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

# EXHIBIT B
# TIMBER SALE OPERATIONS PLAN

(See page 2 for instructions)

Date Received by State: _____

(5) State Brand Information ( Complete)

(1) Contract Number: FG-341-2025-W01017-01

(2) Sale Name: Finger Creek

(3) Contract Expiration Date: 10/31/2027

(4) Purchaser Name: _____

(6) State Representatives:

| Name | Circle One | Phone No. | Cell No. | Alt Phone |
|---|---|---|---|---|
| | Logging Projects All | | | |
| | Logging Projects All | | | |
| | Logging Projects All | | | |
| | Logging Projects All | | | |

(7) Purchaser Representatives:

| Name | Circle One | Phone No. | Cell No. | Alt Phone |
|---|---|---|---|---|
| | Logging Projects All | | | |
| | Logging Projects All | | | |
| | Logging Projects All | | | |
| | Logging Projects All | | | |
| | Logging Projects All | | | |
| | Logging Projects All | | | |
| | Logging Projects All | | | |

(8) Name of Subcontractors and Start Dates:

| Project No. | Subcontractor Name. | Start Date | Completion Date | Cell No. | Alt Phone |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| | Subcontractor Name. | Start Date | Cell No. | Alt Phone |
|---|---|---|---|---|
| FELLING | | | | |
| YARDING | | | | |

(9) Comments:

_____

_____

_____

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

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

# EXHIBIT B
# INSTRUCTION SHEET FOR OPERATIONS PLAN

**SUBMIT ONE COPY OF PLAN TO STATE**

Operations shall be limited to the work shown in the plan until a revised plan or supplemental plan is submitted covering additional work. Compliance with this plan is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act including without limitation PURCHASER'S independent obligation to avoid take of a T&E species and PURCHASER'S obligation to comply with terms and conditions of any incidental take Permit(s) that include required minimization and mitigation measures in any applicable Habitat Conservation Plan. If STATE has prepared a required Forest Practices Act (FPA) "Written Plan" for operations, PURCHASER shall comply with all provisions of the Written Plan.

**Explanation of Item No.(from Page 1)**

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

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

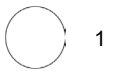
(7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.

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

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

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

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




Cable Landing, with numbers for sequence.


Tractor Landing with alphabetical sequence.

Approximate setting boundary.

Spur truck roads.

Tractor yarding roads.

X

Temporary stream crossings.

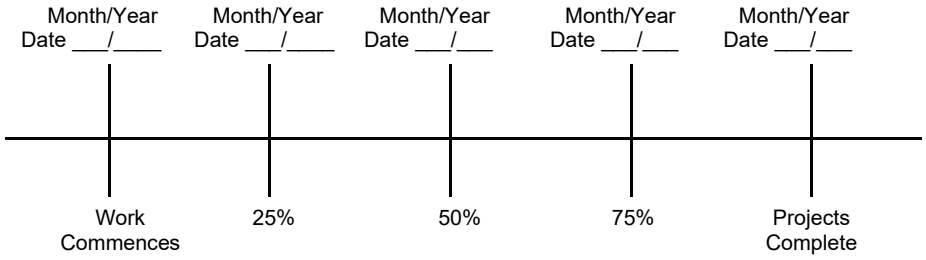
**Oregon Department of Forestry**
2600 State St Salem OR 97310
PART III: EXHIBITS

# EXHIBIT B
# OPERATIONS PLAN

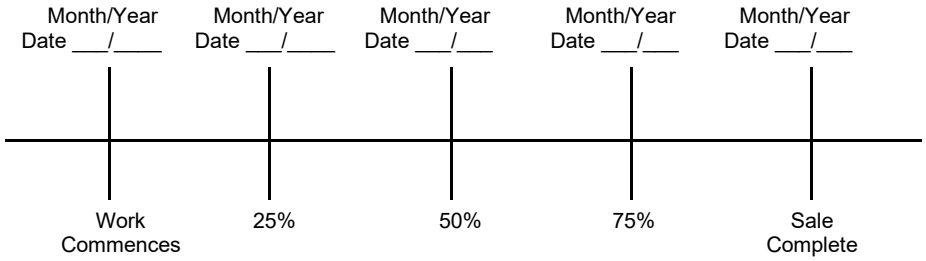
**Completion Timeline**

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

Projects




Harvest & Other Requirements




The Federal Endangered Species Act (ESA) prohibits a person from taking any federally listed threatened or endangered species. Taking under the federal ESA may include alteration of habitat. STATE's approval of this plan does not certify that PURCHASER's operation under the plan is lawful under the federal ESA or that the plan is consistent with the terms and conditions of any applicable incidental take Permit(s) including any required minimization and mitigation measures proposed in the applicable Habitat Conservation Plan. As provided in the timber sale contract, PURCHASER's must comply with all applicable state, federal, and local laws, including without limitation any Permit(s) issued thereunder.

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

APPROVED; Date: _____

STATE OF OREGON - DEPARTMENT OF FORESTRY

_____

Title _____

SUBMITTED BY:
PURCHASER

_____

Title _____

# Oregon Department of Forestry

**EXHIBIT C - SAWMILL GRADE (WESTSIDE SCALE)**
**SCALING INSTRUCTIONS - LOCATION APPROVAL - BRAND INFORMATION**
**Forest Grove - NWOA**

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

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

(3) FROM: Forest Grove Phone (503) 357-2191
(State Forestry District)
Address: 801 GALES CRK RD
FOREST GROVE,OR 97116-1199

(4) PURCHASER: _____
Mailing Address: _____

Phone Number: _____

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

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

(6) WESTSIDE SCALE:
Use Region 6 actual taper rule. Logs over 40'.

| | YES | NO |
|---|---|---|
| (7) Weight Scale Sample | ☐ | ☑ |

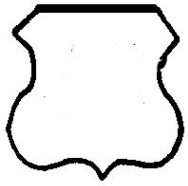
| (8) **APPROVED SCALING LOCATIONS** (as shown on the ODF Approved Locations web-site ) | **Species** | **Yard** | **Truck** | **Weight** |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

(9) **SALE NAME:** Finger Creek
COUNTY: Washington

(10) **STATE CONTRACT NUMBER:**
FG-341-2025-W01017-01

(11) STATE BRAND REGISTRATION NUMBER:

(12) **STATE BRAND INFORMATION:**



(13) PAINT REQUIRED: YES ☑
COLOR: Orange

(14) **SPECIAL REQUESTS** (Check applicable)

| | |
|---|---|
| PEELABLE CULL (all species)..... | ☑ |
| **NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE**..... | ☑ |
| ADD-BACK VOLUME - Deductions due to delay... | ☑ |

OTHER :

(15) **REMARKS:**

"Mule Trains"
1. Loads are required to have load tickets for each set of bunks.
2. If truck and pup are to be weighed, weigh and process separately for gross and tare weights.

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

(16) SIGNATURES:

_____
Purchaser or Authorized Representative Date

_____
State Forester Representative Date

_____
State Forester Representative PRINT NAME

**Notify the District within one hour when branding or painting is inadequate for quick identification, the receipts are missing, not correctly or completely filled out, and/or when logs presented for scaling are impossible to scale accurately.**
**General Distribution: TPSO, Approved Scaling Locations and Purchaser.**

# Oregon Department of Forestry
## EXHIBIT C - SAWMILL GRADE
## INSTRUCTIONS FOR EXHIBIT C
## Forest Grove - NWOA

(1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires logging and hauling to be complete, recall branding hammers.

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

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

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

Mountain Western Log Scaling & Grading Bureau
2560 NW Medical Park Drive, OR 97471
Phone: (541) 673-5571 Fax: (541) 672-6381
Email: info@mwlsgb.com

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

Northwest Log Scalers Inc.
6137 NE 63rd St, Vancouver, WA, 98661
Phone: (360) 553-7212 ext. 4 Fax:(360) 553-7213
Email: info@nwlogscalers.com

(3) State District office, address and phone.

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

(5) Minimum Scaling Specifications.

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

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

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

(9) Enter sale name and county.

(10) Enter sale Contract number.

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

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

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

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

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

(16) Require purchaser to sign and date completed form in addition to State Forester Representative, sign and print name on the form. Signatures not required on revisions.

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

Forest Grove, NWOA

(1) ORIGINAL REGISTRATION ☐ Date _____

REVISION NUMBER 000 ☐ Date _____

CANCELLATION ☐ Date _____

(2) TO: _____

**(Approved Pulp Processing Facility)**

(3) FROM: Forest Grove Phone (503) 357-2191
(State Forestry District)

Address: 801 GALES CRK RD

FOREST GROVE,OR 97116-1199

(4) PURCHASER: _____

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

Mailing Address: _____

_____

Phone Number: _____

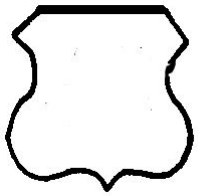
(9) **SALE NAME:** Finger Creek

COUNTY: Washington

(10) **STATE CONTRACT NUMBER:**
FG-341-2025-W01017-01

(11) STATE BRAND REGISTRATION NUMBER: _____

(12) STATE BRAND INFORMATION:



(13) **REMARKS:**

"Mule Trains"

1. Loads are required to have load tickets for each set of bunks.
2. Truck and pup are to be weighed and processed separately for gross and tare weights.

Operator's Name (Optional inclusion by District):

(14) SIGNATURES:

Purchaser or Authorized Representative Date

State Forester Representative Date

State Forester Representative PRINT NAME

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

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

(7) PULP FACILITY PROCESSING INSTRUCTIONS:

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

(8) TPSO PROCESSING INSTRUCTIONS

- Submit data files daily (or each day of activity).
- Mail or deliver scale tickets weekly to ODF Headquarters in Salem.

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

**General Distribution: TPSO, Approved Scaling Locations and Purchaser.**

# Oregon Department of Forestry
# EXHIBIT C - PULP SORT
# INSTRUCTIONS FOR EXHIBIT C

Forest Grove, NWOA

(1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires logging and hauling to be complete, recall branding hammers.

(2) Approved Pulp Processing Facility. Write in as written in the Approved Log Delivery Location
https://apps.odf.oregon.gov/Divisions/management/asset_management/scalinglocation.asp

(3) State District office, address and phone.

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

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

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

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

Mountain Western Log Scaling & Grading Bureau
2560 NW Medical Park Drive, Roseburg, OR 97471
Phone: (541) 673-5571 Fax: (541) 672-6381
Email: info@mwlsgb.com

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

Northwest Log Scalers Inc.
6137 NE 63rd St, Vancouver, WA, 98661
Phone: (360) 553-7212 ext. 4 Fax:(360) 553-7213
Email: info@nwlogscalers.com

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

(9) Enter sale name and county.

(10) Enter sale Contract number.

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

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

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

(14) Require purchaser to sign and date completed form in addition to State Forester Representative, sign and print name on the form. Signatures not required on revisions.

# EXHIBIT D

## FOREST ROAD SPECIFICATIONS

| SUBGRADE WIDTH | SURFACED WIDTH | POINT TO POINT | STATION TO STATION | DRAINAGE |
|---|---|---|---|---|
| 16 feet | 12 feet | A to B | 0+00 to 104+75 | Ditch |
| 16 feet | 12 feet | B to C | 0+00 to 29+25 | Ditch |
| 16 feet | 12 feet | D to E | 0+00 to 3+15 | Ditch |
| 16 feet | 12 feet | F to G | 0+00 to 14+50 | Ditch |
| 16 feet | 12 feet | H to I | 0+00 to 47+65 | Ditch |
| 16 feet | 12 feet | J to K | 0+00 to 10+55 | Ditch |
| 16 feet | 12 feet | L to M | 0+00 to 2+70 | Ditch |
| 16 feet | 12 feet | N to O | 0+00 to 5+45 | Ditch |

CLEARING. This work shall consist of clearing, removing, and disposing of all trees, Snags, Down Timber, brush, surface objects, and protruding obstructions within the clearing limits. All danger trees, leaners, and Snags outside the clearing limits which could fall and hit the road shall be felled.

CLEARING CLASSIFICATION.

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

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

GRUBBING. This work shall consist of the removal or digging out of stumps and protruding objects. All stumps shall be completely removed within the limits of required grubbing. Stumps overhanging cutslopes shall be removed.

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

- Where end-haul is required
- On side slopes exceeding 55 percent
- On unstable areas
- In any stream channel (Type F, N or D) or where material may enter the stream channel.

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

# EXHIBIT D

## FOREST ROAD SPECIFICATIONS

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

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

Excavated materials shall not be placed within an RCA.

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

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

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

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. Drainage features shall be in place as soon as possible during construction and prior to October 31 annually. Drainage features shall include:

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

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

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

TURNOUTS. Increase roadbed width an additional 8 feet for both subgrade and surfacing. Length shall be at least 25 feet, plus 25-foot approaches at each end. Location: Intervisible but not greater than 750 feet apart.

| SLOPES. Top of cutslope shall be rounded. | Cutslopes | Fill Slopes |
|---|---|---|
| Solid Rock | Vertical to ¼ :1 | |
| Fractured Rock | ¼:1 | |
| Soil - side slopes 50% and over | ½:1 | 1½:1 |
| Soil - side slopes less than 50% | ¾:1 | 1½:1 |

LANDINGS. Landings shall be constructed (as posted in the field,) no less than 50 feet wide and no more than 70 feet wide unless otherwise stated or approved by STATE. Surface is to be outsloped or crowned for drainage with general grade no more than 3 percent. Surface as shown in the “Road Surfacing” table in this Exhibit, with 2 feet of subgrade extending out from base of the surfacing.

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 blocked from vehicular traffic and waterbarred in accordance with the Waterbar and Tank Trap specifications in this contract. Areas of bare soil that have the potential to deliver sediment shall have grass seed and mulch placed in accordance with the Seeding and Mulch specification in this contract. All seasonal winterization shall be completed prior to October 31, annually and as directed by STATE.

# EXHIBIT D

## FOREST ROAD SPECIFICATIONS

EROSION CONTROL. Install erosion control measures in all areas which have the potential, as determined by STATE, to deliver sediment to Waters of the State. Install bio bags, silt fence, or straw bales for erosion control in project areas and ditch lines where sedimentation or erosion is possible, as directed by STATE. Each Bio-bag shall be installed with a minimum of two wooden stakes.

MATERIAL STORAGE AND STAGING. No materials shall be stored or staged within the boundaries of any riparian conservation area or equipment restriction zone. To include dirt, soil, aggregate and fuel stored in fuel cans, transfer tanks, vehicles or equipment. Staging areas must be constructed in a manner that to be hydrologically disconnected from the stream. Culverts, logs for stream enhancement and erosion control supplies may be stored within the boundaries.

# EXHIBIT D

## FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION INSTRUCTIONS:

(1) Excavated Materials. Excavated materials shall be utilized for road construction and hauled in where required. 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.

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

(3) Culvert Installation. Fill construction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with this Exhibit.

(4) Settling Ponds. Construct settling ponds for erosion control in project areas and ditchlines where sedimentation or erosion is possible as directed by STATE. Excavated material shall be hauled to the designated waste areas designated on Exhibit A. Waste materials shall be sloped and compacted for drainage. Large settling pond dimensions shall be a finished length of 10 feet, width of 10 feet, 5 feet in depth, and 3 feet apart, or as directed by STATE. Standard settling pond dimensions shall be a finished length of 8 feet, width of 3 feet, and 3 feet in depth, or as directed 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 E.

(6) Subgrade Preparation and Application of Surfacing Rock.

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

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

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

# EXHIBIT D

# FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS:

| Segment | Station | Work Description |
|---|---|---|
| **B to C** | 0+00 | Point B. Begin road construction; crown road, construct ditch, and construct bridge approach. Begin bridge approach construction. Taper bridge approach to facilitate road run off away from live stream at 1+25. Begin ditch material end-haul to Waste Area. |
| | 1+00 | End bridge approach construction. |
| | 1+10 | Install 15 cy of riprap as bank armoring. |
| | 1+20 | Live Stream. Widen stream channel to a final width of 8'. Install log stringer bridge in accordance with the specifications in Exhibit G. End-haul surplus material to Waste Area. |
| | 1+30 | Install 15 cy of riprap as bank armoring. |
| | 1+40 | Begin bridge approach construction. |
| | 2+40 | End bridge approach construction. Begin fill construction to align new road construction with old road grade ahead at station 3+15. Blend road grade percentage to match old road grade ahead and minimize vertical curve on bridge approach. Use suitable material from stockpile at 94+20 on A to B to construct fill. |
| | 2+85 | End ditch material end-haul. |
| | 3+15 | End fill construction. Construct two large settling ponds one on the left and one on the right side of road. Settling ponds shall be located approx. 25' off road edge with ditch-outs leading to each settling pond. Each settling pond shall be 10'L X 10'W X 5'D in size and side slopes at a 2:1 ratio. End-haul surplus material to Waste Area. |
| | 3+20 | Road follows old grade. Begin road widening on left to construct ditch. |
| | 3+75 | Install Culvert No. 19 (18" x 30') as cross drain. |
| | 6+00 | Road leaves old grade and continues uphill on right. Construct ditch-out on right. |
| | 10+75 | Install Culvert No 20 (18" x 30') as cross drain. |
| | 16+00 | Construct ditch-out on left. |
| | 18+00 | Begin full bench road construction. End haul surplus material to Waste Area. |
| | 19+20 | End full bench road construction. Begin balanced road construction. |
| | 19+60 | Install Culvert No. 21 (18" x 40') as cross drain. |
| | 20+00 | Begin adverse drift from station 21+15 to maintain grade ≤ 13%. |
| | 21+15 | End drift. |
| | 23+50 | Install Culvert No. 22 (18" x 40') as cross drain. |
| | 23+75 | Point D. Junction with D to E on right. |
| | 24+50 | Timber Sale Boundary. |
| | 25+75 | Construct roadside landing on right. |
| **END** | 29+25 | Point C. Junction with H to I. End road construction. |

| Segment | Station | Work Description |
|---|---|---|
| **D to E** | 0+00 | Point D. Junction with B to C. Begin road construction; crown road, construct ditch. |
| | 2+15 | Construct roadside landing on left. |
| **END** | 3+15 | Point E. End road construction. Construct landing. |

# EXHIBIT D

## FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS:

| Segment | Station | Work Description |
|---|---|---|
| **F to G** | 0+00 | Point F. Junction with H to I on left. Begin road construction; crown road, construct ditch. Begin fill construction to maintain grade ≤ 12%. Excavate suitable fill material from adjacent cutslope to construct fill. Manipulate existing road grade at junction to better facilitate log truck haul. |
| | 1+45 | End fill construction. |
| | 6+00 | Construct 215’ spur with landing on left. Install Culvert No. 23 (18” x 40’) as cross drain. Begin drift to maintain grade ≤ 15%. |
| | 8+75 | End drift. |
| | 12+00 | Install ditch-outs on left and right. |
| | 14+00 | Construct turnaround on right. |
| **End** | 14+50 | Point G. End road construction. Construct landing. |

| Segment | Station | Work Description |
|---|---|---|
| **L to M** | 0+00 | Point L. Junction with J to K on right. Begin road construction; crown road, construct ditch. Begin adverse drift from station 2+70 to maintain grade ≤ 13%. Install Culvert No. 28 (18” x 40’) as cross drain. |
| | 2+20 | Construct turnaround on left. |
| **End** | 2+70 | Point M. End adverse drift. End road construction. Construct landing. |

# EXHIBIT D

## FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT AND MAINTENANCE INSTRUCTIONS:

(1) Excavated Materials. Excavated materials shall be utilized for road and fill construction and hauled in where required. 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.

(2) Bank Slough Removal. Excavate all bank slough. Bank slough material shall not be pulled across existing surfacing rock. Excavated material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A.

(3) Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. Existing culvert geometry shall be modified to provide for optimum drainage and culvert performance. Modifications may include, skewing the culvert and/or installing the culvert at gradients equal to or exceeding the drainage (or ditch) gradient. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. All woody debris encountered during fill excavation shall be removed. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Unsuitable backfill material shall be hauled to the designated waste areas as marked in the field and/or designated on Exhibit A. Backfill materials shall be hauled in where necessary.

(4) Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. (Ditch debris including woody debris shall be loaded and hauled to designated waste areas and shall be accomplished with the use of an excavator and dump truck.) 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.

(5) Settling Ponds and Ditch Armoring. Construct up to 15 settling ponds for erosion control in project areas and ditchlines where sedimentation or erosion is possible 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. Settling pond dimensions shall be a finished length of 8 feet, width of 3 feet, and 3 feet in depth, or as directed by STATE. Backslopes shall be ¾:1. Ditch line armor and settling pond armor shall be 8 inches deep.

(6) Energy Dissipator Construction. 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 E.

(7) Sod Removal. Remove/ separate sod from crushed rock surfacing as directed by STATE. Sod material shall be scattered in stable locations through openings in the timber outside of the cleared right-of-way. In areas where sod cannot be scattered in a stable location, material shall be end hauled to designated waste areas as shown in Exhibit A, or other stable locations as directed by STATE.

# EXHIBIT D

## FOREST ROAD SPECIFICATIONS

GENERAL ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT AND MAINTENANCE INSTRUCTIONS:

(8) Subgrade Preparation and Application of Surfacing Rock.

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

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

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

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

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

# EXHIBIT D

## FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT AND MAINTENANCE INSTRUCTIONS:

| Segment | Station | Work Description |
|---|---|---|
| **A to B** | 0+00 | Point A. Rogers Road. Junction with Highway 6. Begin road improvement; crown road, do not clean ditchlines unless directed to by STATE. |
| | 0+55 | Gate. |
| | 6+35 | Double ditch on left. |
| | 6+75 | End of double ditch. |
| | 14+50 | Double ditch on left. |
| | 16+15 | End of double ditch. |
| | 24+55 | Double ditch on left. |
| | 25+65 | .5 mile marker on left. |
| | 26+65 | Trail on left. Do not disturb existing trail culvert and trail prism. |
| | 26+70 | End of double ditch. |
| | 33+50 | Bridge. |
| | 34+05 | Gate. |
| | 36+75 | Junction with Rogers Road on left. Plantation Rd. on right. Continue improvement right onto Plantation Rd. |
| | 36+85 | Remove existing culvert and install Culvert No. 1 (18” x 50’) as cross drain. Culvert tag posted on left. |
| | 47+95 | Junction on left and right. Gate. |
| | 48+80 | 1 mile marker on left. |
| | 51+55 | Install Culvert No. 2 (18” x 30’) as disconnect. End-haul all material to Waste Area. Culvert tag posted on left. |
| | 52+05 | Live Stream. Existing culvert. |
| | 56+90 | Live Stream. Existing culvert. Install six settling ponds, three on left side of inlet and three on right side of inlet. End-haul all material to Waste Area. |
| | 57+65 | Install Culvert No. 3 (18” x 30’) as disconnect. End-haul all material to Waste Area. Culvert tag posted on right. |
| | 58+80 | Live Stream. Existing culvert, clean inlet and outlet. End-haul all material to Waste Area. |
| | 60+60 | Live Stream. Install Culvert No. 4 (24” x 30’). End-haul all material to Waste Area. Culvert tag posted on right. |
| | 64+05 | Live Stream. Install Culvert No. 5 (24” x 40’). End-haul all material to Waste Area. Culvert tag posted on right. |
| | 66+40 | Install Culvert No. 6 (18” x 30’) as disconnect. End-haul all material to Waste Area. Culvert tag posted on right. |
| | 67+60 | Existing culvert. Place 12 cy of riprap as energy dissipator at outlet. |
| | 74+15 | 1.5 mile marker on right. |
| | 78+20 | Install Culvert No. 7 (18” x 30’) as disconnect. End-haul all material to Waste Area. Culvert tag posted on left. |
| | 79+50 | Live Stream. Install Culvert No. 8 (24” x 30’). End-haul all material to Waste Area. Culvert tag posted on right. |
| | 80+60 | Install Culvert No. 9 (18” x 30’) as disconnect. End-haul all material to Waste Area. Culvert tag posted on left. |

# EXHIBIT D

# FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT AND MAINTENANCE INSTRUCTIONS:

| Segment | Station | Work Description |
|---|---|---|
| **A to B continued** | 81+15 | Live Stream. Remove existing culvert and install Culvert No. 10 (24” x 30’). End-haul all material to Waste Area. Culvert tag posted on left. |
| | 81+50 | Junction on left with access to Gales Creek Quarry. Install Culvert No. 11 (18” x 60’) as disconnect, across junction, to facilitate flow away from stream. End-haul all material to Waste Area. Culvert tag posted on left. |
| | 83+30 | Install Culvert No. 12 (18” x 30’) as cross drain. Culvert tag posted on left. |
| | 85+20 | Waste Area on left. |
| | 91+05 | Install Culvert No. 13 (18” x 30’) as cross drain with ditchout at outlet. Culvert tag posted on left. |
| | 93+80 | Install Culvert No. 14 (18” x 30’) as disconnect with ditchout at outlet. End-haul all material to Waste Area. Culvert tag posted on left. |
| | 94+20 | Suitable material stockpiled for fill on B to C on left. |
| | 94+80 | Live Stream. Install Culvert No. 15 (24” x 30’) with ditchout at outlet. End-haul all material to Waste Area. Culvert tag posted on right. |
| | 97+05 | 2 mile marker on right. |
| | 97+40 | Install Culvert No. 16 (18” x 30’) as disconnect. Install three settling ponds at outlet. End-haul all material to Waste Area. Culvert tag posted on left. |
| | 98+45 | Bridge. |
| | 98+90 | End of bridge. Install six settling ponds, three on each side of road, in ditch. End-haul all material to Waste Area. |
| | 99+55 | Junction on left. Continue improvement ahead onto old road grade. Construct ditchlines. |
| | 101+65 | Install Culvert No. 17 (18” x 30’) as cross drain. Culvert tag posted on right. |
| | 103+55 | Begin ditch material end-haul to Waste Area. |
| | 103+80 | Turnout on right. Rip-rap for stream embankment protection on right. |
| | 104+40 | Install Culvert No. 18 (18” x 30’) as disconnect. End-haul all material to Waste Area. Culvert tag posted on left. |
| **End** | 104+75 | Point B. End ditch material end-haul End road improvement. |

| Segment | Station | Work Description |
|---|---|---|
| **H to I** | 0+00 | Point H. Timber sale boundary. Begin road improvement; crown road, clean or construct ditchlines. Construct roadside landing on right. |
| | 1+55 | Point C. Junction with B to C on right. |
| | 3+25 | Remove existing culvert and install Culvert No. 24 (18” x 40’) as cross drain to facilitate drainage away from junction at station 3+45. |
| | 3+45 | Point F. Junction with F to G on right. |
| | 3+50 | Borrow site for roadside landing at station 19+80 on left. |
| | 8+70 | Improve roadside landing on right. |
| | 17+65 | Junction on left. Continue improvement right. |
| | 19+80 | Construct roadside landing on left. Use material from cutslope at station 3+50 to match roadside landing with existing road grade. |
| | 24+30 | Construct roadside landing on left. |
| | 30+25 | 3.5 mile marker on right. |

# EXHIBIT D

## FOREST ROAD SPECIFICATIONS

SPECIFIC ROAD IMPROVEMENT, SURFACE ROCK REPLACEMENT AND MAINTENANCE INSTRUCTIONS:

| Segment | Station | Work Description |
|---|---|---|
| **H to I continued** | 33+65 | Point J. Junction with J to K on right. |
| | 36+55 | Remove existing culvert and install Culvert No. 25 (18" x 80') as cross drain. Install culvert approximately 13' deeper in fill than current placement. |
| | 39+60 | Begin road re-alignment construction to straighten curve by 12'. Use suitable material from road re-alignment construction for project work on segment N to O. |
| | 39+95 | Point N. Y- Junction with N to O on right. |
| | 40+70 | End road re-alignment construction. |
| | 42+90 | Remove existing culvert and install Culvert No. 26 (18" x 30') as cross drain. |
| | 43+75 | Construct roadside landing on right. Excavate suitable fill material from adjacent cutslope to construct roadside landing. |
| | 46+20 | Construct turnaround on right. Excavate suitable fill material from adjacent cutslope to construct turnaround. Do not disturb wildlife trees as marked in field. |
| **End** | 47+65 | Point I. Property line with Stimson. End road improvement. |

| Segment | Station | Work Description |
|---|---|---|
| **J to K** | 0+00 | Point J. Junction with H to I. Begin Y- Junction reconstruction on right to facilitate log haul towards point H. Remove large stump on right. Scatter excess material above existing cutslope. Begin road improvement on existing road grade; crown road, clean or construct ditchlines. Remove existing culvert and install Culvert No. 27 (18" x 50') as cross drain. |
| | 0+60 | End of Y-Junction reconstruction on right. |
| | 2+90 | Point L. Junction with L to M on left. |
| | 10+40 | Timber Sale Boundary. Property line with Stimson. |
| **End** | 10+55 | Point K. End road improvement. Improve turnaround on left. |

| Segment | Station | Work Description |
|---|---|---|
| **N to O** | 0+00 | Point N. Y- Junction with H to I. Begin road improvement; outslope road, construct ditchline as needed. Re-align Y- Junction 15' to the left of current orientation. Excavate suitable fill material from adjacent cutslope to bring Y- Junction to ≤ 12%. |
| | 0+80 | Wildlife tree on right. Do not disturb. |
| | 3+35 | Wildlife tree on left and right. Do not disturb. |
| | 3+80 | Construct turnaround on left. Use suitable material from H to I station 39+60 to construct turnaround. |
| | 4+30 | Wildlife tree on right. Do not disturb. |
| **End** | 5+45 | Point O. End road improvement. Reconstruct landing to 50'. Use suitable material from H to I station 39+60 to reconstruct landing. |

# EXHIBIT D

## FULL BENCH AND END-HAUL REQUIREMENTS

| POINT TO POINT | STATIONS |
|---|---|
| A to B | 51+55, 56+90, 57+65, 58+80, 60+60, 64+05, 66+40, 78+20, 79+50, 80+60, 81+15, 81+50, 93+80, 94+80, 97+40, 98+90, 104+40, & 103+55 to 104+75 |
| B to C | 1+20, 3+15, 0+00 to 2+85, & 18+00 to 19+20 |
| Quarry Development | |

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.

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

- Full: No excavated material remains below the road.

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

Waste Area Location

- As shown on Exhibit A and as marked in the field.
- Setback from slope break shall be a minimum of 20 feet horizontal measurement.

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 I.

EXHIBIT D

ROCK TABLE

| ROAD SEGMENT: A to B | | | | Sta. to Sta. 0+00 to 104+75 | | | | TOTAL VOLUME (CY) |
|---|---|---|---|---|---|---|---|---|
| Application | Rock Size and Type | Location | Depth of Rock (inches) | Volume (CY) Per | | Number of | | |
| Culvert Bedding /Backfill | 1 ½"- 0 Crushed | Culvert Nos. 1 - 18 | Varies | Culvert | 24 | Culverts | 18 | 432 |
| Energy Dissipator | 36"- 24" Riprap | Culvert at 67+60 | Varies | Culvert | 12 | Culverts | 1 | 12 |
| Surfacing Rock | 1 ½"- 0 Crushed | 47+95 to 81+50, 81+50 to 99+25 | 3 | Station | 15 | Stations | 51.30 | 770 |
| Base Rock | 3" - 0 Crushed | 81+50 to 99+25 | 6 | Station | 31 | Stations | 17.75 | 550 |
| Surfacing Rock | 1 ½"- 0 Crushed | 99+55 to 104+75 | 3 | Station | 15 | Stations | 5.2 | 78 |
| Base Rock | 3" - 0 Crushed | 99+55 to 104+75 | 9 | Station | 47 | Stations | 5.2 | 244 |
| Junction | 1 ½"- 0 Crushed | 47+95 | 3 | Junction | 12 | Junctions | 2 | 24 |
| Junction | 3" - 0 Crushed | 81+50 & 99+55 | 6 | Junction | 24 | Junctions | 2 | 48 |
| Turnout | 3" - 0 Crushed | 47+95 to 99+55 | 6 | Turnout | 14 | Turnouts | 5 | 70 |
| Turnout | 3" - 0 Crushed | 103+80 | 12 | Turnout | 29 | Turnouts | 1 | 29 |
| Total Rock for Road Segment: | | | | | | | | 2,257 |

| ROAD SEGMENT: B to C | | | | Sta. to Sta. 0+00 to 29+25 | | | | TOTAL VOLUME (CY) |
|---|---|---|---|---|---|---|---|---|
| Application | Rock Size and Type | Location | Depth of Rock (inches) | Volume (CY) Per | | Number of | | |
| Base Rock | 3" - 0 Crushed | B to C | 12 | Station | 65 | Stations | 28.85 | 1,875 |
| Junction | 3" - 0 Crushed | Point C | 12 | Junction | 24 | Junctions | 1 | 24 |
| Turnout | 3" - 0 Crushed | B to C | 12 | Turnout | 29 | Turnouts | 4 | 116 |
| Spot Rock | 1 ½"- 0 Crushed | B to C | Varies | Station | Varies | Stations | Varies | 38 |
| Roadside Landing | 3" - 0 Crushed | 25+75 | 12 | Landing | 95 | Landings | 1 | 95 |
| Bridge Approach Surfacing Rock | 1 ½"- 0 Crushed | 0+00 to 1+00, 1+40 to 2+40 | 3 | Station | 15 | Stations | 2 | 30 |
| Bridge Approach Surfacing Rock | 3" - 0 Crushed | 0+00 to 1+00, 1+40 to 2+40 | 9 | Station | 47 | Stations | 2 | 94 |
| Surfacing Rock | 1 ½"- 0 Crushed | 1+00 to 1+40 | 6 | Station | 31 | Stations | 0.4 | 12 |
| Footing Embedment | 1 ½"- 0 Crushed | Sill log footing | 6 | Each | 2 | Footings | 2 | 4 |
| Bank Armor | 36"- 24" Riprap | 1+10 & 1+30 | 36 | Bank | 15 | Banks | 2 | 30 |
| Total Rock for Road Segment: | | | | | | | | 2,318 |

| ROAD SEGMENT: D to E | | | | Sta. to Sta. 0+00 to 3+15 | | | | TOTAL VOLUME (CY) |
|---|---|---|---|---|---|---|---|---|
| Application | Rock Size and Type | Location | Depth of Rock (inches) | Volume (CY) Per | | Number of | | |
| Base Rock | 3" - 0 Crushed | D to E | 12 | Station | 65 | Stations | 3.15 | 205 |
| Junction | 3" - 0 Crushed | Point D | 12 | Junction | 24 | Junctions | 1 | 24 |
| Roadside Landing | 3" - 0 Crushed | 2+15 | 12 | Landing | 95 | Landings | 1 | 95 |
| Landing 50' | 3" - 0 Crushed | Point E | 12 | Landing | 95 | Landings | 1 | 95 |
| Total Rock for Road Segment: | | | | | | | | 419 |

EXHIBIT D

ROCK TABLE

| ROAD SEGMENT: F to G | | | | Sta. to Sta. 0+00 to 14+50 | | | | TOTAL VOLUME (CY) |
|---|---|---|---|---|---|---|---|---|
| Application | Rock Size and Type | Location | Depth of Rock (inches) | Volume (CY) Per | | Number of | | |
| Base Rock | 3” - 0 Crushed | F to G | 12 | Station | 65 | Stations | 14.5 | 943 |
| Junction | 3” - 0 Crushed | Point F & 6+00 | 12 | Junction | 24 | Junctions | 2 | 48 |
| Turnout | 3” - 0 Crushed | F to G | 12 | Turnout | 29 | Turnouts | 2 | 58 |
| Turnaround | 3” - 0 Crushed | 14+00 | 12 | Turnaround | 20 | Turnarounds | 1 | 20 |
| Traction Rock | 1 ½”- 0 Crushed | 0+00 to 12+00 | 3 | Station | 15 | Stations | 12 | 180 |
| Approach to Landing | 3” - 0 Crushed | 6+00 | 12 | Station | 65 | Stations | 2.15 | 140 |
| Landing 50’ | 3” - 0 Crushed | Approach to Landing at 6+00 | 12 | Landing | 95 | Landings | 1 | 95 |
| Landing 70’ | 3” - 0 Crushed | Point G | 12 | Landing | 180 | Landings | 1 | 180 |
| Total Rock for Road Segment: | | | | | | | | 1,664 |

| ROAD SEGMENT: H to I | | | | Sta. to Sta. 0+00 to 47+65 | | | | TOTAL VOLUME (CY) |
|---|---|---|---|---|---|---|---|---|
| Application | Rock Size and Type | Location | Depth of Rock (inches) | Volume (CY) Per | | Number of | | |
| Culvert Bedding /Backfill | 1 ½”- 0 Crushed | Culvert Nos. 24 - 26 | Varies | Culvert | Varies | Culverts | 3 | 72 |
| Base rock (Road re-alignment) | 3” - 0 Crushed | 39+60 to 40+70 | 12 | Station | 65 | Stations | 1.1 | 72 |
| Surfacing Rock | 3” - 0 Crushed | 0+00 to 17+65 | 6 | Station | 31 | Stations | 17.65 | 547 |
| Surfacing Rock | 1 ½”- 0 Crushed | 17+65 to 47+65 | 3 | Station | 15 | Stations | 30 | 450 |
| Junction | 1 ½”- 0 Crushed | 17+65 & 33+65 | 3 | Junction | 12 | Junctions | 2 | 24 |
| Y-Junction | 1 ½”- 0 Crushed | 39+95 | 3 | Junction | 24 | Junctions | 1 | 24 |
| Turnout | 3” - 0 Crushed | H to I | 6 | Turnout | 14 | Turnouts | 4 | 56 |
| Turnaround | 3” - 0 Crushed | 46+20 | 12 | Turnaround | 20 | Turnarounds | 1 | 20 |
| Curve Widening | 1 ½”- 0 Crushed | 39+60 to 40+70 | 3 | Station | Varies | Stations | 1.1 | 10 |
| Roadside Landing (Improve) | 3” - 0 Crushed | 8+70 | 6 | Landing | 47 | Landings | 1 | 47 |
| Roadside Landing (Construct) | 3” - 0 Crushed | 19+80, 24+30, & 43+75 | 12 | Landing | 95 | Landings | 3 | 285 |
| Total Rock for Road Segment: | | | | | | | | 1,607 |

# EXHIBIT D

## ROCK TABLE

| ROAD SEGMENT: J to K | | | | Sta. to Sta. 0+00 to 10+55 | | | | TOTAL VOLUME (CY) |
|---|---|---|---|---|---|---|---|---|
| Application | Rock Size and Type | Location | Depth of Rock (inches) | Volume (CY) Per | | Number of | | |
| Culvert Bedding /Backfill | 1 ½"- 0 Crushed | Culvert No. 27 | Varies | Culvert | 24 | Culverts | 1 | 24 |
| Base Rock (Junction reconstruction) | 3" - 0 Crushed | Point J | 12 | Station | 65 | Stations | 1.05 | 68 |
| Surfacing Rock | 3" - 0 Crushed | J to K | 6 | Station | 31 | Stations | 10.55 | 327 |
| Junction | 1 ½"- 0 Crushed | Point J | 3 | Junction | 12 | Junctions | 1 | 12 |
| Turnout | 3" - 0 Crushed | J to K | 6 | Turnout | 14 | Turnouts | 1 | 14 |
| Turnaround | 3" - 0 Crushed | Point K | 6 | Turnaround | 10 | Turnarounds | 1 | 10 |
| Total Rock for Road Segment: | | | | | | | | 455 |

| ROAD SEGMENT: L to M | | | | Sta. to Sta. 0+00 to 2+70 | | | | TOTAL VOLUME (CY) |
|---|---|---|---|---|---|---|---|---|
| Application | Rock Size and Type | Location | Depth of Rock (inches) | Volume (CY) Per | | Number of | | |
| Base Rock | 3" - 0 Crushed | L to M | 12 | Station | 65 | Stations | 2.7 | 176 |
| Junction | 3" - 0 Crushed | Point L | 12 | Junction | 24 | Junctions | 1 | 24 |
| Turnaround | 3" - 0 Crushed | 2+20 | 12 | Turnaround | 20 | Turnarounds | 1 | 20 |
| Landing 70' | 3" - 0 Crushed | Point M | 12 | Landing | 180 | Landings | 1 | 180 |
| Total Rock for Road Segment: | | | | | | | | 400 |

| ROAD SEGMENT: N to O | | | | Sta. to Sta. 0+00 to 5+45 | | | | TOTAL VOLUME (CY) |
|---|---|---|---|---|---|---|---|---|
| Application | Rock Size and Type | Location | Depth of Rock (inches) | Volume (CY) Per | | Number of | | |
| Base Rock (Junction reconstruction) | 3" - 0 Crushed | 0+00 to 0+80 | 12 | Station | 65 | Stations | 0.8 | 52 |
| Surfacing Rock | 3" - 0 Crushed | 0+80 to 5+45 | 9 | Station | 47 | Stations | 5.15 | 242 |
| Turnaround | 3" - 0 Crushed | 3+80 | 12 | Turnaround | 20 | Turnarounds | 1 | 20 |
| Landing 50' | 3" - 0 Crushed | Point O | 12 | Landing | 95 | Landings | 1 | 95 |
| Total Rock for Road Segment: | | | | | | | | 409 |

| TOTAL ROCK | 36"-24" Riprap | 3"-0 Crushed | 1 ½"-0 Crushed |
|---|---|---|---|
| 9,529 | 42 CY | 7,303 CY | 2,184 CY |

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

Total rock cubic yard volumes are rounded to the whole yard.

# EXHIBIT D

## ROCK ACCOUNTABILITY

PURCHASER shall obtain subgrade approval from STATE prior to rocking. Rocking shall be limited to periods when weather conditions are acceptable to STATE and when sediment will not enter streams. Additional surfacing needed because of construction season or construction practice is not included in the preceding ROAD SURFACING table and shall be furnished at PURCHASER expense.

Rock accountability shall be determined by the following methods, as directed by STATE. STATE shall be given 24 hours' notice prior to rocking.

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

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

# EXHIBIT D

## COMPACTION AND PROCESSING REQUIREMENTS

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

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

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

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

| ROAD SEGMENT | SUBGRADE COMPACTION OPTIONS |
|---|---|
| All road segments that require rock surfacing | Vibratory Roller |
| All road segments that require subgrade reinforcement rock | Vibratory Grid Roller or a combination of Vibratory Roller and Dozer |

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 | FILL COMPACTION OPTIONS |
|---|---|
| All road segments | Vibratory Roller, Vibratory Hand-Operated, Backhoe-Mounted Tamper, or Dozer |

# EXHIBIT D

## COMPACTION AND PROCESSING REQUIREMENTS

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

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

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

| ROAD SEGMENT | CRUSHED ROCK COMPACTION OPTIONS |
|---|---|
| All road segments requiring crushed rock | Vibratory Roller |

## COMPACTION EQUIPMENT OPTIONS

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.

Vibratory Hand-Operated or Backhoe-Mounted Tamper. Vibratory hand-held or hydraulic tampers shall be used for compaction of backfill materials around culverts. The tamper shoe dimensions shall be a minimum of 10" X 13" and capable of a centrifugal force of 2,250 pounds.

Vibratory Grid Compactors. The roller shall have a grid surface and have an operating weight of 32,000 pounds or more. The rock shall be worked with a grader weighing at least 20,000 pounds during the grid rolling process. All rock shall come in contact with the vibratory grid compactor.

# EXHIBIT E

## CULVERT SPECIFICATIONS

All culverts and drainage structures shall be installed as soon as possible and before October 31 annually.

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

Uninstalled culverts shall become property of the STATE. PURCHASER will deliver surplus culverts to the district office as directed by STATE.

Culverts 36 inches in diameter and smaller shall be constructed of corrugated polyethylene. Culverts larger than 36 inches in diameter shall be constructed of corrugated aluminized Type 2 steel. Polyethylene culverts shall be double-walled and meet the requirements of AASHTO M-294-11, Type S, or ASTM F2648.

Joining shall be done with bands of like material and corrugations. Manufacturers' instructions shall be followed for prefabricated pipe assembly. 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.

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

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

Cross Drain Culverts

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

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

Disconnect Culverts

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

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

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

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

# EXHIBIT E

## CULVERT SPECIFICATIONS

Minimum height of cover over top of culvert to subgrade when road is to be rocked shall be 12" for culverts 18” to 36”. Minimum vertical cover for other designs shall be as specified by STATE.

Lengths of individual culvert sections shall be not less than 10 feet, unless otherwise provided for in special instructions. The shortest culvert section length shall be placed at the inlet end.

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

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

Culverts 36 inches in diameter or larger shall have 1:1 step beveled inlets.

Compaction by tamping utilizing a Vibratory Hand-Operated or Backhoe-Mounted Tamper is required for all stream crossing culverts and culverts on improvement sections.

All culverts scheduled for replacement shall become property of the PURCHASER and be removed from STATE land in the same project period in which replacement occurred. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack or cutting off the culvert end to allow for free passage of water at peak flow levels.

The intake ends of culverts in fills less than 3 feet to the top of the culvert shall be marked by driving steel posts within 6 inches of the downgrade side. Posts shall be painted with rust-resistant paint and be a minimum of 5 feet long, with the spade driven 2 feet into the ground. Install a culvert marker at each existing culvert that is missing a marker that could be reached by a grader blade.

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

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

# EXHIBIT E

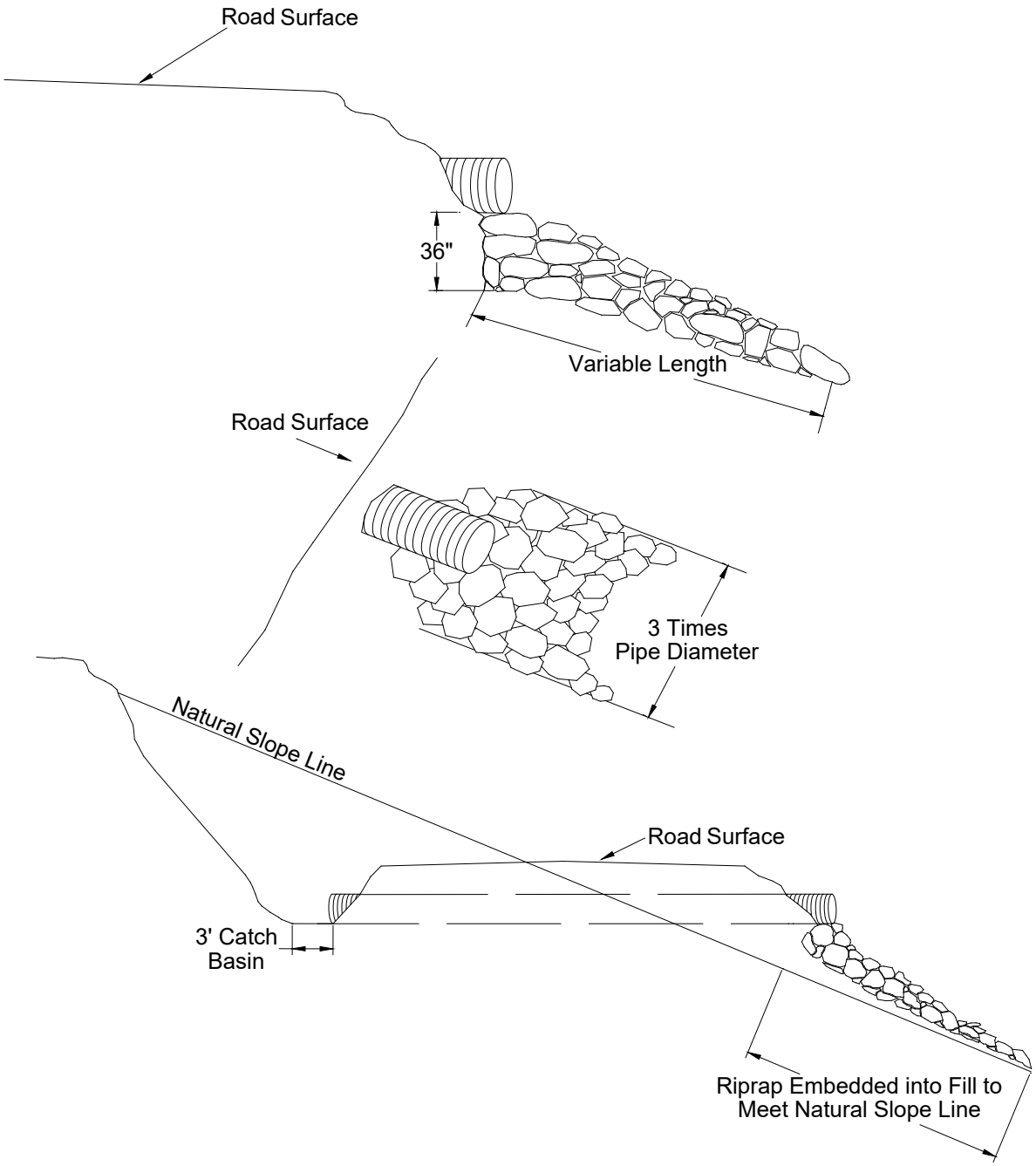
## CULVERT LIST

| CULVERT NO. | DIAMETER (Inches) | LENGTH (Feet) | ROAD SEGMENT POINT TO POINT | STATION |
|---|---|---|---|---|
| 1 | 18 | 50 | A to B | 36+85 |
| 2 | 18 | 30 | A to B | 51+55 |
| 3 | 18 | 30 | A to B | 57+65 |
| 4 | 24 | 30 | A to B | 60+60 |
| 5 | 24 | 40 | A to B | 64+05 |
| 6 | 18 | 30 | A to B | 66+40 |
| 7 | 18 | 30 | A to B | 78+20 |
| 8 | 24 | 30 | A to B | 79+50 |
| 9 | 18 | 30 | A to B | 80+60 |
| 10 | 24 | 30 | A to B | 81+15 |
| 11 | 18 | 60 | A to B | 81+50 |
| 12 | 18 | 30 | A to B | 83+30 |
| 13 | 18 | 30 | A to B | 91+05 |
| 14 | 18 | 30 | A to B | 93+80 |
| 15 | 24 | 30 | A to B | 94+80 |
| 16 | 18 | 30 | A to B | 97+40 |
| 17 | 18 | 30 | A to B | 101+65 |
| 18 | 18 | 30 | A to B | 104+40 |
| 19 | 18 | 30 | B to C | 3+75 |
| 20 | 18 | 30 | B to C | 10+75 |
| 21 | 18 | 40 | B to C | 19+60 |
| 22 | 18 | 40 | B to C | 23+50 |
| 23 | 18 | 40 | F to G | 6+00 |
| 24 | 18 | 40 | H to I | 3+25 |
| 25 | 18 | 80 | H to I | 36+55 |
| 26 | 18 | 30 | H to I | 42+90 |
| 27 | 18 | 50 | J to K | 0+00 |
| 28 | 18 | 40 | L to M | 0+00 |

| TOTAL LENGTHS BY DIAMETER | |
|---|---|
| 18 INCH | 24 INCH |
| 860 | 160 |

EXHIBIT E

TYPICAL EMBEDDED ENERGY DISSIPATOR



# 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 STATE shall be notified 24 hours prior to the beginning of blasting operations. Working days shall be defined as Monday through Friday, 7:00 a.m. to 4:30 p.m.

4. Purchaser shall identify a Blaster in Charge (BIC) for all blasting operations. The BIC will be qualified by experience to oversee all phases of the blasting operations. The BIC shall provide direct supervision at all times when blasting and explosives handling activities are occurring on STATE LANDS.

5. Controlled blasting techniques shall be utilized for any blasting operations, and shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain as much material as possible within the quarry development area. Each shot shall also have a “tattle-tale” end cap so that it is known if all charges were detonated. The CONTRACTOR shall detonate or remove all non-detonated explosives from STATE LANDS. PURCHASER shall maintain a comprehensive blasting log that contains all pertinent data for all blasting operations. The blasting log shall be submitted to the STATE after the completion of all blasting activity. The blasting log is intended for STATE record keeping purposes only.

6. At the Gales Creek Quarry, fall all timber within the posted right-of-way boundary and remove all merchantable timber. All woody debris, including stumps and Slash shall be hauled to the designated disposal areas.

7. Overburden shall be removed for a distance of 20 feet beyond the developed rock source. All overburden and reject material shall be hauled to the designated waste area as directed by STATE.

8. 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.

9. 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.

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

11. Oversized material that is produced shall be piled in a designated area adjacent to the pit. It shall not be wasted.

12. 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. Unused shot rock material that is produced shall be piled in the vicinity of the quarry as directed by STATE.

13. The quarry floor shall be developed to provide for drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained. Ditches, culverts, waterbars and other direct conveyances of water from the quarry or stockpile site(s) shall be constructed to drain to the forest floor in locations that will provide filtration. Quarry access roads shall be cleared and blocked upon completion of quarry use as directed by STATE.

14. 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

## 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 may require screening and/or rejecting of materials utilized for production of crushed rock for the purpose of removing excess fine material. Excess fines are present when greater than 5 percent of a total rock sample weight passes a #200 sieve. 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:

Hardness - Aggregate Hardness - Test Method AASHTO T 96: 30% Maximum

Durability – Test Method ODOT TM 208

Passing No. 20 Sieve: 30% Maximum

For the purpose of crushing rock specified under the projects in Section 2610, “Project Work,” PURCHASER shall utilize a two-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 F

## CRUSHED ROCK SPECIFICATIONS

Grading Requirements:

| | | | |
|---|---|---|---|
| For 3”-0” | Passing | 4" sieve | 100% |
| | Passing | 3" sieve | 90-100% |
| | Passing | 1½" sieve | 60-90% |
| | Passing | 3/4" sieve | 40-60% |
| | Passing | 1/4" sieve | 20-40% |
| | Passing | No. 10 sieve | 5-20% |

## RIPRAP ROCK SPECIFICATIONS

Grading Requirements

For 36”-24” Riprap A minimum of 50 percent of the material shall measure a minimum of 36 inches, measured in one dimension. Material shall be clean, well graded, and free of 2"-0" fines.

For Riprap Control of gradation shall be by visual inspection by STATE.

# EXHIBIT G

# LOG STRINGER BRIDGE SPECIFICATIONS

PURCHASER shall construct and install a log stringer bridge that will provide an adequate crossing for all rock and log hauling activities associated with the timber sale contract.

BRIDGE REQUIREMENTS

a) The bridge materials and installation shall comply with all applicable OR-OSHA, Division 7 requirements.
b) The bridge shall be a minimum of 40 feet in length and shall provide a running surface of 16 feet in width.
c) The running surface shall consist of crushed rock no more than 6 inches in depth.
d) The bridge shall be installed to provide for:
   - A minimum open stream channel of at least 8 feet wide, measured parallel with the bridge axis.
   - Provide a minimum vertical clearance of six feet between the active channel and the bridge deck soffit elevation.
   - Developed slopes shall be no steeper than 1:1.

BRIDGE MATERIALS. Logs shall be selected by the PURCHASER from trees within the Right of Way and/or inside the Timber Sale Boundary, as approved by STATE. Logs that have been sourced from within the RCA may be used as bridge materials and shall be marked as directed by STATE. Logs shall be high quality, straight, free of wind shake, decay, disease, excessive twist, and all defects that may considerably affect their strength.

a) SILL LOGS

Sill logs shall be Douglas-fir and shall be a minimum of 20” in diameter on the small end.

b) STRINGERS

Stringers shall be Douglas-fir and shall have an average mid span diameter no less than 27 inches inside bark. Mid span stringers shall be a consistent diameter. This diameter is considered the average for all stringers in the bridge. The small end diameter shall be a minimum of 24 inches. The number of stringers shall be sufficient to provide a 16-foot surfaced road width when the brow logs are placed.

c) MID SPAN STABILIZER LOG

Stabilizer log shall be Douglas-fir and shall have a minimum diameter of 18 inches on the small end.

d) BROW LOGS

Brow logs shall be Douglas-fir and shall be of a diameter sufficient to provide a rub guard height of 15 inches above the finished road surface.

e) GEOTEXTILE SPECIFICATIONS

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

1. Grab Tensile 300 lbs. ASTM D4623;
2. Puncture strength 110 lbs. ASTM D4833;
3. Mullen Burst 600 lbs. ASTM D3786; and
4. Width – 16’

# EXHIBIT G

# LOG STRINGER BRIDGE SPECIFICATIONS

## BRIDGE INSTALLATION

a) "In-Stream" work shall be conducted only during periods of low water flows between July 15th and September 30th, annually. STATE shall be notified a minimum of 48 hours prior to beginning work. PURCHASER shall isolate the stream and work area as necessary to prevent sedimentation in the stream below during all phases of excavation and installation of the bridge. PURCHASER shall have a turbidity control plan and work area isolation plan that meets the specifications in this Exhibit prior to the beginning of construction.

b) Remove embankment 4' on each side to allow for riprap placement and to maintain a minimum stream channel width of 8'. Excavated debris shall be end-hauled to waste area approved by STATE. PURCHASER shall excavate as necessary to prepare a firm footing for the placement of sill logs. Native soil shall be machine compacted prior to the placement of footing rock. Footings shall be a minimum of 4.5' wide by 26' long with depths as follows: 6" of 1 ½" – 0 crushed rock over 12" depth of compacted soil slabs. Sill logs shall be embedded in the 1 ½" -0 footing rock. Additional logs shall be placed as wing logs if necessary to contain backfill.

c) Utilize 30 cy of 36"-24" riprap rock hauled from the pre-staged rip-rap stockpile located on segment A to B at station 103+80. Utilize riprap from stockpile at 103+80 for road approach embankment protection. Riprap rock shall be placed at a minimum thickness of 3 feet. Riprap rock shall be placed and tamped at a 1:1 slope, beginning at the toe(s).

d) Stringers and brow logs shall be secured by wrapping with 3/4-inch (minimum wire) rope as shown on Bridge Detail drawing in this exhibit. A minimum of three wraps shall be taken at each cabling point. Cable shall be new and shall be fastened using appropriate cable clamps. Turnbuckles or other appropriate cable clamps should be used, and driving penetrating fasteners should be avoided if possible. Stringers shall be placed butt-to-tip and wrapped together. Small logs shall be placed as necessary to shim between the stringers and provide a smooth surface for placing crushed rock. Stabilizer log will be wrapped to brow logs or exterior stringers.

e) Backfill shall be 3" -0 crushed rock sourced from the Gales Creek Quarry. Backfill shall be uniformly placed in machine-compacted lifts on both sides of the bridge. Lifts shall not exceed eight inches in depth before compaction.

f) Bridge shall be surfaced according to the specifications in Exhibit D. Prior to placement of surfacing, geotextile fabric shall be placed over the stringers and small logs. Geotextile fabric shall meet the requirements in this Exhibit. Surfacing Rock shall be walked in with an excavator and shall not be compacted with a vibratory roller.

## EROSION CONTROL

All areas of bare soil shall be grass seeded and mulched according to the specifications in Exhibit I. Straw mulch shall be spread over all seeded areas to a depth of 4 inches.

## WORK AREA ISOLATION AND TURBIDITY CONTROL PLAN

a) Contractor is required to provide a detailed written Work Area Isolation (WAI) and Turbidity Control (TC) plan 21 business days prior to the start of construction. Plan will include construction timing and sequence with specific materials and equipment intended for use. Written approval of the plan is required prior to any instream activity. Changes to the approved plan may only be made by providing detailed supplemental information and receiving written approval of STATE.

b) No work shall begin until the necessary controls for that particular phase of work have been implemented. Ensure erosion and turbidity control features (i.e., straw bales, silt fences, etc.) are on site at start of project and incorporate these materials into the project at the earliest practicable time.

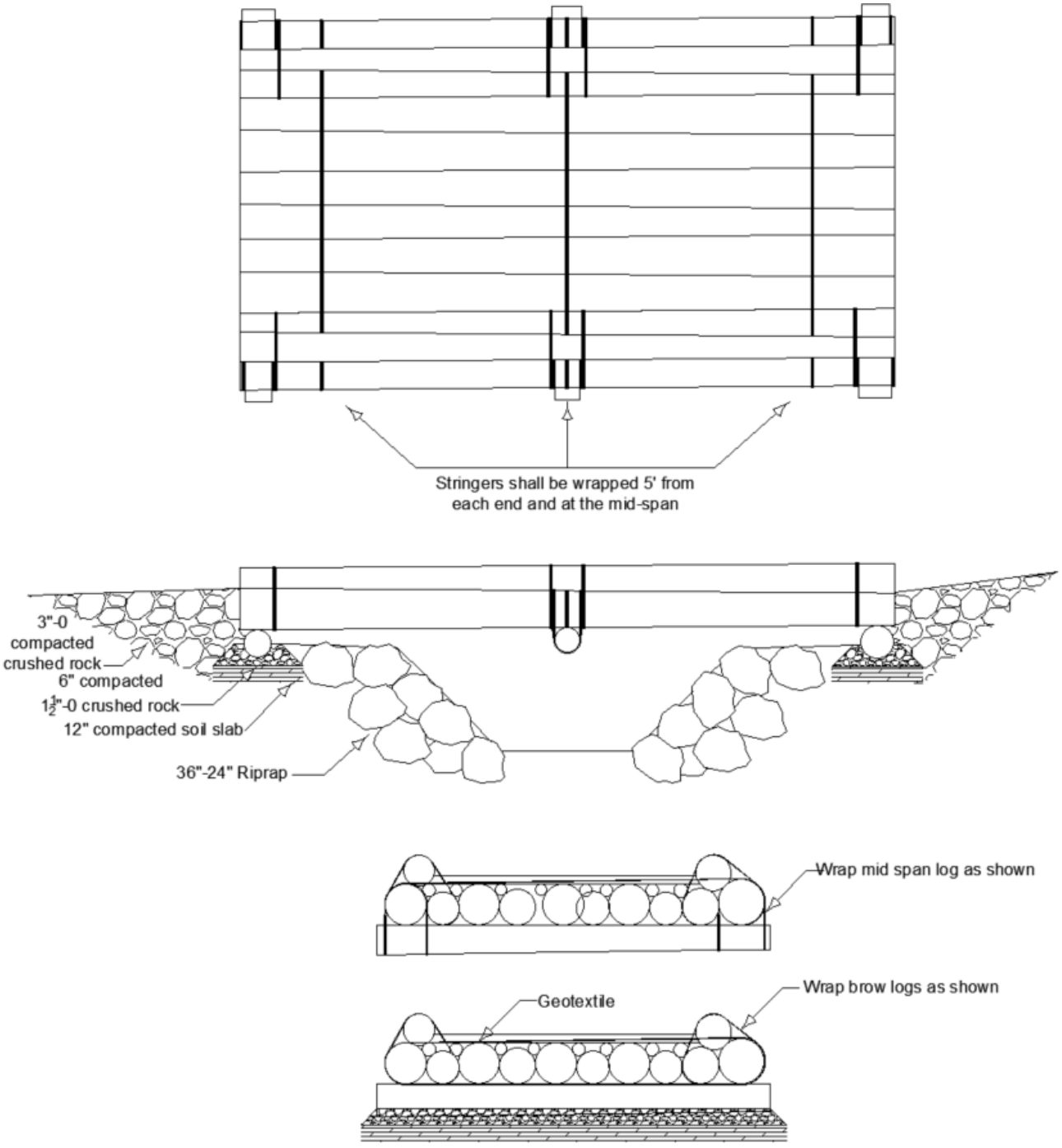
c) Plan will provide specific sediment control measures and locations to minimize delivery of soil and turbidity into the aquatic system construction. Turbidity within 150 feet downstream shall not be visually greater than the turbidity upstream of the project site.

d) When turbidity requirement or other erosion control measures are not met during construction, immediately take corrective action. Cease operations that are causing turbidity until the turbidity requirement can be met. When the interpretation of this requirement is in question, measure turbidity using a turbidity meter as approved by the STATE and provide documentation that operations are in compliance with permit monitoring and reporting requirements.

e) WAI and TC plan shall indicate approximate stream location (distance from existing and proposed structures), specific type and location of equipment and materials including enough dimensional detail of turbidity and erosion control features to indicate Contractor’s understanding of work zone isolation and turbidity management.

EXHIBIT G

TYPICAL LOG STRINGER BRIDGE SPECIFICATIONS



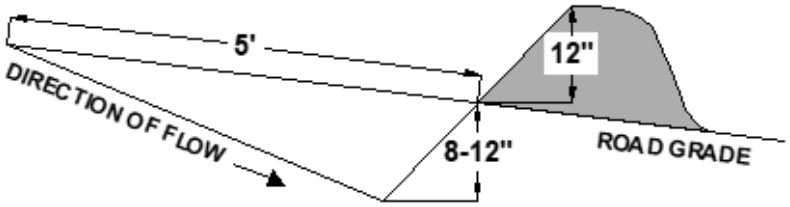

Not to Scale

EXHIBIT H

WATERBAR SPECIFICATIONS

**PROFILE**

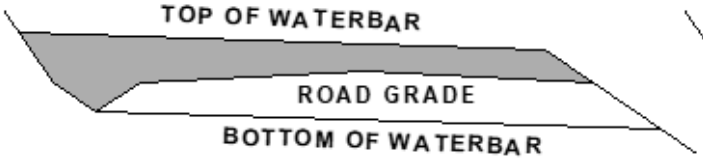
**DITCHED AND OUTSLOPED**



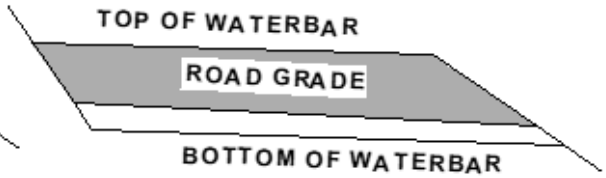

| SPACING OF WATERBARS | |
|---|---|
| ROAD GRADE | DISTANCE |
| < 6 % | 400' |
| 6 - 10 % | 200' |
| 11 - 15 % | 150' |
| > 15 % | 100' |

**CROSS SECTION**

**DITCHED**



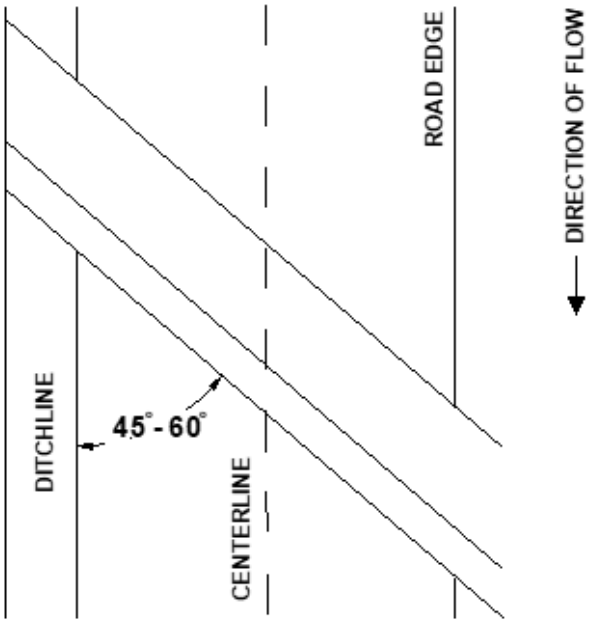

**OUTSLOPED**




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

**PLAN VIEW**

**DITCHED**

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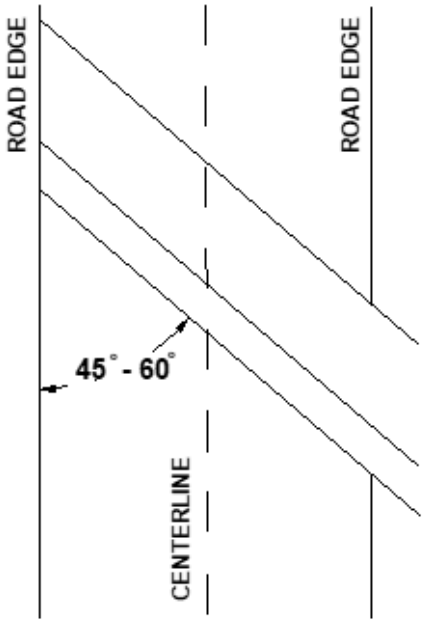
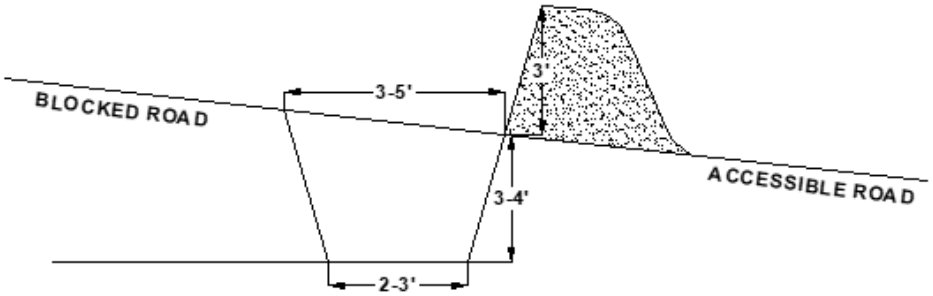


EXHIBIT H

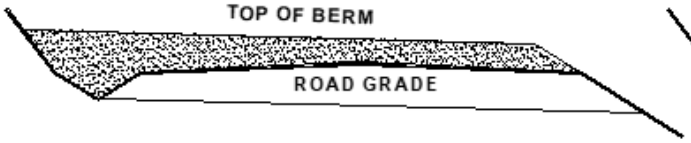
TANK TRAP SPECIFICATIONS

**PROFILE**
**DITCHED AND OUTSLOPED**

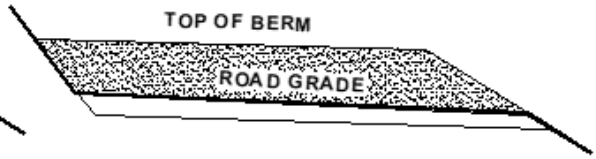



**CROSS SECTION**

**DITCHED**




**OUTSLOPED**

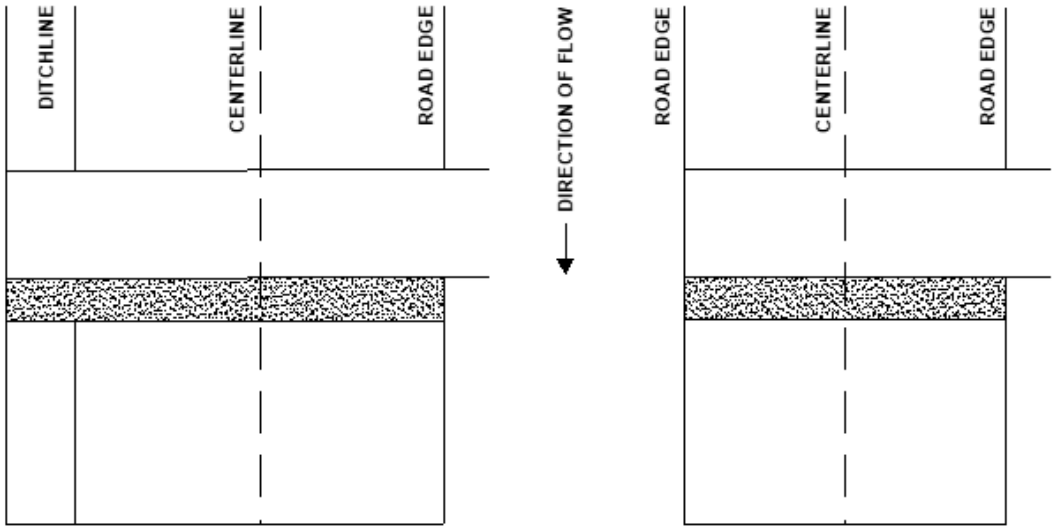



CONSTRUCT DITCHOUT THRU ANY EXISTING BERM.
CROSS DRAINAGE GRADIENT MINIMUM 3%

**PLAN VIEW**

**DITCHED**

**OUTSLOPED**




It should be sloped to drain with a relief ditch through the down slope edge of the road. The trench shall be behind the berm for approaching traffic.

# EXHIBIT I

## SEEDING AND MULCHING

This work shall consist of preparing seedbeds and furnishing and placing required native seed, fertilizer, and straw mulch. Straw mulch shall consist of straw that is free of noxious weeds. Apply seed and fertilizer to all waste areas, and bare soils resulting from Project Nos. 1 and 2. Apply straw mulch to all bare soils within 100' of streams resulting from Project Nos. 1, 2, and to all waste areas.

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

### APPLICATION METHODS FOR SEED AND FERTILIZER

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

### APPLICATION RATES FOR SEED AND FERTILIZER

Native Grass Seed. Listed grass seed below shall be applied at specific broadcast rates that coincide with grass seed selected by purchaser in accordance with the table below. The seed mixture shall be approved by STATE or comprised of at least three of the following and sufficiently mixed before application:

| Native Grass Species | lbs | Coverage Ft^2 | Broadcast Rate lbs/acre |
|---|---|---|---|
| Barley Meadow | 1 | 1740 | 50-62.5 |
| Bentgrass Spike | 1 | 43560 | 2-2.5 |
| Bluegrass Pine | 1 | 21780 | 2-2.5 |
| Brome Alaska | 1 | 1980 | 2-2.5 |
| Brome California | 1 | 1740 | 50-62.5 |
| Brome Columbia | 1 | 1980 | 44-55 |
| Fescue Native Red | 1 | 2200 | 20-25 |
| Fescue Roemers | 1 | 3630 | 24-30 |
| Fescue sand | 1 | 3110 | 28-35 |
| Fescue Western | 1 | 2900 | 15 |
| Hairgrass Slender | 1 | 7260 | 12-15 |
| Hairgrass Tufted | 1 | 10890 | 8-10 |
| Junegrass Prairie | 1 | 43560 | 2-2.5 |
| Lemmons Needlegrass | 1 | 2900 | 30-37.5 |
| Oatgrass California | 1 | 1240 | 70-87.5 |
| Sloughgrass American | 1 | 4355 | 20-25 |
| Wheatgrass Slender | 1 | 2180 | 20 |
| Wildrye Blue | 1 | 2175 | 40-50 |

# EXHIBIT I

## SEEDING AND MULCHING

Fertilizer: Chemical analysis shall be 16-20-0 and shall be applied at the rate of 200 pounds per acre. Fertilizer shall not be applied within 100 feet of streams.

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 |
|---|---|
| A to B | Culvert Nos. 2 - 11, 14 – 16, & 18 |
| A to B | Settling Ponds at 56+90, 97+40, & 98+90 |
| A to B | Culvert at 58+80 |
| A to B | Ditches at 103+55 to 104+75 |
| A to B | Waste Area at 85+20 |
| *B to C | Bridge Installation & Stream Widening at 1+20 |
| B to C | Ditches at 0+00 to 2+85 |
| B to C | Settling Ponds at 3+15 |

*Specific mulch application rates for 1+20 on B to C are as follows: Straw mulch shall be spread over all seeded areas to a depth of 4 inches.

# EXHIBIT J

# SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

## Description of Work to be Done

Areas designated for work under the contract shall be treated according to the specifications given below:

Clearing - brush, logging Slash, and other debris shall be cleared from planting sites and piled in windrows or piles, so that 80 percent or more of the soil organic layer is exposed. All woody vegetation other than trees is defined as brush in this exhibit. Stumps, however, shall be placed separately, in small clumps for wildlife.

In-Unit Piles - shall be located at least 75 feet apart and shall be no more than 75 feet long. Piles shall be located inside the sale area designated for piling and shall be more than 50 feet from any cutting edge, standing tree, or existing road. Logs that do not meet Section 2045 Log Removal requirements, chunks larger than 12 inches diameter, and stumps shall be left scattered in the Unit for wildlife habitat away from roads and landings.

Pile Construction - all landing piles, and in-unit piles greater than 9 feet by 9 feet by 9 feet, shall have no smaller than a 200 square feet of polyethylene plastic sheeting or enough to cover 50% of the pile. Start the pile with good burnable material such as conifer limbs and chunks, 6 to 8 feet high, add plastic, and complete the pile with Slash on the plastic. Debris that contains a log segment at least 3 inches in diameter at the small end and at least 10 feet in length shall be decked separately from smaller debris and hauled as Pulp.

Protective Measures - shall comply with Oregon Forest Practice Rules issued per ORS 527.610 to 527.992. Examples of protective measures are: (1) waterbarring tractor trails where necessary to prevent runoff toward streams; (2) not windrowing in streams or streamways; and (3) leaving Stream Buffers along designated streams.

Work specifications may be modified or waived only upon written notice from STATE.

# EXHIBIT J

# SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

## Equipment Type, Equipment Operation, and Conduct of Work

The specifications given below are requirements for equipment type, equipment operation, and conduct of work under the contract.

Shovel - shall be a track-mounted machine with a ground-pressure rating of not more than 6.8 PSI and a net horsepower of 85 or more. The machine shall be capable of a minimum horizontal reach of 26 feet and a minimum vertical reach of 16 feet.

- Log Loader – shovel: Grapple with rake attachment shall be a hydraulically controlled, with a 360-degree continuous rotation, and tooth length on rake arm shall be greater than 14 inches long, unless otherwise approved in writing by STATE.

| Equipment | Rate | Acres | Appraised Value |
|---|---|---|---|
| Log Loader | $250 / acre | 25 | $6,250 |

Operator - must be experienced in operating similar equipment on land clearing operations, be able to operate the equipment proficiently, and pile the debris on the area as directed by STATE.

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, other than as agreed under the contract terms.

Work Scheduling - work shall be accomplished only during dry weather conditions and started within 14 calendar days after completion of yarding activities on the Timber Sale Area. Operations 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. Piling operation shall not be allowed when operations might damage sites or affect stream flows. Any exception to these instructions must be authorized in writing by STATE.

STATE Representative - shall provide directions for the conduct of work according to specifications.