists have developed a plan for the creation of stream enhancement structures at six locations along Hamilton Creek east of Area 4 of the Swede Retreat timber sale and north of Highway 202 for a distance of approximately 1,700 feet.

**Specific Site Characteristics:**
**Hamilton Creek:** The streambeds are approximately 20 to 25 feet wide with low to moderate stream-bank slopes. Streamside vegetation is dominated by mature red alder, conifer, and salmonberry.

**Tree and Vegetation Retention:**
All logs for stream placement will be taken from Area 4. Vegetation disturbance in the RMA's will be kept to a minimum. There will not be any harvesting permitted within the RMA.

**Practices:**
Six stream enhancement structures will be constructed using ground based equipment between points SE1 and SE2. Each structure will be created by placing four to six conifer logs (two logs greater than 25 inches DBH and 50 feet long with root wads attached and two to four bucked lengths) 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"
Original: Salem
CC: Operator, Purchaser, District file, Jewell Unit

State Timber Sale Contract
No. 341-15-04
Swede Retreat

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. 341-15-04
Swede Retreat

# 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